Corporate Internationalization and Systematic Risk

Yih-Wen Shyu,
Department of Industrial and Business Management,
Chang Gung University,
Tao-Yuan, Taiwan, ROC.
Email: yishyu@mail.cgu.edu.tw

Niky Ou,
Graduate Institute of Business Administration,
Chang Gung University,
Tao-Yuan, Taiwan, ROC.

Abstract
This study aims at characterizing the benefits of corporate international diversification on stock values by introducing the notion of psychic distance in the analysis. In order to capture this crucial dimension, we construct a new internationalization index, which outperforms the traditional measures, such as the foreign sales ratio, for homogenous populations of multinational companies. A Hybrid Capital Asset Pricing Model is employed to engage in measuring the relationship between international index and systematic risk by using the sample of top 100 companies listed in Taiwan Stock Exchange during 2000-2005. The results show that the sample companies generally reduce their international exposure by taking into account psychically distant markets. Alternatively, it also demonstrates that the international systematic risk exposure is often dominated by the domestic market risk exposure.

Key Words: Internationalization, Systematic Risk, Hybrid CAPM
1. Introduction

In today’s increasingly complex and competitive global economy, it is critical for businesses to pursue the expansion of their markets around the world. International expansion enables a firm to increase markets, gain access to low cost resources, leverage economies of scale, and utilizing the best technology worldwide. Corporate internationalization and globalization has been the focal point in the 21st century. It has become an inevitable trend of future that enterprises move towards the internationalization. In particular, enterprises in Taiwan face surges of increased competition from their multinational counterparts as the world's enterprises have grown in size and markets. Besides, the establishment of regional economic cooperatives has further accelerated the pace of overseas corporate investment to gain competitive advantages and market niches. In this case, there has been a profound reflection on multinational corporations (MNCs) in the past decade in Taiwan. Internationalization is now considered as a necessary step in the quest for sustainable competitive advantage.

As previous literature has pointed, the firms expanding internationally may work to decrease the systematic risk of the firm owing to the diversification benefit. This seems to be inconsistent with the results found by Reeb, Kwok and Baek (1998), where they confirm a significant and positive relationship between firm internationalization and systematic risk. The reason behind this unresolved result is mostly due to the inappropriate specification of an internationalization measure. To date, various indicators of a firm’s internationalization have been proposed. Sullivan (1994) argues that an aggregate index measure of internationalization construct would be superior to single variable measures such as the ratio of foreign sales to total sales, which is the most common measure of internationalization. Ramaswamy, Kroeck, and Renforth (1996) indicate that internationalization is more complex than envisioned by this index and suggest that further refinement of the construct is necessary before constructing indices.

Given the overall absence of clear research findings in this area, this research takes into consideration the psychic distance of firms’ international markets, which is a critical dimension identified in the internationalization process literature. The purpose of this paper is twofold. Firstly, it is important to characterize the geographical breakdown of firm’s internationalization activities. Although traditional measures such as the foreign sales ratio are appealing, they are inaccurate and may lead to erroneous conclusions. Hence, we propose a new internationalization index measure, which incorporates the psychic distance of each geographical areas of destination. Secondly, the relationship between firms’ internationalization and their corresponding systematic risk is examined in this paper by using a hybrid CAPM model including both variance as well as covariance with the world. The
effect of expanding corporate international activities on the systematic risk is deeply explored. We test our set of internationalization indexes and the effect on systematic risk against a sample of top Taiwan Listed companies over the period from 2001-2005. The paper is organized as follows. Section 2 reviews the previous literature, and the psychic distance concept. The third Section explains the methodology. The empirical results are reported in the fourth section. The paper ends with a summary and concluding section.

2. Literature Review

The most important motive for a firm’s international expansion is the pursuit of growth. A firm that possesses valuable proprietary assets turns to international markets when it outgrows its original local market (Caves, 1996). In addition to growth, a firm that seeks for internationalization may have different goals, such as achieving efficiency, diversifying economic and political risks, and adapting to future competitive changes (Ghoshal, 1987). For example, a firm based on a developing economy may start invest in production facilities abroad when they face obstacles to successfully exporting.

