

# External Liberalization of the Korean Securities Market: Its Effects on Efficiency and Return Performance\*

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The purpose of this paper is to provide arguments that there exist traditional forms of benefits associated with forming global portfolios. This study provides the empirical evidence that these benefits are generated internally, i.e., strictly from the traditional diversification of global portfolios alone. Moreover, our results also establish that domestic interest rate, represented by risk-free rate of return, is much higher than the world level. Furthermore, price of risk associated with portfolio investments in domestic securities has remained far below the world level, implying that investment behaviors of indigenous investors are much less risk-averse relative to their counterparts in the rest of the world. Consequently, our results show that we must reject the popular belief that domestic securities are generally undervalued in comparison to foreign securities, when we account for different risk levels entailed between domestic and foreign portfolio investments.

## I. Introduction

Circumstances surrounding the Korean economy have changed greatly in the 1980s. After years of chronic international payment deficits, the current account balance has changed for the better in

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the latter half since 1986. With the economy growing steadily and foreigners demanding liberalization of Korean capital markets, the government decided to open up the domestic capital markets to foreign portfolio investors. And it also decided to provide accesses to foreign capital markets for domestic producers to raise funds abroad as well to enhance long-term economic growth.

In 1981, the Korean government announced the so-called four-stage plan to externally liberalize the domestic capital markets over ten year period. During the first stage, indirect securities investment was allowed in the form of international investment trusts and funds. In the case of the former, the Korea International Trust was launched and for the latter, the Korea Fund. The second stage began in 1985 and entailed allowances for some limited direct investment by foreigners. The third stage ensued later in 1985 with the announcement of guidelines for Korean companies intending to issue convertible bonds overseas. Several companies, including Samsung Electronics Co., have issued convertible bonds eligible for conversion after two years. The last stage for complete liberalization is scheduled to begin in 1992.

In discussing liberalization of the capital markets, however, there are at least three main liberalization processes that must be encompassed; one involving the securities market, the second interest rate deregulation and banking practices, and the third the foreign exchange market. Moreover, external liberalization of the Korean securities market is so closely intertwined with the international capital markets via the other two domestic markets. Consequently, discussion of externally liberalizing the capital markets loses much of its meaning if any one of the liberalization processes were to proceed independent of other domestic capital markets' conditions or in segregation from international trends. Therefore, discussion of liberalization of the securities market must involve dual aspects in the sense that it must proceed both with regard to external liberalization in the face of international capital flows on the one hand, and also with regard to internal liberalization in the face of intra-national asset flows on the other. Nevertheless, we shall confine our current discussion to those issues connected to domestic securities market only and defer considerations of the other markets.

For main tools of analysis, we have employed international portfolio diversification model developed by Grubel (1968) and Solnik (1974), which is basically an extended version of the traditional diversification models of Markowitz (1952) and Sharpe (1964). Both

Grubel and Solnik have argued that substantial benefits are available, in the form of superior earnings performance and reduced risk, from including foreign securities. This is because variations of returns can be reduced at the margin by including foreign securities in comparison to the case which includes domestic securities alone. In this paper, we will develop a model which gives a theoretical foundation for this assertion from a slightly different angle. This model is shown to be capable of empirically verifying this assertion in the case of Korean portfolios as well. Moreover, we will proceed to test empirically whether in fact, Korean interest rate is far too high for the purposes of externally liberalizing domestic securities market. At the same time, we are also interested in finding out whether or not the empirical tests bear out the popular belief that Korean domestic securities are in fact generally undervalued in comparison to foreign securities.

This paper provides the empirical evidence that there exist substantial amounts of traditional benefits from forming globalized portfolios. That is, these benefits are shown to be in the form of superior earnings performance and greater risk reduction in the case of globalized portfolios. Moreover, our empirical results also establish that domestic interest rate represented by risk-free rate of return far exceeds the world rate that prevails in the rest of the world. At the same time, it is empirically established that price of risk associated with portfolios of domestic securities has remained far below the world level, implying that investment behavior of indigenous investors are much less risk-averse relative to their counterparts in the rest of the world. Finally, our results show that we must reject the popular belief that domestic securities are generally undervalued in comparison to foreign securities, when we account for different risk levels entailed between domestic and foreign portfolio investments.

## II. A Model Specification of Global Diversification

The source of traditional micro-economic benefits associated with international portfolios lies in the fact that cyclical variations of security prices reflecting their own political, economic, and social conditions on national levels are imperfectly synchronized across international boundaries. In other words, a great deal of national

systematic risk inherent in the domestic market is not systematic on a global level. Consequently, movements of stock prices across different countries are less correlated than among domestic securities within a national boundary alone, reflecting imperfectly synchronized movements of the cyclical variations. This aspect of international relations provides in effect an opportunity of international risk arbitrage that can be exploited by international diversification. Thus, a further reduction of the domestically undiversifiable systematic risk then becomes possible by globally extending portfolio diversification without affecting expected return. Consequently, investors thereby attain the benefits of stabilized earnings without necessarily sacrificing the level of expected earnings. These are, of course, the traditional benefits internal to international diversification activity itself, that exist in the form of superior earnings performance, reduced earnings variance, and reduced foreign exchange risk.

In order to discuss the above considerations somewhat rigorously, however, we will construct an analytical model from which we can extract the empirically testable hypotheses associated with the benefits available from global portfolio diversification, which include both domestic and foreign securities. For this purpose, we will construct our model by building on the basic structure of the single index market model developed by Sharpe (1964), which is then extended by partially globalizing portfolio investments.

In order to facilitate comparison of return performances between domestic versus global investments, we will assemble autarky portfolios that invest in domestic securities only and next, form global portfolios by removing this restriction. From the outset, we will assume that indigenous investors can remove most of foreign exchange risk by hedging holdings of all foreign securities. Therefore, all foreign security price levels are converted to Korean won by using appropriate spot rates and forward rates.<sup>1</sup> Thus, fluctuations in security prices are assumed to represent total risk of holding global portfolios. As a result, we can safely do away, for the most part, with the major problems encountered in constructing international CAPM, viz, problems arising from purchasing power parity deviations, commodity price parity deviations, and non-existence of homogeneous international numeraire playing havoc with the

<sup>1</sup>The actual steps taken for this calculation are provided in the following sections where we explain how data are converted into Korean won.

CAPM's model structure.

