

# GLOBALIZATION OF CAPITAL MARKETS AND THE COST OF CAPITAL: THE CASE OF NESTLÉ

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Capital markets have become increasingly global over the last 20 years. While providing world investors with opportunities to diversify beyond their home markets, the progressive integration of international financial markets is also bringing about a significant reduction in the cost of capital of public corporations around the world. And a lower cost of capital, for a given level of expected corporate profits, means a higher stock price. Although such an effect is most pronounced for multinationals based in small countries with limited capital markets, even wholly domestic (though mainly large) firms in well-established financial markets like the U.S. and U.K. are benefiting from this development.

Nevertheless, assessing the effect of the globalization of capital markets on capital costs is not a simple matter. In fact, global integration of markets can be seen as having two directly opposite effects on the cost of equity capital. On the one hand, the removal of barriers to foreign investment means that the *risk premiums* on securities in general are falling because the risk of these securities can be shared among more investors—and more efficient spreading of risks among investors with globally diversified portfolios means lower required returns and thus higher stock prices. At the same time, however, the increasing integration of both capital markets and real business activity resulting from continued overseas expansion by multinationals implies a greater degree of synchronization among various international capital markets—that is, a greater tendency for all markets to move together. And such greater

correlation among national capital markets means *reduced* benefits to investors from global diversification and, hence, a higher cost of capital.

In this article, I discuss both of these effects of globalization on the cost of capital by using a case study of the Swiss firm Nestlé. I also argue that conventional methods for calculating the cost of capital do not take into account the effects of globalization. The most common practice for companies outside the U.S. is to use a “local” version of the Capital Asset Pricing Model (or CAPM) that considers a stock’s degree of risk only in relation to its own domestic market—for example, Nestlé’s risk as measured by the extent of its correlation with the Swiss market. Such a method effectively assumes that each nation’s capital market is an island unto itself. In this article, I propose the use of a *global CAPM* that evaluates the risk of an individual security in the context of a broad-based global index that represents the collective wealth of all countries with well-developed, readily accessible capital markets.

The differences between cost of capital and share valuations produced by the two models are potentially quite large. If an overseas company’s stock price has a much weaker correlation with worldwide stocks than with its own domestic market, the firm may be significantly overstating its own cost of capital (and thus undervaluing its shares). For example, I show that use of the CAPM with a Swiss benchmark instead of the global CAPM is likely to overstate Nestlé’s cost of equity capital by about 150 basis points.

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## GLOBALIZATION AND THE BENEFITS OF INTERNATIONAL DIVERSIFICATION

At the end of World War II, countless obstacles made international portfolio investment extremely difficult if not impossible. Most currencies were not convertible, so that proceeds from investment could not be exchanged for the currency of the investor. Some capital transactions were simply not permitted, or were allowed only at very unfavorable exchange rates. There were numerous restrictions on foreign ownership. Tax harmonization was nonexistent. And, even in countries where some of these obstacles did not exist, the fear that they might be imposed at any time could be as effective a deterrent to international portfolio investment as the obstacles themselves.

The existence of a regime of fixed (but adjustable) exchange rates further created a political climate hostile to capital flows. When a given exchange rate became less sustainable because of differing economic policies across countries, huge capital flows would be created by the speculative activity of investors attempting to benefit from an eventual realignment of exchange rates. Many countries tried to reduce or eliminate these capital flows altogether. Finally, investors had legitimate reasons to worry that their holdings abroad might be expropriated by a nationalistic government.

By the 1980s, however, the situation had changed dramatically for international investors. Currencies were freely convertible, tax harmonization had reduced the possibly adverse tax consequences of investing abroad, and several other steps had been taken to create a level playing field among investors. With floating exchange rates, capital controls seemed increasingly unlikely. And, whereas many countries after World War II were inclined to view public ownership of enterprises as an important policy tool, in the 1980s a wave of privatization began to engulf the world.

With a level playing field for global investors, it became increasingly possible for investors everywhere to reap the benefits of international diversification. The idea is a fairly straightforward one: Investments by local investors within their own economy are all sensitive to the business cycle and political accidents of that country. But, if something

bad happens in one country and affects all firms in that country to some degree, something good might be happening in other parts of the world. A portfolio invested in many countries can therefore benefit from national economic cycles or events that are partly offsetting.

