A NEW FRAMEWORK *for*

INTERNATIONAL INVESTING

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Introduction

Why invest internationally? Do international equities still offer diversification opportunities not available in the US? After more than a decade of underperformance, should we be shying away from international assets, or should we instead be looking to these assets for diversification and, perhaps, superior future performance?

If the investor decides to invest in international equities, should he or she take a lot of active risk, hoping to profit from market inefficiencies that are perceived to be larger internationally than in the US? Or does careful attention to risk control have the same beneficial effects on a portfolio of international equities that it does in other asset classes?

Finally, assuming that controlling the active risk in an international equity portfolio is important, does it make sense to think about and manage that active risk in a multidimensional context? International equities involve dimensions of decision making—country allocation and currency management—that are not required in home-country portfolios. Is the traditional practice

of allowing stock selection to dictate country and currency positions sound, or can one earn additional returns by allowing the manager to separate these decisions and manage country and currency positions independently of stock holdings?

In our experience, plan sponsors ask a whole barrage of questions when contemplating their allocations to international equities, although not always with the clean separation of issues that one might prefer when trying to answer them. Our goal in this paper is to provide both a framework for how to think about international equities, and to set forth sensible answers that are capable of being put into action.

Why invest internationally? Restating the case for international equities

WHY INVESTORS ARE QUESTIONING THEIR INTERNATIONAL EQUITY ALLOCATIONS

After decades of exceptional performance, international equities (from the viewpoint of US investors) have lagged US equities since about 1990. Overshadowed as a diversifying asset by bonds, real estate and hedge funds, international equities have become a topic of reflection and skepticism among plan sponsors, many of whom have been starting to challenge the basic premises underlying international equity investing.

- Exhibit 1 shows the history that has led to this skepticism. Beyond the simple fact of underperformance since 1990, some of the challenges to international investing that we hear in plan sponsors' discussions include: "International investing no longer diversifies the risk of US equities."

- "US-based multinational companies are those best positioned to thrive in an environment of increased globalization."

- "Non-US companies are particularly subject to opacity in financial reporting, government control, and motives other than shareholder value."

- "In addition to the ordinary market risks to which all equities are exposed, international equities expose the investor to currency fluctuations, which add risk but not return."

Mostly these concerns do not hold up to rigorous scrutiny, but each contains a tempting seed of intuition. We respond to each of these concerns by restating and updating, in a relatively brief space, the case for international equity investing by US-based sponsors that the present authors, along with Patricia Dunn, set forth at greater length in a 1999 *Investment Insights*.[1]

The principal arguments for international investing, as presented in the 1999 *Investment Insights*, are:

- The success of US companies in global markets over the last decade reinforces the case for international investing: high profit margins are a target, not a moat.

Exhibit 1
HISTORICAL TOTAL RETURNS ON THE S&P 500 AND EAFE INDEXES

Sources: MSCI, S&P.

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1   Patricia C. Dunn, Andrew R. Olma, and Laurence B. Siegel, "The Case for International Investing," *Investment Insights*, Barclays Global Investors, San Francisco, May 1999.

- Global markets are not all that integrated nor should we expect their returns to be excessively correlated; today's high correlation is likely to be an aberration.

- The US is not a complete investment universe. Unique companies and industries exist outside the United States. One can diversify risk through market completion.

- Non-US economies, especially emerging markets, offer faster rates of long-term economic growth than the US.

- Some liabilities are better offset by internationally diversified investments than by US-only investments.

Although we did not say so in 1999, we would add:

- Currency risk, at least in developed markets, can be managed to an optimal level or if the investor so prefers, even avoided entirely.

Here, we review and update these arguments.

DOMINANCE OF THE UNITED STATES: A PERILOUS ILLUSION

During the 1990s boom, many US companies increased their share of the global market for their products or services. This phenomenon was accompanied by exceptional performance of the US stock market, reflecting growing profit margins. Rightly or wrongly, many analysts and corporate managers came to regard US-based companies as having a "moat" of protection around them, consisting of technological superiority, skillful supply-chain management, labor mobility and limited government regulation.

Although the contraction of 2000–2002 cut very sharply into corporate earnings in the United States, the S&P still beat EAFE in the associated bear market. The bear market years seemed to reinforce, rather than to counteract, the idea that international investing is a no-win proposition[2]

Recently, US corporate profits have started to improve. While the go-go years of the 1990s have not returned, the impression is once again widespread that US companies can earn extraordinary profits in the long run.

But let's recall a basic principle from Economics 101: extraordinary profits are an irresistible target. They get competed away. There is plenty of financing available (at low costs of capital) for those who would try. That is what markets are for.