For the purpose of extending the market model to construct a globally extended diversification model, one could then start out by assuming that international capital markets are totally segmented between countries so that a security's return would be determined solely by its own national index, i.e., entirely independent of factors arising from the rest of the world. Alternatively, one could also assume that capital markets are fully integrated across countries such that there exists a single world market index which affects individual security returns of all countries, albeit to different degrees. While it is difficult to measure the extent of market segmentation or integration, previous empirical studies have suggested strongly that the extent of integration lies somewhere between these two extremes.<sup>2</sup>

Accordingly, we assume that in each domestic market place, autarky portfolios have in common a national factor represented by its national composite stock price index. And if domestic portfolios are influenced by world factors at all, then portfolios are assumed to be affected by a common world factor only via their national index. Thus, autarky portfolios are influenced by its own national market rate which is in turn dependent on a single world rate to some extent.<sup>3</sup>

While several specifications of stochastic price generating processes are consistent with a globally extended quasi-international capital asset pricing model, we will follow the Sharpe's procedure. Accordingly, we postulate that in the domestic market, security prices have in common a national factor consistent with a single-factor stochastic process. Moreover, a national factor in turn is assumed to depend on a single common world factor. In other words, for a security  $i$  contained in a representative autarky portfolio of country  $k$ , we shall employ the basic structure of the model represented by the following:

<sup>2</sup>While there appear to be extra returns from international investments regardless of whether markets are totally segmented or integrated, based on both theory and empirical evidences, it is fairly obvious that the gains from diversification in the case of total segmentation of markets would be certainly greater.

<sup>3</sup>In order to avoid possibly overstating importance of U.S. market in the world economy, however, the world market rate was generated by calculating a simply weighted world market index rate. We have also experimented with transaction volume-weighted world market index rate, as well as employing market value-weighted world market index rate. It turned out that choice of a world market rate was not crucial in obtaining various results, and therefore, we adopted the simple world market index rate.

$$\bar{r}_{ki} = a_{ki} + b_{ki}\bar{R}_{km} + \bar{e}_{ki} \quad (1)$$

$$\bar{R}_{km} = a_k^* + b_k^*\bar{R}_{km}^* + \bar{e}_k^* \quad (2)$$

where  $\bar{r}_{ki}$  = security  $i$ 's rate of return in the  $k$ th country

$b_{ki}$  = security  $i$ 's national systematic risk

$b_k^*$  = international systematic risk of country  $k$

$\bar{R}_{km}$  =  $k$ th national market index rate in terms of  $k$ th currency

$\bar{R}_{km}^*$  = world market index rate in terms of  $k$ th currency.

In the above equations,  $\bar{e}_k$  and  $\bar{e}_k^*$  are domestic and world residual terms, respectively. These terms are assumed to be normal random variables with the ordinary least squares conditions of standard serial and linear independence conditions, that is,

$$\text{Cov}(\bar{e}_{t-1}, \bar{e}_t) = \text{Cov}(\bar{e}_{t-1}^*, \bar{e}_t^*) = 0,$$

$$\text{and } \text{Cov}(\bar{e}_k, \bar{R}_{km}) = \text{Cov}(\bar{e}_k^*, \bar{R}_{km}^*) = 0.$$

The first Equation (1) is usually referred to as the single index market model in the financial economics literature, stating that a security's return is related to its domestic market index rate of return. The second Equation (2) specifies that a domestic market index rate  $\bar{R}_{km}$  is in turn dependent on a world market index rate  $\bar{R}_{km}^*$ . This specification is justified on the ground that there exists some relationship between national market indices in different countries through international linkages. This relationship is reinforced by the fact that earnings of many firms are affected by international economic activities and that many of these shares are traded globally.<sup>4</sup>

Under the assumption that all autarky portfolio returns are affected identically by changes originating from the rest of the world, some important results can be derived. For convenience, we will assume that each country's autarky portfolios are initially composed of  $n$  domestic securities with equal weights, and that international portfolios of each country in turn is assembled with only foreign securities from  $m$  countries with equal weights as well. Denoting  $\bar{r}_k$  and  $\bar{r}_k^*$  to represent, respectively, the rate of return on a representative autarky portfolio of country  $k$  and the rate of return on a representative international portfolio which excludes  $k$ th country's securities, we can decompose these returns as follows,

<sup>4</sup>Because of this, it would be inappropriate to view even a tightly closed domestic market, such as Korean securities market, for example, as being wholly segmented from the rest of the world, which justifies our Equation (2).

where the bar above variables represents the simple average of  $m$  countries:<sup>5</sup>

$$\bar{r}_k = (a_k + a_k^* b_k) + b_k b_k^* \bar{R}_{km}^* + (b_k \bar{e}_k^* + \bar{e}_k) \quad (3)$$

$$\bar{r}_k^* = (\bar{a} + \bar{a}^* \bar{b}) + \bar{b} \bar{b}^* \bar{R}_{km}^* + (\bar{b} \bar{e}^* + \bar{e}) \quad (4)$$

Globalization of an autarky portfolio can then be thought of in various ways. A simple globalization method would be to increase the number of foreign securities for inclusion simply to ensure an increasing proportion of foreign securities by picking them across different countries. Another method is to increase the number of foreign countries from which the foreign securities are selected to ensure a simple geographic extension for diversification purposes. A third globalization method would be to adopt a combination of the two; to increase the extent of the globalization level of a portfolio, one would then pick securities consciously across both countries and industries. In this paper, however, we are interested only in estimating any welfare effects in terms of reducing risk and enhancing return performance from partially globalizing autarky portfolios. Therefore, we will proceed to construct our model by assuming that indigenous investors are allowed to diversify portfolios by investing across a number of countries.<sup>6</sup>

Denoting  $q$  and  $q^*$  to represent, respectively, proportion of domestic and foreign securities, we will denote  $\bar{R}^*$  to mean the rate of return on the global portfolio, i.e.,  $\bar{R}^* = q\bar{r}_k + q^*\bar{r}_k^*$  with  $q = (1 - q^*)$ . We can now express total risk associated with thus-extended portfolio investment and decompose the resulting expression as follows:

$$V(\bar{R}^*) = [(qb_k b_k^*) + (q^* \bar{b} \bar{b}^*)] V(\bar{R}_{km}^*)$$

<sup>5</sup>Equation (3) and (4) are obtained, respectively, from

$$\bar{r}_k = \sum_{i=1}^n (a_{ki} + a_{ki}^* b_{ki}) + b_{ki} b_{ki}^* \bar{R}_{km}^* + b_{ki} \bar{e}_k^* + \bar{e}_{ki})/n \text{ and}$$

$$\bar{r}_k^* = \sum_{i=1}^n \sum_{j=1}^n (a_{ij} + a_{ij}^* b_{ij}) + b_{ij} b_{ij}^* \bar{R}_{km}^* + b_{ij} \bar{e}_j^* + \bar{e}_{ij})/nm$$

<sup>6</sup>In spite of the simplicity followed in this procedure, the industrywise diversification aspect of the third procedure mentioned above has been accounted for indirectly since we adopted in the subsequent analyses to represent returns of the typical foreign portfolios by market index rates of respective foreign countries. In any event, it has been empirically established earlier by Lessard (1973) and Solnik (1974a, b) among others that diversifying across countries given inter-industry diversification does produce superior results in comparison to diversifying across industries given inter-country diversification. Moreover, the combined procedure of diversifying both industrywise and countrywise were shown to give better results, as expected, with respect to reducing risk of portfolios.

$$\begin{aligned}
 &+ [(qb_k)^2 V(\bar{e}_k^*) + (q^* \bar{b})^2 V(\bar{e}^*)] \\
 &+ [q^2 V(\bar{e}_k) + q^* V(\bar{e})]
 \end{aligned}
 \tag{5}$$

The first term of the above Equation (5) is the international systematic risk that cannot be reduced by global diversification or by any other diversification. Fluctuations of security prices represent only part of the total systematic risk associated with foreign security holdings due to presence of foreign exchange risk. However, since all foreign security holdings have been assumed to be hedged against exchange rate risk through purchasing forward exchange contracts, the exchange rate risk entirely vanishes out of this term.