This benefit of international diversification enables investors to reduce the risk of their portfolios substantially without reducing the return they expect on their wealth. For example, although studies of international diversification differ as to the extent of these benefits, most conclude that exchanging a portfolio of U.S. stocks for an internationally diversified portfolio will reduce the standard deviation of the returns by at least 20%.

Such promised benefits notwithstanding, investors have not diversified their portfolios overseas as quickly as expected, but have kept a disproportionate share of their portfolios in their home countries.<sup>1</sup> Part of the explanation for this still pronounced "home-country bias" is that it takes time for investors to adjust their portfolios and learn about the benefits of international diversification. But another part has to do with other costs of international diversification that, although falling rapidly, are still large enough to put off many investors. As one example of such costs, many countries have withholding taxes that cannot be recovered directly by institutional investors who do not pay taxes. If stocks in a country with a withholding tax of 25% have a dividend yield of 4%, it means that the effective dividend yield for a foreign, tax-exempt investor is only 3%. If the institutional investor faces no withholding tax in his home country, he loses 1% by investing in the foreign stock instead of a domestic stock with the same dividend yield. And this, of course, is one reason to stick to domestic stocks. In addition to withholding taxes, there are higher transactions costs, as well as costs associated with acquiring information, that could also discourage overseas investors.

Nevertheless, as such costs continue to fall with time,<sup>2</sup> more and more investors are likely to choose to take advantage of the benefits of international diversification. For one thing, investors will keep learning more about the process of overseas investing. And, as emerging markets become steadily more accessible, what barriers to international investment still remain are being lowered. Both the investment

1. See, in this issue, Ian Cooper and Evi Kaplanis, "Home Bias in Equity Portfolios and the Cost of Capital for Multinational Firms."

2. For evidence that such costs are indeed falling, see Cooper and Kaplanis (1995), cited above.

industry and financial markets are making it easier for investors to take advantage of international diversification. For example, diversified country funds have been established that, like the highly successful index funds in the U.S., enable individuals to earn returns that mirror those of international indices. Finally, derivatives such as currency futures and swaps have made it easier to design and execute international asset allocation strategies that maximize the benefits of international diversification. Using swaps and futures, for example, an international fund manager can minimize the effects of withholding taxes by shifting the taxes to the party with the lowest tax rate.

### GLOBALIZATION AND THE COST OF CAPITAL: THE CASE OF NESTLÉ

What happens to the cost of capital as markets become more global? Consider a market that, for whatever reason, is isolated from the rest of the world. In this market, shares issued locally must be held by local investors, and local investors cannot diversify internationally.

In such circumstances, because local investors have to bear more risk than if they were free to invest internationally, they will have required rates of return for holding local stocks that are higher than the rates required by well-diversified, global investors for holding the same stocks. And, as a consequence, the prices of local shares will be lower than if the local market were integrated with global markets. To put it a little differently, local investors will demand a higher expected return to compensate them for bearing more risk in their portfolios than if they could diversify their holdings across international markets.

How large is this discount on share prices resulting from having the whole supply of shares held by local investors? A striking example is offered by the recent history of Nestlé.

Until 1988, Nestlé had two types of shares that differed in ownership restrictions.<sup>3</sup> One type of shares, called *bearer shares*, was available to all investors in the world, Swiss and foreign (and investors could buy these shares anonymously). A second type of shares, *registered shares*, was avail-

able only to Swiss investors. Investors who bought these shares would have to register with the company to have full ownership rights, and the company could refuse registration without offering any justification. Both registered and bearer shares had the same voting rights and the same dividends. Therefore, these two types of shares differed only in who could own them and in the anonymity conferred on the holder.

If restrictions on foreign ownership do not affect share values, one would expect the shares with restrictions—that is, the registered shares—to sell for about the same amount as the unrestricted bearer shares since the two types of shares differ only in their ownership restrictions. But, as shown in Figure 1, for the period 1985 through most of 1988 the registered shares sold at a consistently large discount to the bearer shares. Indeed, the shares available only to Swiss investors were typically *only about half as valuable* as the shares available to foreign investors.