The economist Joseph Schumpeter coined the vivid phrase "creative destruction" as a metaphor for competitive capitalism. In a world of creative destruction, there are no permanent advantages. Not only European and Japanese companies, but also organizations in China, India and in the rest of the developing world, stand to benefit tremendously if they can erode the US advantage in any number of goods and services.

Some of this erosion has already been achieved. Even after 13 years of recession in Japan, companies in that country are globally dominant in automobiles and consumer electronics[3]

The world capital of the semiconductor industry is Taiwan. Most of the world's clothing is manufactured in east and south Asia. The steel industry, once a powerful fixture of corporate America, is now concentrated in China, Brazil and South

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2   EAFE did beat the S&P in the rally or "new bull market" that began in the spring of 2003, but that was entirely due to currency fluctuations (i.e. EAFE underperformed in local-currency terms, but the dollar declined so that EAFE in US dollars outperformed the S&P). At any rate that is too short a period from which to draw much of a conclusion.

3   The formal definition of "recession" doesn't apply to the entire 1990–2003 period in Japan, but as a descriptive device it seems accurate.

InvestmentInsights

Korea. European financial institutions control a vast swath of banking, insurance and investment management assets. The world's second and third largest aircraft manufacturers are European and Brazilian, respectively.

Exhibit 2 shows the rolling 60-month correlation of the S&P 500 with several MSCI international equity indexes. Note that as recently as 1997, when the world was not all that different than it is now, this correlation was near a historic *low*,

While the correlation of the US equity market with international markets is currently quite high, investors shouldn't assume that it always will be.

US multinational corporations do gain some of the profits from this global manufacturing and trading melee; this has been one of the secrets of their past success. But, as Hardy (1997) has demonstrated, the performance of US multinationals is much more closely aligned with that of other US stocks than with international stocks.[4] The investor must buy international stocks (that is, stocks not in the US benchmark) to take advantage of the full range of opportunities that will arise from non-US companies attempting to capture some of the large profit margins that US companies have been able to achieve in recent years.

CORRELATION OF MARKET INDEXES

While the correlation of the US equity market with international markets is currently quite high, investors shouldn't assume that it always will be.

about 0.3. This wide fluctuation suggests that the currently high US/non-US equity correlation is not a fundamental feature of the investment landscape but a happenstance.

We can identify at least one of the causes of today's high correlation: starting in 1998, the global, technology-led equity price bubble and subsequent reversal caused correlations to soar; in other words, the "technology factor" had a large influence on equity returns in many different countries. As a result, looking back five years from today, the US/non-US equity correlation is above 0.8, and stands at its all-time high. But the relevant correlation for investors today is the correlation over the next five years, not over the last five years. We do not expect another bubble. And as one can easily see from the exhibit, historical

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4   Describing the work of Hardy (1997), Dunn, Olma, and Siegel (1999) write: "Hardy. . .uses returns-based style analysis. . .to examine the extent to which international exposure can be achieved by buying stocks of US-based multinationals. [If so,] 'these US stocks would have to behave like foreign securities,' [Hardy writes]. 'A simple way to test this idea,' [Hardy continues], 'is to do a style analysis on these companies. If these stocks behave at all like foreign markets, it will be demonstrated by significant weightings in the EAFE index.' Of seven [US multinational] companies [that Hardy analyzed], only Coca-Cola and Colgate-Palmolive showed any weight at all in EAFE when regressed against five factors (EAFE plus the four Russell domestic style indices). Moreover, the EAFE weights are small: 5.3% in EAFE for Coca-Cola, which earns 80% of its profits outside the US, and 9.6% in EAFE for Colgate-Palmolive. Avon Products, Gillette, McDonalds, Philip Morris, and Procter & Gamble showed no evidence of being influenced by EAFE using this methodology."

Hardy concluded that one cannot gain exposure to the non-US market factor by constructing a portfolio of these popular US growth stocks. He performed a similar analysis for US multinational-company mutual funds, with the same result. See Stephen R. Hardy, "International Exposure—Going Multi–National," *The Advisor*, vol. 21 (November 18, 1997), Zephyr Associates, Zephyr Cove, Nev.

correlations measured over the short term—even the 60-month rolling periods used to construct Exhibit 2—are notoriously unstable; you need a very long time period to make a sensible forecast.

We also note that the US/non-US equity correlation was almost as high in the mid-1970s and in 1988–1991 as it is now. The correlation is not *rising* in a steady pattern over time. It just fluctuates.

Even if one did anticipate a US/non-US equity correlation of 0.8, one would not avoid international stocks for that reason. In the domestic market, investors do not overlook industrial sectors (such as manufacturing stocks) or capitalization strata (such as small caps) on the ground that these groups of stocks have fairly high correlations with the remaining issues. One instead invests broadly, recognizing that any limitation on the investment universe reduces portfolio efficiency. The same principle applies for international stocks: the US market does not represent a complete set of investments, and there are unique companies and industries that can only be accessed through the

international markets. Unless the *forecast* correlation is 1.00 or something very much like it, one simply cannot ignore these opportunities.