The second term of Equation (5) is the international unsystematic risk which could be reduced to some level in the neighborhood of zero, in theory at least, if both the number of securities and the number of countries included in the globalized portfolio could be simultaneously increased to sufficiently large numbers.<sup>7</sup> Consequently, it is worth noting that this is the term in the above expression that provides the necessary key for explaining the source of international diversification effect. Originally, this term was a portion of domestic systematic risk, prior to globalizing the autarky portfolio, which at that time could not be further reduced by domestic diversification alone, but, which can now be decreased by globalizing the autarky portfolios.

Lastly, the third term of Equation (5) states that domestic unsystematic risk can be reduced by traditional method of increasing the number of domestic securities. But the difference now is that in the case of globalized portfolios, however, unsystematic risk can also be decreased simultaneously by incrementing the number of countries from which foreign securities are selected.

The above exposition suggests that investors can expect the benefits of stabilized return performance, resulting from globally extending autarky portfolios. This is because to the extent that a portion of domestic systematic risk in an autarky situation can now be internationally diversified away, via the second term of Equation (5), total investment risk associated with the globally extended portfolio can also be reduced hereby. As will be demonstrated in the

<sup>7</sup>Although from a practical point of view, it is obviously neither possible nor desirable to increase without limit the number of securities and the number of countries, there are certainly numerous global portfolios of mutual fund type which encompass extremely large numbers of both securities and countries.



subsequently following sections, this has the effects, graphically speaking, of pulling down vertically, as it were, the so-called "risk reduction schedule" of Solnik in the  $(V_p, n)$  space with  $n$  on the horizontal axis and  $V_p$  on the vertical axis. Consequently, this will also have the effect of pulling upward and to the left Markowitz's Efficient Frontier in the  $(E_r, V_p)$  space with  $V_p$  on the horizontal axis and  $E_r$  on the vertical axis. This argument provides a theoretical basis for kindred claims that there exist substantial benefits to be attained by internationally diversifying portfolios, which are explicated in terms of observed reduction in variability of returns and/or increase of return performance at given levels of risk.

### III. Effects of Globalizing Portfolios on Risk Reduction

#### A. Data

First, we selected fifty Korean securities based on size of capital assets and monthly average volume traded. This provided our sampling base from which Korean autarky portfolios were assembled. Monthly rates of return were obtained by first calculating changes of monthly simple average price levels for each security and then adjusted for dividends.<sup>8</sup> Time period chosen for the current study is between 1980 and 1987, and excluded the extremely volatile period following thereafter in the Korean stock market.

For selecting foreign securities, thirty foreign stock markets were chosen based on market size according to their market capitalization values, as of December 1987. This used the data reported by the *Federation Internationale des Bourses de Valeurs*. In order to calculate foreign rates of return, we employed national market indices reported in the *International Financial Statistics*, by assuming that a typical foreign security's rate of return can be represented by rate of change of the foreign country's market index. This is tantamount to assuming that a typical foreign security to represent the country had its beta value of unity with respect to its national market index rate throughout the entire period.<sup>9</sup>

In order to construct autarky portfolios, only Korean securities

<sup>8</sup>Other than that, however, we did not account for stock splits or gratis stock payments without consideration, that were distributed in the form of dividend payments or capital increases during the period.

<sup>9</sup>In these calculated figures, however, cash dividends and gratis stock distribution without consideration were not accounted for.

were selected by a random-number generator, and their individual return and variance figures were collected. For each given size of the portfolios, we assembled twenty portfolios, each containing the same number of securities, and calculated simple averages of returns and variances from thus-assembled twenty portfolios. This procedure was repeatedly applied for portfolio sizes of 2, 5, 10, 15, 20, 25, and 30.

We then proceeded to form naive global portfolios in order to geographically extend portfolios. The naive global portfolios were defined as a special form of globalized portfolios that contain both Korean securities and the representative foreign securities with equal proportions. Thus, in each of the globally extended portfolios with even numbers, domestic and foreign securities were evenly represented. For each of those portfolios with sizes of odd numbers, however, equiproportional representation was ensured by including even number of domestic securities but odd number of foreign securities for the first ten portfolios, while including odd number of domestic securities but even number of foreign securities for the next ten portfolios.<sup>10</sup>

In order to compare return performances of autarky versus globalized portfolios, we had to make units of foreign rates of change comparable to that of Korean domestic rate of change for subsequently following empirical analyses. Thus, as far as domestic investors are concerned, in the absence of any world numeraire currency, not only should the foreign rate of return be adjusted by the exchange rate factor ( $F_t/S_t$ ), with  $F_t$  and  $S_t$  denoting, respectively, forward and spot exchange rate at the point of time  $t$ , in order to ascertain the final value of returns in units of Korean won, but it must also account for capital gains or losses from foreign exchange transactions involved in order to arrive at the final value of the investment.<sup>11</sup> Consequently, all current foreign market index levels

<sup>10</sup>For portfolios with five securities, for example, we included two domestic and three foreign securities in each of the first ten portfolios. We then assembled the next ten more portfolios by including three domestic and two foreign securities. Hence, twenty portfolio returns and variances were obtained from thus-assembled portfolios. Simple averages of the twenty returns and variances were then used to provide return and risk measures of the representative portfolio that contain five securities in this case.