What does this imply about investors' required rates of return on the two securities? Using the well-known dividend-growth model for valuing stocks, we can perform a simple back-of-the-envelope calculation that shows the implications of this price difference for the cost of capital.

In brief, the dividend growth model says that the price of a share is the dividend per share divided by the cost of equity capital minus the growth rate of dividends (the model assumes both a constant growth rate and a constant cost of capital). For example, a share with a dividend ( $d$ ) of \$1 per year, a cost of equity capital ( $r$ ) of 10% per year, and a growth rate of dividends ( $g$ ) of 2% is worth  $d/(r-g) = \$1/(0.10-0.02)$ , or \$12.50.

As noted earlier, both kinds of Nestlé shares had the same dividend and hence the same dividend growth rate. Thus, the differences between the share values must be explained largely if not entirely by differences in the cost of capital. If we let  $c_L$  be the cost of capital of the restricted shares and  $c_1$  be the cost of capital of the bearer shares, then it follows that:

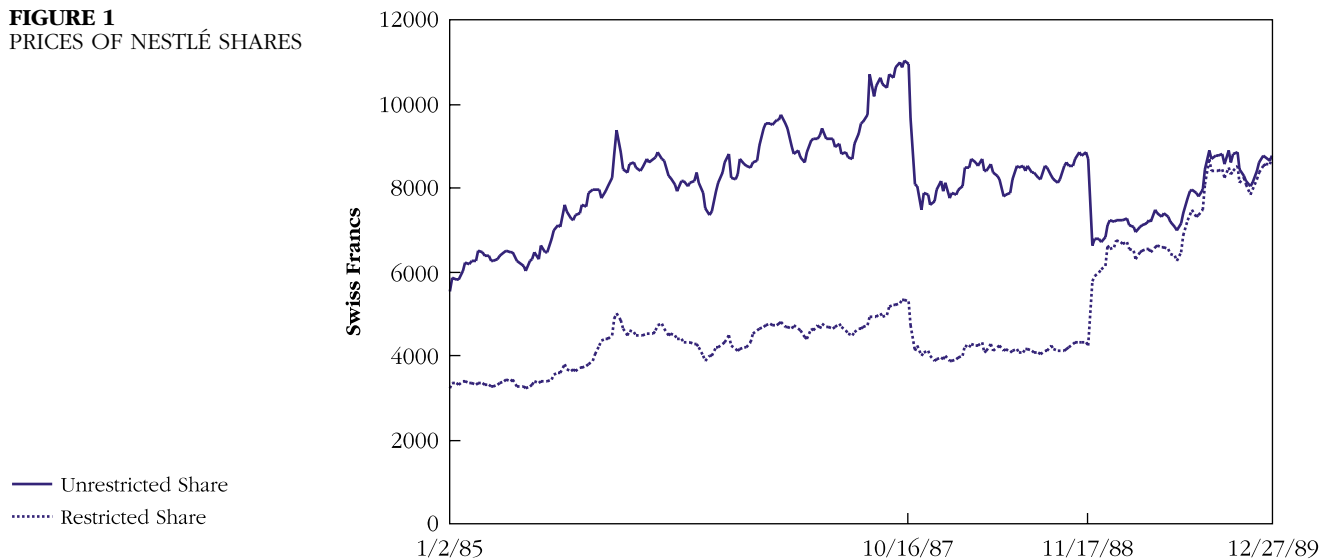
$$\frac{d}{c_1 - g} = 2 \times \frac{d}{c_L - g}$$

(value of the bearer shares) = 2 (value of the registered shares)

3. In addition, Nestlé also had shares that differed in voting rights. These shares, called "participating certificates," had no ownership restrictions but also no voting rights.

**The removal of barriers to foreign investment means that the *risk premiums* on securities in general are falling because the risk of these securities can be shared among more investors—and more efficient spreading of risks among investors with globally diversified portfolios means lower required returns and thus higher stock prices.**

**FIGURE 1**  
PRICES OF NESTLÉ SHARES



With some simple algebraic manipulation, the above equation reduces to the following:

$$c_L = 2c_1 - g$$

If we assume that  $c_1 = 10\%$  and  $g = 2\%$ , then  $c_L$ —the cost of capital for shares available to Swiss investors only—would be 18%. Even using a growth rate of 4%, which is well above Nestlé’s historical average, yields a cost of equity capital for restricted shares of 16%.