Also—maybe we're being too cute—if one knew in advance that the US/non-US equity correlation was going to be 0.80, which market would that information tell us to avoid? The international market, or the United States? There's nothing in the correlation statistic that suggests an answer. The "correct" portfolio weights are given by optimization, in which correlation is only one of many inputs, and in which, in some circumstances, the result also relies on the liability one is trying to fund.

Finally, correlations of cap-weighted benchmarks understate the potential gains from diversification, because the companies with the largest weight in each country's cap-weighted index tend to be global. But you don't have to invest in the benchmark. If you want to take advantage of the low correlations of specific international stocks that have low correlations with US stocks, you can use active management to overweight such stocks (relative to the cap-weighted benchmark).

Exhibit 2
ROLLING 60-MONTH CORRELATIONS OF PRINCIPAL
US AND INTERNATIONAL EQUITY INDEXES, 1975–2003
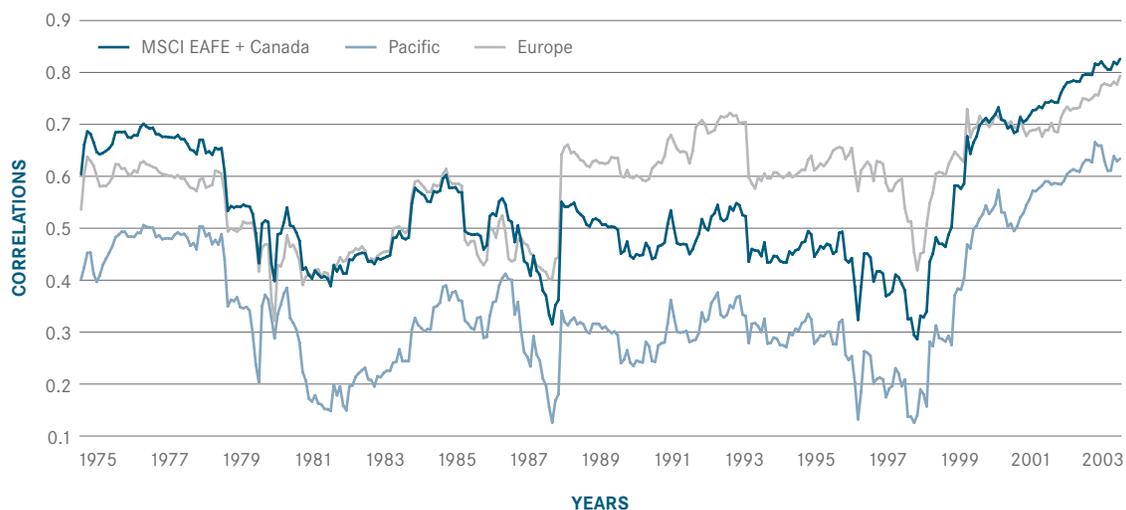
Source : MSCI, S&P.

Exhibit 3
AVERAGE 60-MONTH CORRELATION OF EQUITY INDEXES ACROSS PAIRS OF COUNTRIES, 1860–2000

Source: Goetzmann, Li, and Rouwenhorst (2002).

Correlations in the long run. A very long view of global equity market correlations helps to gain further understanding of the dynamics of international investing. Goetzmann, Li, and Rouwenhorst (2002) note that the correlations of equity market returns across countries have ebbed and flowed, reaching highs in the mid-nineteenth century, in the early twentieth century, and then again very recently.[5] Correlations have tended to be low at most other times. Exhibit 3 shows the average correlation across all pairs of countries for which Goetzmann et al. were able to obtain return data.[6] Goetzmann et al. indicate that correlations have tended to be high when the investment opportunity set was expanding rapidly, a condition that corresponds to high or rising levels of global market integration. Like the period from 1890 to 1914, the current time period is marked by such integration and by burgeoning markets, for both financial and real assets, all over the world.

But the spread of market economies has to stop somewhere—one eventually runs out of countries—and the Ricardian process of specialization among countries begins to affect market returns, *lowering* the correlations.[7] In an integrated world, each country produces what it is best at (since its

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5   William N. Goetzmann, Lingfeng Li, and K. Geert Rouwenhorst, "Long-Term Global Market Correlations," Yale International Center for Finance Working Paper No. 00-60, 2002, *http://papers.ssrn.com/abstract=288421.*

6   Note that Exhibit 3 overstates the diversification benefit available to US investors in international equities because (1) the analysis weights all countries equally, rather than according to their capitalizations; and (2) the analysis does not isolate the correlation of the US with each country, but treats all cross-correlations equally.