<sup>11</sup>Thus, when these two factors are not explicitly accounted for, one is subsuming that exchange rates of all countries remain fixed for the entire duration of the investment, or that regardless of presence of any exchange rate fluctuation, a national market rate is influenced only by movements of the world market index rate per se. For the purposes of calculating foreign rate of return, however, we assumed that forward exchange rates were

were first converted to U.S. dollar units using their own respective local spot rates prevailing at time  $t$ . Next, to make units of foreign rates of changes in the converted index levels consistent with that of Korean domestic rate of change, however, the above converted foreign indices were converted once more into Korean won applying appropriate Korean exchange rates per unit of U.S. dollar.<sup>12</sup>

### *B. Empirical Results*

In order to represent portfolio variance of a given size, we first calculated twenty portfolio variances for the corresponding size, and then simply averaged them. For inter-comparison purposes of variances between portfolio types, however, we obtained relative variances of the two types of portfolios. To calculate the relative variances of autarky portfolios, their simple average variances obtained above were in turn divided by the simple average of variances of thirty domestic securities that were selected according to their market values. To calculate the relative variances of global portfolios, their simple average variances were also divided by the average of variances of fifteen domestic and fifteen foreign securities.<sup>13</sup>

Examining the reported figures across Table 1, that is, from reading it horizontally from left to right, we observe that variances decline rather rapidly as portfolio sizes increase in both cases. This, of course, reflects the classical result of portfolios with randomly selected securities having risk that asymptotically decreases to a minimum level. This minimum level of risk is equal to the systematic risk in the market as the portfolio's size is increased. On the other hand, from reading the reported figures of Table 1 verti-

identical to future spot rates. As a result, foreign exchange risk does not wash off completely from the foreign rates of return converted to Korean won, due to its implicit inclusion in the calculated rates.

<sup>12</sup>To convert rate of return  $\tilde{r}^*(K)$  from country  $k$  with currency unit of  $K$ , for example, the above procedure yields the following expression in terms of Korean won  $\tilde{r}^*(W)$ :

$$\tilde{r}^*(W)_t = \tilde{r}^*(K)_t [F(W/\$)/S(W/\$)]_t + [ \{F(W/\$) - S(W/\$)\} / S(W/\$)]_t$$

<sup>13</sup>In other words, the averages of portfolio variances were normalized with respect to the average of variances of the individual securities selected for a typical portfolio of the corresponding type. This procedure provides the necessary controls for different levels of market volatility between autarky and global markets, so as to make meaningful direct comparisons of domestic and global diversification effect. The normalized risk measures then were used to represent the proportions of total risks that remain after the diversification.

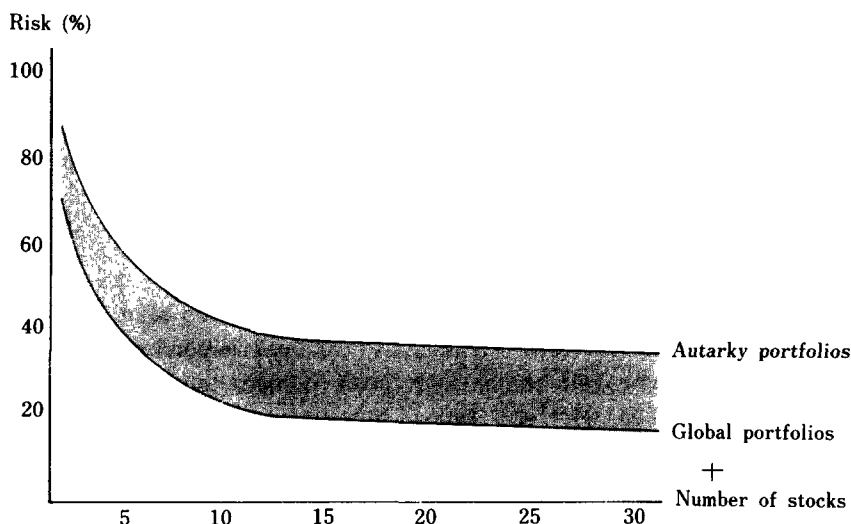


FIGURE 1  
EFFECTS OF GLOBALIZATION ON RISK REDUCTION

cally for comparing the above two types of portfolios, we observe that variances of portfolio returns drop drastically as foreign stocks are added to the Korean autarky portfolios, regardless of portfolio sizes. It is also interesting to notice that the risk level that can be achieved by including more 20 securities in the case of the autarky portfolio type can be obtained by including merely five securities in the case of the globalized portfolio type.

The results reported in Table 1 are shown in Figure 1. In Figure 1, *X*-axis plots the number of securities included in portfolios, and *Y*-axis plots the risk of investment represented by calculated relative variances of portfolio returns. Two different schedules are shown to represent the corresponding types of portfolios' relative variances reported in Table 1. Figure 1 indicates that as the num-

TABLE 1  
RISK REDUCTION EFFECT OF GLOBAL DIVERSIFICATION

Portfolio Type	Portfolio Size (number of securities)						
	2	5	10	15	20	25	30
Autarky Port'	0.8072	0.3507	0.3320	0.3356	0.3263	0.2963	0.2922
Global Port'	0.3664	0.3069	0.1836	0.1820	0.1815	0.1611	0.1518

Note: The above figures are normalized average portfolio variances.

ber of securities contained in the corresponding portfolios increases, it reveals the classical result of declining risk along a given risk-reduction schedule. This is shown to be true for either case. But the main point we wish to reveal here is that the entire initial risk-reduction schedule itself is shown to shift downward as the autarky portfolio becomes globalized by including foreign securities. As the theory developed in the previous section has suggested, this results in further enhancing the risk-reduction effects, regardless of portfolio sizes. The shaded area in Figure 1 represents the additional portion of total risk that can be reduced incrementally through the global diversification.

As shown in Figure 1, the risk reduction schedule associated with the global portfolios is lower than the initial schedule of the autarky portfolios that contained no foreign securities. The shaded area between the two curves represents the benefits available to indigenous investors in terms of risk reduction following from the partially extended global diversification. According to the results of Table 1, the amounts of benefits in terms of incremental reduction in variability of returns are shown to be quite substantial, even in this simple case of a naive diversification through assembling the simple global portfolios. For those Korean investors who hold portfolios containing ten securities, for example, they can expect to reduce investment risk by 44.7% when they hold the global portfolio with five foreign securities and five domestic securities. It turns out that these benefits are also significant at all levels of the portfolio sizes they wish to hold.

However, the naive globalization approach taken heretofore and imposition of any restriction on the mix between domestic and foreign securities, for that matter, are not likely to be conducive to the most optimal diversification. It should come as no surprise that in fact, had the most optimal diversification been allowed to take place, the extent of risk reduction would have been certainly much greater than possible from the case of the naive global diversification. Accordingly, the risk reduction schedule associated with the most optimal diversification, not indicated in the above figure, would have dropped further down, somewhere below the risk reduction schedule corresponding to the naively diversified global portfolios in Figure 1. Consequently, efficiency loss, due to foregone opportunity to additionally reduce risk of portfolio investment, would have been even greater in this case.

#### IV. Effects of Globalizing Portfolios on Efficiency Gains

Most studies of international portfolio investment attempt to show advantages of international diversification by forming optimal portfolios of international securities. Consequently, autarky and international efficient frontiers are delineated and then compared. In order to test the hypotheses regarding the advantageous global diversification, we too take this approach and proceed to trace out a domestic efficient frontier in an autarky situation and then a globally efficient frontier, from the view point of indigenous investors, i.e., by converting all units in Korean won.