Given that roughly half of Nestlé’s equity capital was in the form of registered shares (with the other half in bearer and participation certificates), the company’s *total* (or weighted average) cost of equity would be about 14% (or 13%, with the higher dividend growth rate). Thus, it follows that the restrictions on foreign ownership increased the annual cost of equity capital for Nestlé by as much as 3% to 4%.

#### A Test Case<sup>4</sup>

Then, on November 17, 1988, Nestlé announced that it was removing the restrictions on foreign ownership of its registered shares. More precisely, it would allow foreign investors to buy registered shares

with a limit of three percent for any investor. (But because such shares would continue to be registered, they did not provide potential buyers with the promise of anonymity, and thus they would be expected to be worth somewhat less than bearer shares even in the absence of ownership restrictions.)

As shown in Figure 1, during the week of the announcement, the price of the registered shares rose from SFr. 4,245 to 5,782, an increase of over 36%. At the same time, however, the value of the bearer shares fell from SFr. 8,688 to 6,609, or a drop of about 25%. The net effect on the total equity capitalization of Nestlé was an increase of 10%, which is consistent with a significant decrease in its overall cost of capital.

But how can we make sense of the difference in market reaction to the two different classes of stock? The positive reaction to the registered shares is easy to explain. Remember that, before the removal of the restrictions, these shares could be held only by domestic investors. When these restrictions were lifted, Swiss investors then had the right to sell their shares to foreign investors. As Swiss investors hold less of these shares, they demand a smaller risk premium to hold them.

But what about the negative reaction to the bearer shares? In 1988, world financial markets were

<sup>4</sup> The analysis and findings in this section are based on René Stulz and Walter Wasserfallen, “Foreign Equity Investment Restrictions: Theory and Evidence,” *The Review of Financial Studies* (1995).

significantly less integrated than they are today. At that time, the removal of ownership restrictions meant that the supply of Nestlé shares available to foreign investors suddenly far exceeded the demand for those shares at their then current price. And so the price of the bearer shares had to fall.

If such restrictions had been lifted in 1995 instead of 1988, such an increase in the number of shares of Nestlé available to foreign investors might have had a significantly smaller impact on the price of the bearer shares. (And, in fully integrated global markets, one might speculate, the entire new supply of bearer shares might have been absorbed without any price drop whatsoever.) But, because world investors in 1988 were less globally diversified and world capital markets were less integrated than they are today, Swiss investors were still forced to overweight Nestlé shares in their portfolios. Hence, when Nestlé removed the restrictions, the price of bearer shares fell.

Nevertheless, as mentioned above, the total equity value of the company increased by 10%, reflecting the anticipated increase in demand by global investors and the resulting reduction in its cost of capital. And, since 1988, the market for Nestlé shares has become progressively more international. As this has happened, the discount in the share price that was once necessary to convince local investors to overweight Nestlé shares has fallen, and Nestlé's share price has benefited further from the globalization of markets. Besides the reduction in required risk premiums noted above, the information costs for foreign investors have also fallen as international coverage of the shares has increased.

And it is not only companies like Nestlé that have experienced tremendous gains from globalization. Entire countries—particularly, those in South America and other emerging markets—have seen their markets take off in response to “liberalization” programs designed to encourage foreign investors. The recent stock market advances in these economies are further evidence of the benefits of international diversification. And the lesson from this experience seems clear: The greater the freedom and confidence with which foreign investors can invest, the more the risks of the local economy can be spread among well-diversified global investors

instead of local investors. The resulting increase in stock values holds out benefits for local companies and investors as well as overseas investors.

Now we turn to the issue of how globalization of markets affects the corporate task of calculating the cost of capital.

