

# Global Equity Investment in a Borderless World

## —From Country Factor to Global Industry Factor—

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**This paper breaks down the risks of global equities into several categories including country and global industry factors, and estimates the influence of each category. The analysis finds that the global industry factor increased in influence from 1994 to 2000, which was not so evident previously. This trend is obvious in large capital stocks, developed countries, and multinational firms, showing this factor to be essential for the analysis of company fundamentals. In active portfolio management, given similar prediction ability, the higher return the volatility of a sake factor, the higher the return. Therefore, global sector allocation is expected to be more important in investment strategy. On the other hand, emerging countries are still considerably affected by the country factor, much less by the global industry factor. With respect to investment in emerging countries, it is reasonable to maintain a conventional country allocation approach.**

**The result of the analysis of the shareholding ratio of Japanese stocks by foreigners indicates that information with respect to the country factor might be “asymmetrical” between domestic and foreign investors. This is evidence for the theory that a home asset bias may be caused by investors acting reasonably, based on this information asymmetry.**

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## ***1. Introduction***

World capital markets have changed considerably due to the increase in borderless economic activities and global investors now need to adjust their management methods and organizations in line with these market changes.

One of these changes is a deterioration in the effectiveness of globally diversified investment. In other words, the correlation among stock markets in countries around the world has increased. Institutional investors in Europe and the U.S. expanded global investment from the late 1980s to the early 1990s to reduce risk by diversifying investment, taking advantage of the low correlation between domestic and foreign stock markets. However, increasing correlation between world stock markets has become evident through such incidents as the crises in Asia and Russia. Both cases reveal the highly interlocked nature of the world’s stock exchanges. Consequently, diversified investment has lost the effectiveness it had in the early stages of the introduction of global investment<sup>1</sup>. Some now view with skepticism the usefulness of global investment in reducing risk.

Many empirical studies have been made to identify the factors that contribute to the effectiveness of diversified investment. In these studies, returns from individual issues on stock markets around the world are interpreted according to the particular stock market’s characteristics (country factor) or the global industry factor (industry factor<sup>2</sup>). Most of these studies found that variations in stock returns could be attributed to the country factor. It is also reported that even multinational firms are influenced

relatively little by the global industry factor. The country factor has had a low correlation because economic cycles, financial and accounting policies, etc. have been independent. However, the introduction of the euro in 1999 brought financial consolidation and integration of the financial policies of European countries, and this has led to expansion of the financial markets. Under these circumstances, the uniqueness of respective countries might have faded sufficiently to decrease the influence of the country factor, thereby increasing correlation among individual countries.

There have been some changes in the investment strategy of institutional investors. In the past, the typical process of global management was as follows: first, country allocation was effected, was followed by the building of a country portfolio. Nowadays, such investors make a global (or regional) sector allocation, and then choose individual stocks in the subject sector<sup>3</sup>.

Given a similar prediction ability (correlation between information and return), the higher the volatility of a stake factor, the higher the return. If the country factor is stronger than any other factor, management should be centered on country allocation. In light of this, the emergence of sector allocation investor suspects that the industry factors have come into focus.

Either of the changes apparently indicates the change in the influence that the country and industry factors have on stock price variation. This paper breaks down the respective returns by issue in stock markets around the world by factor, including country and industry. In Chapter 1, these factors are discussed, considering changes in each factor's characteristics and the causes of these changes. Chapter 2 explains the data used in this paper. Chapter 3 explains the method of analysis. Chapter 4 considers changes in the characteristics of country and industry factors, which is the theme of this paper. Chapter 5 discusses open issues on the subject of global investment.

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## 2. Data

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The individual stocks constituting the FTSE All World Index are used as the basis for this analytical study. The Index covers 2,300-plus issues in 49 countries, including emerging markets (Table 1).

The Global Classification System of FTSE is also employed for the classification of industries. In this classification, there are the top-class groups, which are the 10 Economic Groups, 39 Industrial Sectors, and 102 Industrial Sub-sectors. In addition, 39 Industrial Sectors are used to calculate the industry factor.

The period of analysis is from January 5, 1994 to the end of December 2000. To cover chronological change in market characteristics, the samples were divided and analyzed by year. Data was collected weekly to obtain sufficient samples for a period. The closing quote on Wednesday was set as the reference point to eliminate the influence of holidays as much as possible. Return from individual issues, an explained variable, is on a local currency basis<sup>4</sup>. The explained variables included the major four currencies (the US dollar, Japanese yen, euro <before 1999, the German mark>, and British pound). To eliminate the influence from the introduction of the euro, data from the last week of 1998 was excluded.

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## 3. Analytical Method

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### 3.1 Multi-factor Model

The return from stock *i* belonging to industry *k* in country *j* is assumed to follow the multi-factor model expressed in equation (1).

$$R_{it} = \alpha_i + \beta_i^M M_t + \beta_i^C C_{jt} + \beta_i^I I_{kt} + \sum_{l \in \{\$, \text{¥}, \text{£}, \text{Euro}\}} \beta_i^{FXl} FX_{lt} + \varepsilon_{it} \quad (1)$$

Where,

$R_{it}$  is the local currency return of instrument *i* during period *t*. For the world stock market factor, the dollar return of the FTSE

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1. Uppal (2001) made a model of risk that the returns from stock markets around the world would fall simultaneously upon occurrence of a financial crisis, according to the jump diffusion model. The influence on portfolio selection by an investor was estimated in the model. Uppal concluded that a very small degradation would be caused in the effectiveness of the investor by ignoring the systemic risk would be small.
  2. See Lesard (1974), Roll (1992), Heston and Rouwenhorst (1994), and Griffin and Karolyi (1995).
  3. Cavaglia, Cho and Singer (2001) made a model of regional risk sector allocation, which had been popular among investors. They showed the relationship between the regional sales volume of a company and the industry factor.
  4. In this analysis we assumed the influence from ignoring the risk-free interest rate is small.



