7   It's also conceivable that, instead of triumphing, global capitalism could decline; under such conditions, markets would tend to become more segregated and correlations would fall. The argument by David Ricardo (1817 [1996]) that nations, like individuals, find their area of specialty or comparative advantage if trade among them is possible was enunciated in an investment-returns context in Roll (1992), and is also discussed, without attribution, in Dunn, Olma, and Siegel (1999). See David Ricardo, *[On the] Principles of Political Economy and Taxation*, Prometheus Books, Amherst, NY, 1996 (originally published in 1817), chapter 7.

Country effects versus sector effects

Much effort has gone into research that attempts to determine whether global capital markets are integrated or segmented. Integration studies in fixed income and currency markets give fairly clear-cut results, since one can test for uncovered interest parity and other conditions that strongly suggest integration or segmentation.

If profitable arbitrage opportunities can be found, then markets are segmented (since, in integrated markets, arbitrageurs would have eliminated these opportunities). But in equity markets, it's harder to determine whether arbitrage opportunities exist across countries, since the relevant test is whether the expected equity risk premium (per unit of risk) is the same in different countries. You can't observe expected equity risk premia directly, and using realized premia as a proxy for expected premia involves far too much noise. Thus the fruitful research on equity market integration has focused on whether country or industrial sector has greater power in explaining the cross-section of stock returns.

The answer at least through the middle 1990s has been that the country effect dominates, suggesting substantial market segmentation since stock returns should cluster by sector if markets are integrated. This was demonstrated by one of the landmark country-versus-sector effect studies, that of Heston and Rouwenhorst (1995).[*] Their finding that country effects dominated in the period they studied, 1978–1992, indicates that international equity markets were still quite segmented over that period, despite the superficial appearance of integration (due to the existence of global investment funds and other such institutions).

To see how a country/sector study provides evidence on capital market integration or segregation, think about stock returns in states of the US, where the capital market really is integrated across state lines, with one national currency, a national yield curve, a national equity market in New York and so on. Do Californian stocks move together as a regional "asset class"? No, tech companies in California tend to co-vary with tech companies in Massachusetts, and agricultural firms in Texas and Iowa have similar returns. In the integrated US market, sector (as opposed to "state") explains almost everything.

But a more up-to-date BGI study shows that, in accordance with intuition, sectors are becoming important in explaining equity returns, at least in developed markets. (Part of this new importance of sector returns arises from the influence of the technology factor across global markets in 1998–2003.) Yet, as shown in Exhibit A, country variation is still more important than sector variation—about 1.2 times as important, down from being almost three times as important a decade ago. Just because something is less important than it used to be doesn't mean that it should be ignored!

Moreover, market segmentation will probably continue indefinitely into the future. One reason is the "home country bias," in which investors persis-

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[*]   Steven L. Heston and K. Geert Rouwenhorst, "Industry and Country Effects in International Stock Returns," *The Journal of Portfolio Management,* Spring 1995, pp. 53–58.

tently overweight their own country's markets. They do so partly because their liabilities are mostly denominated in the home currency, but also out of fear of the unknown and out of concerns about investment costs, lack of information and transparency, and other difficult-to-manage risks in other countries. Exhibit B compares cross-border investments by pension funds in various countries with those countries' weights in a global equity benchmark (the MSCI World index). In every case, the home country weight is much larger than the benchmark weight. Such behavior—dramatically visible after more than two decades of international managers striving to get plan sponsors to do the opposite—will keep segmented markets, and thus

country effects on stock returns, alive for a long time to come: possibly forever. The "borderless world" anticipated by some pundits a decade or two ago does not look like a particularly good forecast any more.
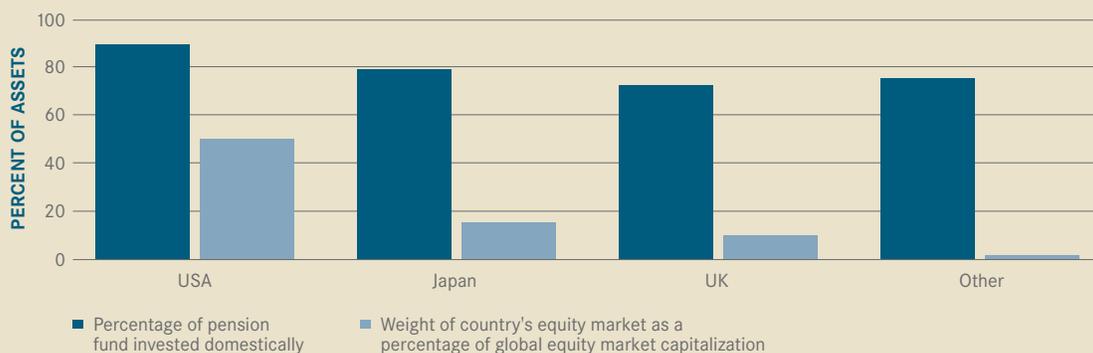
If there is still a substantial country effect, then it makes sense to undertake country selection as a discipline independent of stock selection or currency selection. The evidence indicates that country effects—the dispersion among the returns of cap-weighted equity benchmarks in different countries—are very much alive, so that, as we argue in more depth later, country selection can be profitable.