## A PRIMER ON THE CAPM

Despite the considerable controversy that now surrounds it, the capital asset pricing model (CAPM) continues to be used by most U.S. companies to estimate their cost of equity. The cost of equity in turn serves both as a discount rate for valuing the company's equity cash flows and, when adjusted for the amount of debt in the company's capital structure, as the “hurdle rate” for new corporate investment.<sup>5</sup>

In brief, the CAPM states that shareholders' required rate of return on a given stock can be estimated as the *risk-free rate* of interest plus a company risk premium equal to the *company's beta* (a statistical measure of a stock's tendency to move with the market) multiplied by the *market risk premium* (the long-term average difference between the return on the broad market and the risk-free return). Stated as an equation,

$$E(R) = R_f + (\text{Beta} \times (R_M - R_f))$$

Standard practice in the U.S. is to use a long-term (say, the 30-year) Treasury yield as a proxy for the risk-free rate. The market risk premium, as mentioned, is estimated by calculating the long-term average difference between the return on the broad market and the risk-free rate; and, depending on the period of time one chooses (and on whether one uses the geometric or arithmetic average over that time), estimates of the U.S. market risk premium range from 4% to 8%. Both company betas and market risk premiums are typically measured using a broad-based U.S. index such as the S&P 500.

To illustrate how the model works in practice, let's assume we wanted to calculate the cost of equity capital for a company like Procter & Gamble. Begin by noting that the yield on the 30-year Treasury (at the time of this writing, October 1995), and hence the

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5. For a discussion of the implementation of the CAPM approach in the U.S., see Steven Kaplan and Richard Ruback, “The Valuation of Cash Flow Forecasts: An Empirical Analysis,” *Journal of Finance*, Vol. 50 (1994), pp. 1059-1094.

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risk-free rate, is running around 6.5%. Assume further that the U.S. market risk premium is 6%, which is roughly the midpoint of the range used in current corporate practice. (Although some recommend use of the arithmetic average difference between stocks and 30-year Treasuries (8.4%), such an estimate of the risk premium is considerably higher than that of both the post-World War II experience and the U.S. historical average estimated over the last two centuries (4.6%).<sup>6</sup>)

The third and final piece of information we need to calculate P & G's cost of equity is the company's beta. According to Merrill Lynch's risk estimation services, as of July 1995 P & G's beta was 1.01 (which, loosely speaking, means that movements in P & G's stock price tend to mirror those of the broad U.S. market). Multiplying the beta of 1.01 times the U.S. market risk premium of 6% yields a company risk premium for P & G of just over 6%. And by adding this 6% to the 6.5% risk-free rate, we come up with a cost of equity for the company of 12.5%.

### THE LOCAL CAPM

As noted earlier, standard practice for companies outside the U.S. is to use a “local” version of the CAPM that considers a stock's degree of risk only in relation to its own domestic market. Use of the local CAPM effectively assumes that international capital markets are “segmented”; that is, investors in the home country cannot invest abroad and foreign investors cannot invest in the home country. And, given this assumption, the market portfolio that is relevant for the valuation of a given company is the market portfolio of the home country.

Thus, for an overseas company operating in a completely isolated financial market, the cost-of-capital formula would be as follows:

$$E(R_H) = R_f + b_H \times [E(R_H) - R_f],$$

where  $E(R_H)$  is the required rate of return on the company's stock when markets are completely segmented;  $R_f$  is the risk-free rate;  $b_H$  is the beta of the company's stock price in relation to the local or home-country market; and  $E(R_H)$  is the expected return of the home country market portfolio.

To illustrate this calculation, let's take the case of Nestlé. Local beta estimates for the Swiss company—that is, the regression coefficients measuring the covariance between the monthly returns of Nestlé's shares and those of FTA Switzerland—are approximately 0.90. The fact that Nestlé's local beta is close to 1.0 should come as no surprise, since Nestlé represents a substantial fraction of the Swiss market capitalization.

Using a slightly modified version of the approach we used for Procter & Gamble, we note that the arithmetic average return on the Swiss stock market from 1925 to 1993 was 9.8%, and that the return to Swiss bonds over the same period was 4.6%. Unlike the U.S., in the case of Switzerland there seems to be no good reason to use a smaller estimate of the risk premium than the historic arithmetic average. (In fact, as I will suggest later, the somewhat increased tendency of the Swiss market to move with world stock markets may actually justify *raising* the Swiss risk premium above its historic average.)