In order to delineate efficient frontiers corresponding to the above two cases, we employ the standard Lagrangean optimization method by minimizing total portfolio variance subject to the rate of return being at some level, which is then incremented successively by equal amounts. The only added features here are that: First, each efficient frontier is generated from a specific opportunity set corresponding to each case; Second, globalized individual portfolios are assembled from a global opportunity set which contains equal numbers of domestic and foreign securities; Third, all relevant units are converted to Korean won. In other words, the above procedure yields the following constrained optimization in which  $a_i$  and  $a_j$  are, respectively, the proportion of  $i$ th and  $j$ th securities, and  $n$  and  $m$  are, respectively, the number of domestic and foreign securities contained in opportunity sets:

$$\begin{aligned} \min \quad & \hat{V}(\hat{R}_p) = \sum_{i=1}^{n+m} \sum_{j=1}^{n+m} a_i a_j \text{Cov}(\tilde{r}_i, \tilde{r}_j) \\ \text{subject to} \quad & R^* = \sum_{i=1}^{n+m} a_i \tilde{r}_i \\ & \sum_{i=1}^{n+m} a_i = 1 \\ & a_i \geq 0. \end{aligned} \quad (6)$$

By varying the target rate of portfolio returns, that is  $R^*$  in the above Equation (6), we can delineate respective efficient frontiers. Results of the above minimization from Equation (6) are reported in Table 2. Figure 2 in turn plots the calculated results of Table 2, tracing out the corresponding efficient frontiers for the two types of portfolio investments.

Table 2 presents the results of two different calculations for tracing out efficient frontiers. First row with the heading of autar-

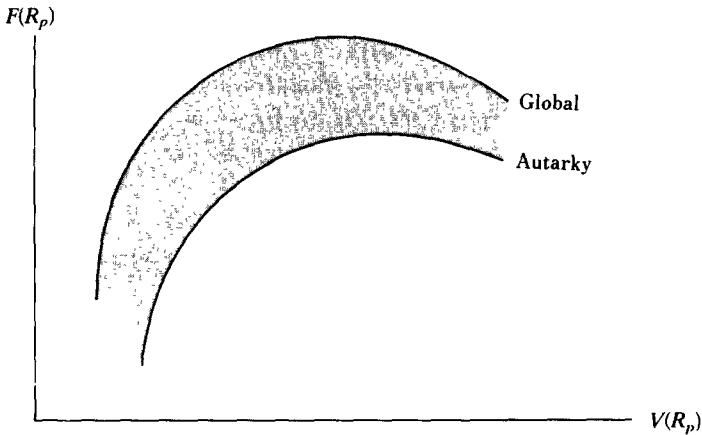


FIGURE 2  
EFFECT OF GLOBALIZATION ON EFFICIENT FRONTIER

ky portfolios is based on fifty domestic securities representing the autarky opportunity set. Second row shows the figures generated from the extended opportunity set containing thirty foreign security index rates and randomly selected thirty domestic security rates.

As can be seen from Figure 2, diversification associated with the assets contained in the global portfolios would have permitted, in general, investors to obtain higher rates of return or lower risk than they could have by investing in the autarky portfolios. Consequently, it can be asserted unambiguously that if an investor had wanted to maintain the same level of risk, investments in the global portfolios would have shown far superior earnings performance, in comparison to that of the autarky portfolios. Similarly, if an investor had wanted to maintain the same rate of return, investments in the global portfolios would have enabled indigenous investors to reduce risk further. This, of course, is merely a reconfirmation of the results already established in the previous section.

In general, the preceding analysis suggests that the investments associated with the global portfolios would have generated substan-

TABLE 2  
RISK MINIMIZATION RESULTS OF AUTARKY VS. GLOBAL PORTFOLIOS

Target Rate	1.4%	1.6%	1.8%	2.0%	2.2%	2.4%	2.6%
Autarky	0.0016	0.0025	0.0049	0.0053	0.0072	0.0113	0.0150
Global	0.0015	0.0016	0.0020	0.0024	0.0035	0.0053	0.0108

tial gains of welfare to indigenous investors. The shaded area between the curves represents the welfare gains that indigenous investors could extract from the partially global diversification, which is the same thing as efficiency loss due to foregone opportunities by not being allowed to invest in the global portfolios. Results of this paper as well as results provided in the past by many others all indicate that these benefits are indeed substantial. Consequently, present analysis enhances our confidence that investments in global portfolios will be undoubtedly profitable for Korean investors as well, and therefore, more of it should be encouraged to take place in the future.

However, this is only a part of the whole story. No matter how substantial the amount of welfare gains from investing in the partially extended global portfolios exists, diversification restricted to the naive globalization must be sub-optimal. It is clear that had the restriction imposed on the opportunity set's mix of securities been entirely removed, earnings could have further increased, and a further reduction would have been available. In other words, globally optimal diversification based on the universe of all securities would not have resulted in the partially extended global efficient frontier in Figure 2 which is not the most efficient frontier from a purely micro-economic view of the portfolio optimization. A truly optimal diversification at the global level would have produced an efficient frontier, which is not in the above figure, but somewhere above the efficient frontier associated with the partially extended global diversification in Figure 2.<sup>14</sup>

## V. Domestic Securities Market Facing External Liberalization

The type of questions we investigate in this section are the following. We wish to empirically test hypotheses regarding; first,

<sup>14</sup>Within the confines of the present analysis, therefore, a case can be made for removal of artificial restrictions imposed by the government with respect to composition of global portfolios. This is because the truly optimal portfolios could be composed, and maximum benefits possible could be extracted, only by removing government restrictions that are arbitrarily imposed on the relative proportions of domestic and foreign securities. Nevertheless, it should be acknowledged at the same time that this is a strictly micro-economic view of the subject matter that altogether ignores any macro-economic considerations. For space considerations, however, we cannot probe into various important issues surrounding them in any detailed fashion here, and therefore, we defer these discussions elsewhere to receive more systematic treatment of a completely different character.



whether or not domestic interest rate level is indeed higher than international interest rate prevailing in the rest of the world; second, whether or not indigenous investors are less risk-averse in their investment behavior toward risk in comparison to foreign investors; third, whether or not domestic security price level is in fact undervalued in comparison to those prevailing in the rest of the world. To probe into these questions, we proceed to estimate and compare domestic risk-free rate vs. international risk-free rate on the one hand, and domestic price of risk vs. international price of risk on the other. The estimated domestic risk-free rates will then indicate whether or not domestic interest rate, represented by the estimated risk-free rate, in turn is indeed higher. And, the estimated domestic security line will indicate whether or not the domestic security price level in turn is undervalued when compared to those of the rest of the world.