Exhibit A
COUNTRY VARIATION COMPARED TO SECTOR VARIATION
IN DEVELOPED INTERNATIONAL EQUITY MARKETS, 1989–2003

Sources: MSCI, BGI.

Exhibit B
HOME COUNTRY BIAS OF PENSION FUND INVESTMENTS IN VARIOUS COUNTRIES

■ Percentage of pension fund invested domestically   ■ Weight of country's equity market as a percentage of global equity market capitalization

Source: InterSec.

people can trade for any goods in the world that they want). As a result, the industrial mix differs from one country to another. This is in contrast to a segmented world in which each country must be self-sufficient, with an agricultural sector an extractive industries sector, a banking sector and so on. Thus, country returns will be imperfectly correlated even if capital markets are entirely integrated.

THE UNITED STATES IS NOT A COMPLETE INVESTMENT UNIVERSE

Perhaps the easiest way to see that international equities offer diversification and active management opportunities that are different from those afforded by US equities is to compare industry weights across country indexes. Exhibit 4 provides this comparison. While the data mostly speak for themselves, let's note a few specifics:

- Korea and Taiwan are dominated by technology firms (in fact, there are whole subcategories of technology in which one simply cannot invest through US companies).

- Industrials and consumer discretionary stocks are more prevalent in Japan and Germany than in the US.

- The large size of European and British banks cause financials to have a larger weight outside the US than within it.

Exhibit 4, then, tends to confirm the intuition that the US equity market does not fully capture the world's industrial mix. Moreover, even if the US had the same sector weights as non-US economies, the specific companies differ, and (it should go without saying) the US companies are not always superior. In other words, US sector portfolios are not as diversified as global sector portfolios.

Exhibit 4
SECTOR WEIGHTS IN VARIOUS COUNTRIES

GICS sector	US S&P 500	MSCI EAFE	Selected countries in EAFE				MSCI EMF	Selected countries in EMF		
			France	Germany	Japan	UK		Mexico	Korea	Taiwan
Consumer discretionary	11.1	11.5	14.8	15.8	21.9	10.5	7.0	11.9	12.8	4.1
Consumer staples	12.9	9.0	13.5	3.7	6.4	10.7	6.3	23.4	3.1	1.0
Energy	5.7	8.1	17.1	–	0.8	13.9	11.1	–	0.6	–
Financials	20.8	25.9	17.3	22.1	15.7	27.1	16.4	7.2	15.4	17.0
Health care	13.8	9.2	10.5	4.9	5.8	13.2	2.8	–	0.2	–
Industrials	10.6	9.0	6.7	15.2	15.3	5.4	6.1	3.5	5.2	4.3
Information technology	17.6	7.2	7.1	8.1	16.9	0.8	17.9	–	40.8	58.8
Materials	2.8	6.6	5.9	12.1	7.5	4.0	16.5	12.7	8.9	12.2
Telecommunication services	3.4	7.5	4.0	7.8	4.6	10.3	12.1	41.3	9.3	2.5
Utilities	2.9	4.6	3.1	10.1	5.2	4.1	3.8	–	3.6	–
	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Notes: EAFE = Europe, Australasia, Far East equity index. EMF = Emerging Markets Free equity index.
Data for individual countries represent the MSCI equity index for the country indicated. As of 9/30/03.
Source: BGI, based on Fact Set Data.

Active management opportunities outside the US. We noted earlier some of the unique companies and industries that can be found outside the US. In quantitative terms, these not only give a different character to any given benchmark (at the sector, country or multicountry level), but also add to the range of risk-factor exposures that can

between GDP growth and equity returns has been tenuous. To some extent that is because workers (consumers) capture much of the GDP gain, as they should. But there should be plenty left over for providers of risk capital. (There had better be, or the whole process of economic development will grind to a halt.)

The process of developing the physical, commercial and financial infrastructure of a country generates enormous wealth. The trick for shareholders is capturing some of it.

be achieved by making active bets away from any given benchmark. In other words, active decisions have greater potential breadth in the global equity market than in just one country (the US). As Grinold and Kahn (2000) show, such breadth— which they define as the number or variety of different investment decisions to which a given set of active management skills can be applied— translates mathematically to a higher expected alpha, if all other things are held equal and, of course, if the manager actually has skill.[8] We'll present this mathematical relationship later in a slightly different context on page 20.