Thus, 5.2% (9.8% – 4.6%) provides a working estimate of the Swiss market premium; and multiplying 5.2% by Nestlé's Swiss beta of 0.90, we come up with 4.7% as an estimate of Nestlé's market risk premium. If we further assume a Swiss risk-free rate equal to its historical average of 4.5% and add that number to the company risk premium of 4.7%, we get an estimate of Nestlé's cost of equity equal to 9.2%.

### THE GLOBAL CAPM

The above approach assumes that Swiss capital markets are isolated from the rest of the world—an assumption that may have been reasonable before 1988 and the lifting of ownership restrictions on Nestlé and other large Swiss companies. But now let's move to the present and make the opposite assumption (also somewhat unrealistic) that Swiss capital markets have become *completely* integrated with global capital markets. In this event, we would use a global CAPM that can be formulated as follows:

$$E(R_G) = R_f + b_G \times [E(R_G) - R_f],$$

6. Over the period 1802-1992, the U.S. stock market returned a premium over estimated yields on U.S. government bonds of 4.6%. See Laurence Siegel, “The Equity Premium: Stock and Bond Returns Since 1802,” *FA Journal* (Jan.-Feb. 1992).

**TABLE 1**  
BETA ESTIMATES FOR  
NESTLÉ BEARER SHARES  
AND FOR INDICES OF  
SWISS SHARES\*

Indices	Beta of Nestlé bearer shares	Beta for FTA Switzerland	Beta estimate for MSCI Switzerland
FTA Switzerland	0.885	—	—
MSCI Switzerland	0.838	—	—
FTA World	0.585	0.737	0.788
MSCI World	0.595	0.756	0.809
FTA U.S.	0.712	0.842	0.897
MSCI U.S.	0.709	0.838	0.893

\*Estimates obtained using monthly Sfr. returns from January 1990 to May 1993. FTA denotes the Financial-Times indices and MSCI stands for Morgan-Stanley International. The beta estimates are regression coefficients of the monthly returns of Nestlé shares, of FTA Switzerland and MSCI Switzerland on the respective indices.

where  $R_G$  denotes the required expected return on a stock when markets are global;  $R_f$  is still the local country risk-free rate;  $b_G$  is the global beta of the company in question; and  $R_G$  denotes the return of the global market portfolio. In the equation above, one would use a proxy for the global market portfolio like the Morgan-Stanley International (MSCI) index.

Now let's attempt to apply the global CAPM to Nestlé. Table 1 provides estimates of the beta of Nestlé bearer shares relative to a number of different indices using monthly returns in Swiss Francs from January 1990 to May 1993. This table shows that although Nestlé has a beta of about 0.90 with respect to the Swiss indices, its beta with respect to the proxies for the global market portfolio is only about 0.60, or about two-thirds its local beta.

The next question is how to determine the market portfolio risk premium. Although it is typical in applications of the CAPM to use the arithmetic return per period computed over extremely long sample periods, such an approach cannot be easily used internationally because there are no data available for a global market portfolio over a long sample period. Even if such data were available, it is not clear what it would mean because the degree of integration of markets has changed so dramatically in the past two decades. As noted, when the global market portfolio expands to include ever more securities that could not previously be held by foreign investors, one

expects the risk premium to fall to reflect the greater diversification of that portfolio. Because it effectively ignores this trend, use of the historical average arithmetic return of the global portfolio will overstate significantly the *current* world risk premium.

One possible solution to this problem is to focus on the period during which markets were fairly well integrated, namely the period after 1980. The problem with this approach, however, is that one is then forced to use a fairly short period of time in which stock markets have done extremely well—in part *precisely because of globalization and falling risk premiums*.<sup>7</sup> That is, because the high stock returns in many national stock markets over the past 15 years are partly attributable to the reduction in risk premiums during this period, it makes little sense to use such high returns as the basis for estimating *future required* rates of returns. For, as we have seen, higher stock prices for a given level of earnings imply a lower, not a higher cost of capital.