#### *A. Data*

Individual domestic time series prepared from the previous section was used to estimate individual domestic betas by regressing them on Korean stock market's composite index rate for the first-pass regression. In order to estimate the foreign betas, however, we generated a time series on the world market rate of return, which is based upon simply-weighted individual countries' national indices. Individual foreign returns were then regressed on thus-calculated world rates of return. Next, in order to estimate the domestic and foreign security market lines, however, we employed portfolio data, rather than directly using the cross-sectional individual data for the second-pass regression. For this regression, individual domestic portfolios were formed by including ten domestic securities only, based on its individual beta rankings. Likewise, individual global portfolios were formed in the entirely similar fashion. From each of the two sampling bases, we formed twenty portfolios separately for estimating the domestic security market line and the global security market line, respectively.<sup>15</sup>

<sup>15</sup>The above approach was adopted primarily to reduce various econometric problems associated with measurement errors. However, Black, Jensen, and Scholes (1972) note that risky assets classified in terms of beta ranking groups still tend to produce beta estimated with measurement errors. Although there are other approaches to reduce the measurement errors, such as instrumental approach for securities groupings and simultaneous estimation method, we shall not delve into these discussions here, and we will proceed with our estimation employing the above method.

Individual portfolio's expected rate of return was generated by first calculating the average rates of return from ten individual time series of returns, and then simply weighting thus-obtained ten average rates. By iterating this procedure for each of the twenty individual portfolios assembled, we obtained the cross-sectional data set from the twenty portfolio returns. On the other hand, each portfolio beta was generated from the traditional market model, i.e., by simply regressing time series of individual portfolio returns on the corresponding market rate of return. For the purpose of generating a cross-sectional data set of twenty portfolio betas, this procedure then was repeated twenty times, corresponding to those twenty portfolio we assembled for each case.

Lastly, in order to compare the equilibrium return characteristics of thus-assembled international portfolios with that of the autarky portfolios, we converted all foreign stock returns into Korean won, and accordingly expressed the international market rate of return in terms of Korean won as well. This is done solely to make a direct comparison meaningful between the two equilibrium return characteristics, but all return figures could have been expressed just as well in terms of dollars instead, or some other common currency, for that matter.

### *B. Empirical Results*

In order to test empirically various hypotheses suggested heretofore, we have extracted and specified explicitly the following three testable hypotheses:

- H1 : Domestic risk-free rate is significantly higher in comparison to the internationally prevailing rate.
- H2 : Domestic investors are significantly less risk-averse in comparison to foreign investors.
- H3 : Domestic security price level is significantly undervalued in comparison to the internationally prevailing level.

By employing the portfolio data prepared from the above procedure, we estimated regression equations of the following form for the domestic security market line (DSML) and the international security market line (ISML):

$$\tilde{R}_j = a_j + \lambda B_j + \tilde{e}_j \quad (7)$$

where  $\tilde{R}_j$  = rate of return on  $j$ th portfolio

- $a_j$  = constant term, representing risk-free rate of return  
 $\lambda$  = slope coefficient, representing price of risk  
 $B_j$  =  $j$ th portfolio's systematic risk  
 $\tilde{e}_j$  = disturbance term, which is assumed to be normal random variables with standard serial and linear independence conditions, that is,  $\text{Cov}(\tilde{e}_t, \tilde{e}_{t+1}) = \text{Cov}(\tilde{e}_j, B_j) = 0$ .

Empirical results of the above regressions are reported in Table 3. With respect to the first hypothesis H1, empirical results reported in the Table 3 show that the estimated domestic risk-free rate is significantly higher, by more than double, in comparison to the international risk-free rate. The domestic risk-free rate is estimated, on a monthly rate basis, to be 3.38%, as compared to only 1.53% for the international rate. This result indicates that price level of domestic risk-free bond is undervalued by more than 100% as compared to foreign bonds.

Regarding the second hypothesis H2, empirical results also show that domestic price of risk, represented by estimated slope coefficient of the domestic security market line, is much lower than international price of risk. In fact, our result indicates that in order to make investors assume 1% increment of market risk at the margin, the price of risk for indigenous investors is only 0.65%, in terms of additional excess return they require in return. On the other hand, foreign investors assume 1% of additional risk only when they can expect an excess return of more than 2.66% increment of return. In other words, in order to earn excess expected return of 1% at the margin, indigenous investors willingly accept additional 1.54% increment in market risk, while foreign investors accept only 0.38% increment of market risk in return. To put it still another way, this means that indigenous investors are more than four times reckless in terms of their attitude toward risk, when compared to their coun-

TABLE 3  
EMPIRICAL ESTIMATES OF DSML VS. ISML

SML type	Const	$\lambda$	$t(a)$	$t(\lambda)$	$F$	$R^2$
Autarky	3.3857 (0.1754)	0.6507 (0.1925)	19.305*	2.279*	11.4206*	0.4876
Global	1.5375 (0.0532)	2.6613 (0.7325)	28.919*	2.633*	13.1987*	0.5237

Note: 1. \* denotes statistical significance at 1% level.

2. Figures in parentheses denote standard error of estimates.

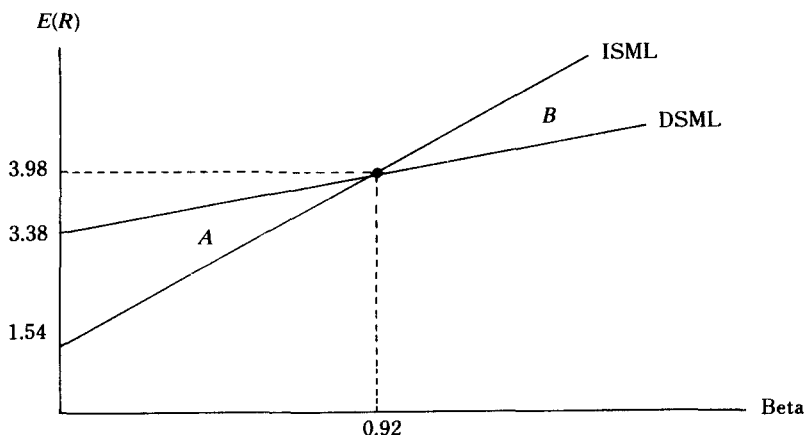


FIGURE 3  
DOMESTIC SML VS. INTERNATIONAL SML

terparts in the rest of the world. Conversely, foreign investors, on the other hand, are more than four times cautious toward risk, that is, more risk-averse, when compared to indigenous investors.<sup>16</sup>

For the purposes of verifying the third hypothesis H3 concerning the relative undervaluation of domestic securities, we plotted the empirical estimates reported in Table 3 in Figure 3 and delineated DSML and ISML.