FASTER GROWTH OUTSIDE THE UNITED STATES

When we suggest that economic growth and thus potentially, capital market returns, may be faster outside the US than inside it, we're mostly referring to emerging markets. The process of developing the physical, commercial and financial infrastructure of a country generates enormous wealth. The trick for shareholders is capturing some of it; historically, the connection (across countries)

The historical failure of emerging markets to provide returns commensurate with the development of the real economies is, in our view, mostly due to inadequate legal protections for shareholders from the predations of management and politicians (perhaps that is why these markets are not already developed). As the success of South Korea, Singapore and other countries that have transitioned from Third to First World status is studied and emulated, we can expect other developing countries to adopt more enlightened policies. As a result, we anticipate a closer match between real economic growth and the returns available to international equity investors.

In addition, only a modern-day Oswald Spengler would write off the developed world, outside the United States, as a sinkhole of economic decline.[9] Britain was the "sick man of Europe" only 25 years ago, and the United States didn't look much better. Germany and Japan were booming. These relationships have largely been reversed. Although stagnation in Japan and in much of the European Union could persist, we believe that market and

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8   Richard C. Grinold, and Ronald N. Kahn, *Active Portfolio Management*, 2nd edition, McGraw-Hill, New York, 2000.

9   Spengler, a German social critic, wrote *The Decline of the West* (somewhat prematurely) in 1922.

political forces tend to correct such problems, at least in the very long run. Voters, for example, react to economic hardship by trying new programs and systems. Today, there are stirrings of liberalization in Japan that would, if effective, lead to a renewal of economic growth in that country, and it is not unreasonable to forecast a similar chain of events in "Old Europe."[10]

While the correlation between international equities in the asset mix and international risk factors in the liability is far from perfect, there is a partial hedge from which plan sponsors can benefit. For example, mobile telephone hardware is mostly a non-US business. If the wage costs (and thus the pension liabilities) of a US-based mobile phone manufacturer rise because a telecom boom

If the wage costs (and thus the pension liabilities) of a US-based mobile phone manufacturer rise because a telecom boom increases global demand for engineers qualified to work in that industry, an investment position in global mobile-phone stocks helps to hedge that increase.

If that is not enough to get US investors to look abroad, equity valuations are, as of this writing, considerably cheaper in both developed non-US markets and in emerging markets than in the US. Since relative valuations can change quickly, however, we won't emphasize them too much.

ASSET-LIABILITY MANAGEMENT USING INTERNATIONAL EQUITIES

As we pointed out in 1999,[11] many pension plans and other institutions have liabilities with long-term exposure to international markets. We're referring to pension plans for US, not foreign, employees. The reason, which we'll admit is subtle, is that the sponsoring company often earns a great deal of its income outside the US, or because it sells to or buys from other companies with such exposures. Additionally, the plan must provide purchasing power for beneficiaries whose consumption patterns are influenced by global factors.

increases global demand for engineers qualified to work in that industry, an investment position in global mobile-phone stocks helps to hedge that increase.

MANAGING CURRENCY RISK

Now that we've reviewed the basic case for international diversification, we look at issues surrounding the implementation of an investor's decision to hold international equity assets. First, we question the commonly held view that international equity portfolios are a particularly fertile field in which to take active risk. Later we focus on the problem of currency management in international equity portfolios, noting that this problem receives surprisingly little attention given how important it is in determining investment performance.

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10 There are a number of economic "tigers" in Europe, including Ireland and several countries east of the former Iron Curtain. The current stagnation is centered in France and Germany.

11 With Patricia C. Dunn as a co-author. See Dunn, Olma, and Siegel (1999).

Should international investors take a lot of active risk?

One of the persistent myths of international investing is that high levels of active risk (with the resulting expectation of generating a high alpha) are desirable. Two kinds of arguments are used to support this contention: first, high alphas have been earned by international managers in the past; and second, international markets are likely to be less efficient than the US market. We'll address each of these issues in turn. To begin, however, let's review the general principles of active return and active risk, as set forth in Waring, Whitney, Pirone, and Castille (2000) and Waring and Siegel (2003a, 2003b).[12]

WHY INVESTORS SHOULD BE AVERSE TO ACTIVE RISK

The dream of getting something for nothing dies hard. If the US market is too efficient for most active managers to prosper, maybe they can find greener pastures abroad. After all, many non-US markets look like they might be quite inefficient—they are less transparent, offer less security analysis, and have fewer institutional investors. If there's still a place in the world for managers who cast the benchmark aside and "just buy stocks that go up,"[13] it must be in countries where price and value are more widely separated than they are in the United States.