Given the strategic importance of internationalization, international business scholars explore internationalization from two different perspectives. They are "depth of internationalization" and "breadth of internationalization", respectively. As a matter of fact, the most commonly used measure to examine the degree of internationalization is the ratio of foreign to total sales (Geringer, Beamish and daCosta, 1989; Grant, Jammine and Thomas, 1988). Other measures, such as the ratio of foreign assets to total assets (Ramaswamy, 1993) and the ratio of employees in foreign locations to total employees (Kim et al., 1989), are also used to capture the depth of internationalization. There has been some research that investigates the scope and breadth of internationalization by examining the geographical dispersion of operations across countries. Kogut (1995) find that multinational enterprises tend to leverage location-based advantages to enhance their performance. Ramaswamy (1993) measures configuration as the number of overseas plants and suggests a significant positive relationship to performance. On the other hand, Shaked (1996) defined multinational corporations as having 20 percent of sales outside the home country and direct investment in at least six countries. Most studies can be criticized for their use of a uni-dimensional measure of internationalization. Even though Sullivan (1994) proposes the need for a multidimensional construct, Ramaswamy, Kroeck, and Renforth (1996) exhibits little support for a multidimensional measure.

There seems to be no consensus, based on the above discussion, for measuring the "degree of internationalization," nor is the exact nature of the relationship between internationalization and firm financial performance known. Nevertheless, the psychic distance construct is sporadically referred to in international trade flow research (Linnemann, 1966;
Geraci and Prewo, 1977). Coincidentally, the concept seems to have recently reappeared in that stream of literature (Rauch, 1999; Rauch and Trindade, 2002; Subramanian and Wei, 2003), but the development of the construct either in terms of a broadly accepted definition or in empirical measurement has been limited. Joliet and Hubner (2008) test the concept of psychic distance and conclude that it outperforms the traditional measure. This measure of psychic distance is defined as the perceived distance between the home country and a foreign country resulting from cultural, business and political differences.

In the international finance literature (Shapiro, 1978), a reduction in systematic risk is confirmed for the MNC diversifying globally. Likewise, Agmon and Lessard (1977) measure the effect of internationalization on the systematic risk of a firm. They find that MNS’s non-domestic sales are negatively related to the domestic systematic risk, implying the effect of lowering systematic risk from international diversification. However, Reeb, Kwok and Baek (1998) confirm the positive relationship between firm internationalization and systematic risk for US based MNCs.

3. Data and Methodology

3.1 Data

To test the effect of internationalization on the systematic risk of the firm, our sample includes top 150 Taiwan public firms based on the sales revenues over the period 2001-2005. Consistent with previous research, firms in regulated industries and financial firms are excluded from this study. With the consideration of empirical data set, the 150 firms should meet the criteria that their sales revenues rank in the largest 150 firms for 5 years consecutively. There are a total of 100 firms corresponding this criteria after screening the above 150 companies. Weekly stock return data come from Taiwan Economic Journal Database.

3.2 Proxy of Internationalization

In this research, three proxy measures of internationalization are used. First, the most common variable chosen is the foreign sales ratio owing to the relative ease of obtaining this information. Nevertheless, there is a disadvantage of this ratio percentage that it mixes international trade with international investment. In case of this, we use two different alternative proxies of internationalization. Specifically, we use the measure of psychic distance, a proxy that is obtained by computing the correlation coefficient between the returns of the national index and the returns on the foreign country index. Indeed, as mentioned by Solnik (2000), correlations between economically and culturally close countries tend to be relatively high, compared to those that are more psychically distant. The other proxy is foreign investor shareholding since it is an indicator of international corporate governance, which is highly associated with internationalization activities.
3.3 Model

With the purpose of estimating the exposures of different factors, a hybrid capital asset pricing model is employed to verify the magnitude of these factors.

\[ R_{i,t} = a_i + \beta_{iD} R_{DM,t} + \beta_{iW} R_{WM,t} + \epsilon_{i,t} \]  

Where \( R_{DM,t} \) is the domestic index return orthogonalized to the world index, \( \beta_{iD} \) represents the exposure to the domestic factor, \( R_{WM,t} \) is the world index return computed in local currency, \( \beta_{iW} \) denotes the exposure to international factors. For the sample of firms described above, we use weekly returns from 2001 to 2005. Subsequently, we also estimate the cross-sectional regressions with the three internationalization proxies as the indepe

\[ \beta_{iD} = \mu_0 + \mu_1 \text{Size}_i + \mu_2 \text{Fsale}_i + \mu_3 \text{Fshare}_i + \mu_4 \text{INT}_i + \eta_i \]  

\[ \beta_{iW} = \lambda_0 + \lambda_1 \text{Size}_i + \lambda_2 \text{Fsale}_i + \lambda_3 \text{Fshare}_i + \lambda_4 \text{INT}_i + \eta_i \]  

Where \( \text{Size} \) is the firm’s scale variable, \( \text{Fsale} \) is the foreign sales ratio, \( \text{Fshare} \) denotes the shareholding of foreign investors, and \( \text{INT} \) represents psychic distance index.