From the traditional CAPM, it is worth remembering that those securities or portfolios whose expected rates of return lie above a security market line are said to be undervalued, whereas those lying below it are overvalued. It becomes immediately clear then from the above Figure 3 that those domestic securities that lie within the area indicated by A are indeed overvalued in comparison to foreign securities. As can be seen from the above figure, those are the relatively less risky securities that lie below DSML but above ISML, all of which have beta values less than 0.92. Consequently, while indigenous investors regard them overvalued in the context of domestic market, i.e., judging from those securities' positions in relation to DSML. On the other hand, foreign investors regard them

<sup>16</sup>One might argue that the above results are dependent upon the currency unit chosen for the empirical estimation. These results, however, were robust with respect to choice of the currency units. In particular, when we converted all figures in terms of U.S. dollars and carried out the exactly same type of tests, many of the similar results were repeated, except that the second hypothesis could not be statistically verified at 5% level of significance. In fact, its statistical reliability was so poor in that case that one could not possibly hope to utilize the estimates to make any inferences in one way or the other.

undervalued instead in the context of international security market, i.e., judging from those same securities' positions in relation to their own ISML. In the meanwhile, those domestic securities that lie within the area indicated by *B*, with beta values more than 0.92, cannot be said to be undervalued from the viewpoints of international investors. In fact, those securities within the area *B* are overvalued in the context of international investment, no matter that indigenous investors regard them undervalued in reference to their own DSML.<sup>17</sup>

Thus, one of the main results this analysis establish is the fact that the relatively more risky domestic securities in terms of high beta values are instead overvalued, contrary to putative belief, if evaluated in the context of the international investments. In the meanwhile, it remains to be the case that the relatively less risky domestic securities are indeed undervalued. Consequently, the third hypothesis can be accepted only for those domestic securities with beta measures less than 0.92, while it cannot be accepted for those securities with beta measures greater than 0.92, which turn out to be overvalued instead.<sup>18</sup>

### *C. Effects of the External Liberalization*

Resulting from externally liberalizing the domestic securities market, among many changes, position and shape of the post-liberalization's DSML will approach to those of ISML as the liberalization proceeds with time. Thus, inflow of foreign capital will cause domestic interest rate, *ceteris paribus*, to decline toward a world level. Simultaneously, this will result in raising domestic level of risk-free bond prices in the first instance. Moreover, as domestic securities market becomes increasingly integrated with the rest of the world's markets, it is eminently likely that domestic price of risk will also increase, approaching toward the higher foreign price of risk associated with ISML.

<sup>17</sup>The above arguments must be qualified, however, because here we are comparing only the pre-liberalization characteristics of return performances and risk attributes in reference to two different market indices. But the two indices are largely independent of one another prior to externally liberalizing the domestic capital markets to foreign investments.

<sup>18</sup>The asymmetry in the above results comes about in turn precisely because price of risk willing to pay differs between indigenous and foreign investors. It is worth noting that this result provides one of the key evidences supporting the view that Korean securities market has been largely segregated from the international capital markets.

Let us now consider, however, what would happen to portfolio performances if indigenous investors were to make investments in reference to the old DSML, even after their domestic securities market is liberalized. In this case, foreign and indigenous investors' behavior can be analyzed with the aid of Figure 3. As far as foreign investors are concerned, first and foremost, foreign portfolio investments will mostly likely be concentrated on domestic risk-free bonds first. This will continue to be the case as long as a significant degree of interest differential persists between domestic market and the rest of the world. Therefore, prices of these risk-free bonds will most likely increase. Second, to the extent that the more undervalued individual domestic securities happen to be the less risky ones, foreign investors' preferences in their demand for domestic securities will also be concentrated on these securities, that is, on the low beta securities, at least in the initial stage. Consequently, it will be these bonds and equities that will enjoy relatively higher price increases in comparison to other domestic securities.

The area indicated by *A* in Figure 3 represents excess returns, from investing in domestic securities with comparable risk levels, which can be exploited by foreign investors. Thus, foreign investors would select securities in this area as possible candidates, while indigenous investors would discard them as relatively undervalued in reference to DSML. On the other hand, all of those securities lying within the area indicated by *B* are potential candidates for inclusion by indigenous investors in their domestic portfolios but discarded by foreign investors as being overvalued. As far as indigenous investors are concerned, therefore, there is the possibility that they end up with selecting some of those inferior securities that are being overlooked by international investors as being overvalued in relation to their risk characteristics. Therefore, if indigenous investors were to insist on maintaining their old investment behavior they previously acquired prior to the external liberalization, return performances of domestic portfolios are bound to be inferior to those of global portfolios of foreign investors. Moreover, any local advantages indigenous investors may possess in their own domestic market may be of a tertiary importance as far as generating superior portfolio performance is concerned.

## VI. Concluding Remarks

We can summarize our findings as follows. First, there exist substantial amounts of benefits from globally diversifying portfolios for Korean investors as well. These were shown to be in the form of reducing investment risk by pulling down, as it were, the investment reduction schedule. Also, expected rate of return on portfolio investment could be increased at all given levels of risk by pulling up the efficient frontier when indigenous investors diversified portfolio investments globally.

Second, domestic interest rate, represented by risk-free rate of return, far exceeds world rate that prevails in the rest of the world. Hence, domestic bond prices are significantly undervalued in comparison to the world price level. Specifically, the domestic interest rate is higher by more than twice in comparison to the world rate, and hence the price level of risk-free bonds are less than one half of what it is in the rest of the world.

Third, we must reject the popularly believed notion that domestic securities are generally undervalued in comparison to foreign securities. This follows immediately once we incorporate risks entailed in securities investments into the analysis and explicitly account for different risk levels between domestic and foreign portfolio investments. Specifically, our results show that while risk-free bonds and relatively less risky securities, with beta values less than 0.92, are indeed undervalued in comparison to foreign securities, relatively more risky group of securities with beta values greater than 0.92, however, are overvalued instead.

Fourth, investment behavior of indigenous investors toward risk was shown to be much more reckless, that is, must less risk-averse, in comparison to their counterparts in the rest of the world. Specifically, they are likely more than four times reckless toward risk, as evidenced by the small value of estimated domestic price of risk they demand in terms of excess returns for assuming 1% increment of market risk. It was estimated to be 0.65% for indigenous investors, as compared to 2.66% for foreign investors. In other words, in order to earn excess return of 1% at the margin, indigenous investors were shown to willingly accept 1.54% of additional market risk, while foreign investors tolerate only 0.38% increment of the market risk per 1% additional excess return they demand.

The first result regarding the existence of traditional benefits from global diversification may not be surprising. In fact, this result was expected in view of the fact that Korean capital markets have been, for the most part, segregated from the rest of the world.