We believe that this kind of thinking is dangerously flawed. The fact that active management is a zero-sum game, the a priori efficiency of the market portfolio, and the special aversion that investors should have to active risk apply in international markets just as much as they do in the United States.

THE ZERO-SUM NATURE OF ACTIVE MANAGEMENT

The zero-sum nature of active management is simply a mathematical fact, and has nothing to do with whether the market is efficient or whether the capital asset pricing model (CAPM) holds or anything else. If the benchmark is properly specified, so that it embraces the opportunity set of investments in a given asset class, country, sector or other aggregation, then the returns of all investors in that market must, by mathematical construction, sum to the return on the benchmark. The Nobel Prize–winning economist William Sharpe demonstrated this a generation ago, although his best exposition of it is relatively recent (and only two pages long).[14]

Because any alpha in a portfolio is earned at the expense of other investors in the same asset class, alpha is difficult to achieve. It's even more difficult to sustain over time in a statistically significant manner. That is what happens when smart people play a zero-sum game with each other. Only if there are a great many players in a market who are motivated by something other than profit (as in currency markets, as we'll argue later) can one justify active management as a good general approach. Under normal circumstances, where most players in the market are seeking

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12 Barton M. Waring, Duane Whitney, John Pirone, and Charles Castille, "Optimizing Manager Structure and Budgeting Manager Risk," *The Journal of Portfolio Management*, Spring 2000. Barton M. Waring, and Laurence B. Siegel [2003a], "The Dimensions of Active Management," *The Journal of Portfolio Management,* Spring 2003. Barton M. Waring, and Laurence B. Siegel [2003b], "Understanding Active Management," *Investment Insights*, Barclays Global Investors, San Francisco, April 2003.

13 As Will Rogers advised investors to do. (He was kidding.) The full quote is: "Take all your savings and buy some good stock and hold it 'til it goes up, then sell it. If it don't go up, don't buy it." Bryan B. Sterling, and Frances N. Sterling, eds., *A Will Rogers Treasury: Reflections and Observations*, Crown Publishers Inc., New York, 1982, p. 157 (quoted in Dunn, Olma, and Siegel [1999]).

14   William F. Sharpe, "The Arithmetic of Active Management," *Financial Analysts Journal*, January/February 1991.

to maximize their return and to control risk, active managers usually get beaten by their own benchmark.

The zero-sum game argument applies, of course, only *before* costs have been deducted from investor returns. After costs—which are typically substan-

have already been wiped out. Nor it is sensible to believe that analysts have properly incorporated all available information into security prices.

The second condition is tougher, since historical performance may be due to luck and not repeatable, and the other criteria that one can reasonably

Sponsors generally are several times more averse to active risk than to policy risk.

tial for active managers in international equity markets, as they tend to be even in the US— active management is a *negative*-sum game.

Then why do it? Waring and Siegel (2003a) note that there are *two conditions* which must apply before any plan sponsor can rationally decide to use active managers:

- The sponsor must believe that skillful active managers exist—in other words, that there are managers who can beat their properly specified benchmarks, after costs, not just by luck but through skill that is persistent enough over time to deliver a statistically significant alpha, and at the desired level of active risk (tracking error).

- The sponsor must believe that he or she has the skill to identify these managers (out of a much larger population of managers who don't meet these criteria).

Few sponsors will have trouble with the first condition; people differ too much in their native abilities, and in their training, for all advantages to

use to select skillful managers are "fuzzy." But, in our experience, just about all sponsors do in fact hire at least some active managers. It is important that they keep these two conditions in mind when doing so.

THE A PRIORI EFFICIENCY OF THE MARKET PORTFOLIO

But let's take this a step farther. In a story too often retold, so we'll keep it short, Markowitz (1952) showed how to build "efficient" portfolios of securities, so that the expected return on the portfolio is maximized at each risk level.[15] He called this procedure "optimization." Sharpe (1964) showed that if all investors behave as Markowitz prescribed, and if they also agree on the expected return and risk of each security and on the expected correlations of each security with every other,[16] then the cap-weighted market portfolio itself—the market benchmark—is the most efficient portfolio (again in the sense of having the highest expected return at a given level of risk).[17] Sharpe's discovery is

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15 Harry M. Markowitz, "Portfolio Selection," *Journal of Finance*, March 1952. Published in book form as Harry M. Markowitz, *Portfolio Selection: Efficient Diversification of Investments*, 1st edition, 1959; 2nd edition, Oxford: Basil Blackwell, 1991.

16 And if one imposes a few other conditions. For a discussion, see William F. Sharpe, Gordon J. Alexander, and Jeffery V. Bailey, *Investments*, 5th ed., Prentice-Hall, Englewood Cliffs, N.J., 1995, chapter 10.