Given this problem, is there some way one can use a longer period of time to obtain an estimate of the global market portfolio risk premium while still accounting for possible changes over time? One possible approach is as follows: Begin by assuming that the true beta of the U.S. market with the world market portfolio is one (in fact, one highly creditable estimate of the U.S. beta with respect to the MSCI world market portfolio is 0.96).<sup>8</sup> In this case, a mechanical application of the CAPM would suggest

7. For example, from September 1980 to September 1990, the annual return of the MSCI world market portfolio (in Swiss francs) was 13.7%. Over this same period, the annual return of the Swiss market portfolio returned was 10.2%. Thus, whereas the Swiss market returned an annual average premium of 5.7% over an index of Swiss bonds (4.5%), the risk premium for the world market portfolio over Swiss bonds was 9.2%. The large *ex post* risk premium on the world market portfolio for the 1980s reflects the benefits of the elimination of barriers to international

investment, which is a once-and-for-all phenomenon. It would therefore be wrong to use this large *ex post* risk premium as an estimate of the risk premium that investors expect to receive in the future, which is the relevant risk premium for cost of capital computations.

8. See C. Harvey, "The World Price of Covariance Risk," *Journal of Finance* 46, (1991) 111-159.



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that the risk premium on the global market portfolio should be roughly equal to the historical average risk premium on the U.S. market portfolio—that is, about 8.4%. But, as noted earlier, this 8.4% estimate is likely to overstate both the U.S. and the world risk premium because, in stretching back to 1926, it includes a long period of time when U.S. investors could not diversify internationally.

To reflect the effect of global integration on the world risk premium, we thus need to make some adjustments. For example, if we make the conservative assumption that international diversification has enabled U.S. investors to reduce the standard deviation of their portfolio by 20%, a simple calculation suggests that the risk premium on the world market portfolio should be about two-thirds of the historical risk premium of the U.S.<sup>9</sup> And, using 8.4% as an upper-bound estimate of the historical risk premium for the U.S., we would obtain an estimate of the global risk premium of 5.4% in integrated markets.<sup>10</sup>

If we then plug this global risk premium into the global CAPM above, we come up with a cost of equity capital for Nestlé of only about 7.7%—that is,  $4.5\% + (0.6 \times 5.4\%)$ . And since the estimate of Nestlé's cost of capital using the local CAPM was 9.2%, the overstatement of cost of capital from using the local CAPM for Nestlé instead of the global CAPM is on the order of 150 basis points.

To see what such an overstatement of cost of capital implies for the value of Nestlé's shares, let's return to the dividend discount formula presented earlier. If we assume a growth rate of earnings and dividends for Nestlé of 2%, one dollar of dividends is worth approximately \$14 with a cost of capital of 9.2% and about \$17 with a cost of capital of 7.7%. This implies a difference in firm value of the order of 20%!

There are two reasons, however, to believe that our estimate of 7.7% exaggerates the benefits of global markets and understates the cost of capital of Nestlé. As corporations become more international in their activities and barriers to international investment fall, national economies become more "connected." And the resulting greater correlation of real

international economic activity increases the cost of capital in two ways. First, with globalization of capital markets, the risk premium on stocks in any given country comes to depend increasingly on events all over the world. With increased integration of markets, for instance, the risk premium on U.S. stocks depends increasingly on the volatility of not only the U.S. stock market, but of the Japanese and German markets as well. And if, for whatever reason, the volatility of these national markets should increase, such increased volatility will be transmitted throughout the global system; and, hence, the risk premium of the world market portfolio will increase. This means, for example, that even with no change in the world beta of U.S. stocks, an increase in the world market risk premium would mean an increase in the risk premium on U.S. stocks. Thus, as markets become more global, one expects the benefits of international diversification to fall somewhat because the common, worldwide components in stock returns become more important.

The other effect of globalization to note in this context is that it should increase the global betas of companies in smaller countries. For example, the global beta of Nestlé—that is, the extent to which its stock price moves in sync with international stock markets—is likely to rise somewhat (though not to the level of its local beta) both as the company increases its overseas investments and as its investor base becomes more international. When most of Nestlé's stock was owned by Swiss investors, it was primarily changes in the expectations of these investors that would determine changes in the value of Nestlé. Because this national factor in Nestlé shares was largely unrelated to the performance of world markets, the beta of Nestlé relative to these markets was quite low. But, as holders of Nestlé have become more international, the value of Nestlé has become increasingly dependent on changes in the expectations of investors who own the world market portfolio. If these investors become more risk averse and require a higher market premium, this affects all stocks, including Nestlé.