For policy purposes, however, the second result implies various important points with respect to the external liberalization policies. One of the more obvious, but nonetheless crucially important, implications is that the higher domestic interest rate unduly burdens domestic borrowers of fund. Putting aside other domestic policy complications at macro-economic level, we might entertain the notion that therefore the observed divergence between domestic and foreign interest rate provides a sufficient condition for removal of restrictions imposed on international flows of capital. This will most likely result in inducing additional source of fund in the form of international capital inflows, and thereby lower interest cost to domestic borrowers. However, another implication for those who are concerned with the conduct of the external liberalization policy might be that domestic bond market must first be distinguished from stock market and proceed discussions on the external liberalization of domestic securities market separately. For domestic policy purposes then, a case can be made just as well that domestic bond market should be protected for the time being, until such time as when domestic interest rate declines sufficiently, and when a sense of competition and efficiency returns to domestic financial markets. This, of course, would require elimination of artificial regulations surrounding determination of domestic market rate of interest, which should be accompanied by other liberalization measures internally, within the rest of the domestic financial markets. Consequently, the external liberalization of the domestic stock market should proceed first.

The third result indicates that indigenous investors' evaluation of domestic assets apparently differs from foreign investors with respect to determining their intrinsic values. In particular, this result suffices to show that for those securities with beta values less than 0.92, they tend to underestimate the current values of these firms' capital assets in comparison to how foreign investors would. The reasons for this might be that first, indigenous investors do not properly account for the underestimated representation of these firms' current market value, which arise from various inefficiencies connected to current accounting practices. One notable example is lack of proper revaluation of firms' assets including real estate



holdings, which have skyrocketed in market value in recent years. Moreover, the second result also suffices to show that indigenous investors tend to also underestimate future growth and earnings potentials of these domestic securities, when compared to foreign investors, as far as those low beta securities are concerned, at least. It is suspected that indigenous investors' time horizon for investment purposes might be comparatively shorter than that of their counterparts in the rest of the world.

One might be surprised, however, to find the last result in particular, viz, regarding such a great extent to which the estimated price of risk from domestic market differs from that of the world market. This result together with the others indicates that Korean securities market possesses all the characteristics of an autarky situation. In other words, these results reflect the fact that Korean capital market is indeed one of the most segregated markets in the world. This is surprising, especially in light of the fact that financial sector of the Korean economy is still highly dependent on foreign influences and closely intertwined with world events, albeit indirectly through its real sectors of the economy. This is because Korea's entire economic structure is, in fact, one of the economies that are heavily dependent upon international trades even among those countries that are export-oriented, and also highly sensitive to international price competition on its export goods. Consequently, one might have reasoned that factors affecting international trade would have also affected indirectly Korean domestic securities market as well. Moreover, Korea's dependency on international economic factors is reinforced by the fact that its industrial structure also is multi-national in its character due to inward direct foreign investments by foreign firms taking place in Korea, as well as outward foreign direct investments taking place abroad by Korean firms to some extent. Thus, one might argue that all of these international economic influences should have exerted impacts extended to domestic securities market as well, even to a segmented market such as Korean securities market. And therefore, these impacts should have reduced the wide differences of the domestic securities market from the world market through these indirect linkages. Nonetheless, our results established in this paper indicate that this is clearly not the case as far as the Korean securities market is concerned.

Therefore, it is evident that for the purposes of externally liberalizing Korean domestic securities market, we are starting practically from a situation in which domestic securities market has been

segmented from the rest of the world. To focus our attention on those factors that might have caused the observed differences between domestic and international securities markets, we provide the following observations as possible explanations in hoping that present discussion will shed some light for the government to find proper policy measures.

First, one possible explanation might be that domestic securities market is relatively inefficient, especially with respect to information at various levels. The inefficiency concerning information may be due to the fact that there are, on the one hand, investors who possess and utilize monopoly access to various information that directly affects securities prices, while information processing capacity is inadequate for the purposes of efficient market operations on the other. Moreover, it is highly likely that this type of information-inefficiency in turn is further exacerbated by the current accounting practices and by the existence of the so-called alias financial system, which is a peculiar feature of Korean financial transactions that allows concealing the true identity of transactors. More likely than not, the information inefficiency associated with the monopoly access may well have originated also from non-independence of firm's management from ownership of capital, as well as from non-independence of Korean economic structure from its political system on the other. As a result, information is neither costless, nor is it available equally to all investors.

Second, the observed differences between domestic and global markets may have originated from the oligopolistic market structure of the domestic securities industry itself, that fosters overall inefficiency of the market. Moreover, the domestic securities industry has existed comfortably within the well-protected fence provided by the government from any real external threats of competition with various rules and regulations from the outset. As a result, they have been negligent for the most part in bringing out any real sense of either internal or international competition. Consequently, domestic competition has been substituted by cooperation in many cases, while more often than not, price mechanism has been replaced by collusion instead. On the other hand, it may very well have originated also from traditional corporate structure and business conducts of the domestic securities firms. In particular, domestic securities firms traditionally have tended to concentrate, for the most part, on only their short-term tactics concerning profit maximization and competition for a larger domestic market share within the gov-

ernment-protected enclave. As a result, they have tended to avoid emphasizing importance of long-term strategic planning for stable growth and international competition. Reforms required in various aspects for an efficient industry have ended, in many instances, at the level of exploration and investigation far from any real reforms, and still remain seemingly idle at a safe distance.

Third, another heuristic explanation might be that indigenous wealth-holders' attitudes toward return-risk relationship are basically different in their psychological make-up. This in turn suggests that there may be more fundamental causes at its roots that have systematically contributed to the investors' psychological make-up revealing rather reckless attitudes toward investment risk. Some of these causes might have their origins in economic disequilibriums and political disturbances that have been accompanied by Korea's rapid economic growth with its unique historical background or socio-political realities. At a more realistic level, one could argue that overall domestic tax structure is fundamentally different from those of the rest of the world. One notable example is that unlike earnings from other sources, there are currently no taxes imposed on capital gains in the domestic securities market, which may foster such low pricing of risk in the indigenous investors' behavior. Additionally, existence of subterranean idle money balances together with the continuing presence of the alias financial system may well have contributed to the observed differences between domestic and international securities markets.

Consequently, on the basis of the above considerations, it is suggested that efficiency of the domestic securities market can be enhanced to the level required for international competition only through heroic reforms of the market structure itself and the financial system that supports it, such as elimination of the alias financial system and overhaul of outdated tax structure. To maximize efficacy of any such reforms, however, it is reasonable to suggest that they be accompanied by reforms of consciousness of investors, entrepreneurs, and government regulators alike from the way in which they have traditionally visualized notion of investment activities, role of securities market, and efficiency of overall economic system. At the most fundamental level, indigenous investors also must change their simplistic investment attitude, so as to think not only in terms of maximizing return but also in terms of minimizing risk through diversification. Indigenous managers of domestic securities firms must also expand frame of their own thinking with re-

spect to how they should go about in achieving maximum efficiency in an environment of international competition. Government regulators should recognize that everything, from the consciousness of investors and industry they once regulated at the bottom to the role of government regulation itself, is rapidly changing along with the introduction of the external liberalization policy. Thus, they must also change their own thinking from the traditionally authoritarian ways of governing with direct controls and outdated regulations that are no longer appropriate in the present world of rapid changes.

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