3.4 Empirical Results

The first task to perform is the computation of exposures by using equation (1). As shown in Table 1, only 41 firms exhibit statistically significant world betas while 100 domestic betas are significant. This finding implies that the systematic risk of large Taiwanese firms is dominated by local and domestic factors rather than international market factors, a consistent evidence of semi-strong segmented market argued by Solink (1974). However, the significant negative sign of world beta provides more or less support regarding the reduction of systematic risk as firms engaging in international activities.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>Max</th>
<th>Min</th>
<th>STD</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>( \beta_{iD} )</td>
<td>0.9536</td>
<td>1.6823</td>
<td>0.2860</td>
<td>0.2989</td>
<td>100</td>
</tr>
<tr>
<td>( \beta_{iW} )</td>
<td>-0.2629</td>
<td>0.4695</td>
<td>-0.7750</td>
<td>0.3437</td>
<td>41</td>
</tr>
</tbody>
</table>

Then, the cross-sectional regressions defined by equation (2) and (3) are estimated against the above systematic loadings. The results are shown in Table 2 and 3, respectively. Our results confirm that the more the firm is internationalized among countries the lower both domestic systematic exposure, whereas the more internationalized activities the more international exposure. Coefficients for the foreign sales ratio and psychic distance index are negative and significant in Table 2. Conversely, the variable of foreign shareholding is insignificant. This evidence suggests that firms enter psychically farther markets or governed further by foreign investors are more likely to experience less domestic systematic risk exposure. On the contrary, there is no positive effect on domestic systematic risk if the firms just try to raise their higher foreign sales proportion. On the other hand, Table 3 shows that the psychic distance index
performs poor compared to foreign sales ratio in interpreting the variation of international risk exposure. The significant positive sign of foreign sales ratio demonstrates that the variable of foreign sales is highly related to world systematic risk.

### Table 2: Regression Result of Domestic Beta

<table>
<thead>
<tr>
<th>Variables</th>
<th>Coefficient</th>
<th>Std. Error</th>
<th>t-statistics</th>
<th>Probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fshare</td>
<td>-0.554</td>
<td>0.150</td>
<td>-3.699</td>
<td>0.0004***</td>
</tr>
<tr>
<td>Fsale</td>
<td>0.151</td>
<td>0.102</td>
<td>1.481</td>
<td>0.142</td>
</tr>
<tr>
<td>INT</td>
<td>-1.289</td>
<td>0.577</td>
<td>-2.233</td>
<td>0.028**</td>
</tr>
<tr>
<td>Size</td>
<td>0.054</td>
<td>0.030</td>
<td>1.820</td>
<td>0.072*</td>
</tr>
</tbody>
</table>

R-squared 0.325541

Note: Asterisks indicate significance at the (1%)***, (5%)**, and (10%)* levels.

### Table 3: Regression Result of World Beta

<table>
<thead>
<tr>
<th>Variables</th>
<th>Coefficient</th>
<th>Std. Error</th>
<th>t-statistics</th>
<th>Probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fshare</td>
<td>0.466</td>
<td>0.275</td>
<td>1.696</td>
<td>0.0985*</td>
</tr>
<tr>
<td>Fsale</td>
<td>0.583</td>
<td>0.131</td>
<td>4.445</td>
<td>0.0001***</td>
</tr>
<tr>
<td>INT</td>
<td>-1.318</td>
<td>1.064</td>
<td>-1.238</td>
<td>0.224</td>
</tr>
<tr>
<td>Size</td>
<td>0.066</td>
<td>0.043</td>
<td>1.542</td>
<td>0.132</td>
</tr>
</tbody>
</table>

R-squared 0.555647

Note: Asterisks indicate significance at the (1%)***, (5%)**, and (10%)* levels.

### 4. Conclusion

This research characterizes the benefits of corporate international diversification on stock values by introducing the notion of psychic distance in the analysis. In order to capture this crucial dimension, we construct a new internationalization index, which outperforms the traditional measures, such as the foreign sales ratio, for top multinational companies in Taiwan. A Hybrid Capital Asset Pricing Model is employed to engage in measuring the relationship between international index and systematic risk by using the sample of top 100 companies listed in Taiwan Stock Exchange during 2000-2005. The results show that the sample companies generally reduce their international exposure by taking into account psychically distant markets. Alternatively, it also demonstrates that the international systematic risk exposure is often dominated by the domestic market risk exposure. It suggests that firms enter psychically farther markets or governed further by foreign investors are more likely to experience less domestic systematic risk exposure. However, there is no positive effect on domestic systematic risk if the firms just try to raise their higher foreign sales proportion. Further, the foreign sales ratio demonstrates that the exporting oriented firms tend to increase their world systematic risk.

### References