9. A more precise estimate would be 0.64. This estimate is derived from the formulation that, in fully integrated markets (in which the global CAPM holds), the world market risk premium divided by the variance of the world market excess return is equal to a measure of the aggregate relative risk aversion. (For more details, see K.C. Chan, G.A. Karolyi, and R.M. Stulz, "Global Financial Markets and the Risk Premium on U.S. Equity," *Journal of Financial Economics* 32 (1992), 137-167.)

Moreover, assuming that relative risk aversion is the same across countries and that the U.S. market is historically segmented from the rest of the world, the ratio

of the historical risk premium of the U.S. market portfolio and the variance of the excess return of the U.S. market portfolio is the same as the ratio of the global market portfolio *ex ante* risk premium to the *ex ante* variance of its return. For a more detailed analysis, see my article, "Globalization and the Fall in the U.S. Market Risk Premium," work in progress.

10. In fact, because the U.S. market has a beta of 1.0, in integrated markets, we would also expect the U.S. market risk premium to be 5.4%. Thus, even the use of some post-WW II historical average risk premium such as 6% is likely to be an overstatement because it fails to reflect the current degree of market integration.



Now, if we wanted to adjust our earlier estimates of Nestlé's cost of capital for these "second-order," partly offsetting effects of global integration, we might proceed as follows: Based on current trends, let's assume that the global beta of Nestlé has increased from about 0.6 to 0.7. And, if we combined this higher beta with a somewhat higher world market risk premium of, say, 6% (instead of the 5.4% used earlier), we would arrive at an upper-bound estimate of 8.7% [ $4.5 + (0.7 \times 6\%)$ ] for Nestlé's cost of capital (which, although 100 basis points higher than our earlier estimate of 7.7%, is nevertheless still 50 basis points below the local CAPM estimate of 9.2%).

But keep in mind that this 8.7% estimate was obtained using an estimate of the historical U.S. risk premium of 8.4%. Most financial economists would suggest that 8.4% is too high. For instance, the U.S. risk premium from 1802 to 1992 was only 4.6%; and, for the period 1966-1992, it was only 3.3%. If we were instead to use a historical risk premium for the U.S. of 6% as a starting point in our calculation, the appropriate world risk premium would then be 4%; and thus Nestlé's cost of equity capital would be about 7.3% ( $4.5\% + (0.7 \times 4\%)$ ). In this case, the global CAPM would yield a cost of capital for Nestlé that is 190 basis points lower than the estimate provided by the local CAPM.

## CONCLUSION

The progressive integration of international financial markets over the past 20 years has led to a significant reduction in the cost of capital of public corporations around the world. Global diversification of their portfolios has enabled world investors to spread risks more effectively and hence to reduce the risk premiums they require to hold stocks. And this effect of globalization on the cost of capital is one important cause of the surge in both U.S. markets and

in national stock markets around the world since the early 1980s.

But the effect of globalization on cost of capital is not a simple or straightforward one. At the same time that integration of financial markets has allowed more efficient spreading of global risks, the increasing synchronization (or correlation) of both real international business activity and world financial markets is partly offsetting the benefits of global diversification. For one thing, the increased sensitivity of corporate stock prices to events occurring all over the world, holding all else constant, means greater risk for local investors and hence *higher* risk premiums. For this reason, small local economies are no longer insulated from worldwide shocks to the extent they once were; and, hence, both corporations and investors face increased exposure to such events.

To reflect the new reality of a globally-determined cost of capital, many public corporations (particularly those outside the U.S.) may want to consider changing their standard practice for estimating cost of capital. Instead of using a local CAPM that evaluates a company's risk in relation to local markets, I recommend use of a global CAPM that views a company as part of the global portfolio of stocks. As I demonstrate in the case of Nestlé, use of a global CAPM instead of the Swiss CAPM can make a substantial difference in cost of capital estimates.

In sum, globalization of financial markets increases the values of companies by reducing the cost of capital (which in turn stimulates further economic growth). When judging the performance of stock markets, it is thus important to keep in mind that we are in a new world—one in which relationships observed in the past may no longer hold. For example, a high price/earnings ratio in a world of segmented markets may be an average P/E in a world of global markets where investors require smaller risk premiums.

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