17 William F. Sharpe, "Capital Asset Prices: A Theory of Market Equilibrium under Conditions of Risk," *Journal of Finance*, September 1964 (vol. 19, no. 3), pp. 425–442. John Lintner, Jan Mossin and Jack Treynor discovered the CAPM at about the same time as Sharpe.

known as the capital-asset pricing model or CAPM (actually the CAPM tells a richer story, but we'll stop there).

Now, the CAPM is not entirely realistic. The conditions are too stringent: not everyone optimizes, and investors disagree with one another on return, risk and correlation estimates. Researchers have found many anomalies, or reasons to believe that the market isn't perfectly efficient or that the CAPM doesn't hold precisely. The strong risk-adjusted performance of small-capitalization stocks as compared to large ones, and of value stocks as compared to growth stocks, are just the best known of these anomalies. There are many others. Active managers rightly use such discoveries to justify their continuing efforts.

Yet the burden continues to be on active managers to show that their portfolios are more efficient than the market portfolio or the benchmark that they're trying to beat. The burden arises from the clean logic of Sharpe's CAPM as well as from the zero-sum nature of active management. Historically, most active managers have underperformed.[18]

WHY INVESTORS ARE OR SHOULD BE AVERSE TO ACTIVE RISK

The CAPM also provides a way to break up total investment risk into two very different parts:

- Policy risk: the part of total risk that arises from exposure to or co-movement with the market benchmark.

- Active risk: the part of total risk arising from active bets, or deviations from the benchmark.

Policy, or beta, risk is rewarded by the delivery of the equity risk premium, which exists in equilibrium because almost all participants in a market are averse to risk and so price riskier assets to have higher expected returns than riskless or low-risk assets. Active risk, as we showed earlier, is rewarded only to the extent that one investor is able to take alpha away from the other investors in the market. As we almost said earlier, and we'll complete the thought now that we have the tools to do so, beta is easy and alpha is hard.

Reflecting this state of affairs, sponsors generally are several times more averse to active risk than to policy risk. This behavior is rational, *precisely because* obtaining a reward for taking beta risk is easy but getting paid for alpha risk is hard. The apportionment of total risk between its policy and active components is beyond the scope of this brief review, but to get a general idea of how much active risk to take, consider Grinold's (1990) and Kahn's (2000) formula:

$$ h_{mgr} \sim E\left[IR_{mgr} \cdot \frac{1}{\omega_{mgr}} \right] = E\left(\frac{\alpha_{mgr}}{\omega_{mgr}^2} \right) \qquad (1) $$

where:

h_{mgr} is the holdings weight of portfolio or manager (its percentage allocation),

IR_{mgr} is the expected information ratio of the manager,

α_{mgr} is the manager's expected alpha,

and

ω_{mgr} is the expected tracking error, or volatility of the manager's pure alpha around a properly established benchmark.[19]

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18 Mark M. Carhart, "On Persistence in Mutual Fund Performance," *Journal of Finance*, March 1997 (vol. 52, no. 1).

19   Richard C. Grinold, "The Sponsor's View of Risk," in Frank J. Fabozzi, ed., *Pension Fund Investment Management: A Handbook for Investors and Their Advisors,* Probus, Chicago, 1990; Ronald N. Kahn, "Most Pension Plans Need More Enhanced Indexing," in Brian R. Bruce, ed., *Enhanced Indexing: New Strategies and Techniques for Investors,* Institutional Investor, Inc. Investment Guides, New York, 2000.

Note that the holdings weight or desired allocation to a manager is thus proportional to the expected alpha, divided by the tracking error *squared*. As a result, well-crafted portfolios of managers tend to have high allocations to index funds and to risk-controlled, quantitative active products, and low allocations to traditional medium-or high-risk active managers.[20]

We'll say this one more time: all this depends on a given active manager actually having skill—on expected alpha being a positive number.

WHY ACTIVE INTERNATIONAL MANAGERS HISTORICALLY BEAT THEIR BENCHMARKS

Over, say, the last ten or fifteen years, a period long enough that persistent patterns found in it should be taken seriously, why did active international managers handily beat their benchmarks?

This doesn't seem possible. As we've argued at length, active management is a zero-sum game, so that active managers as a group, whose holdings sum to the securities in the benchmark, cannot collectively beat that benchmark.[21]

But large institutional managers of US portfolios invested in international markets most certainly did beat the widely used MSCI EAFE benchmark, on average over that period. Over 1990–2002 they earned, on average, a compound annual return

some 2.3% higher than EAFE, according to the investment consulting firm InterSec.[22] How did they manage to do that?

By underweighting Japan, as they had done for a very long time. In the 1980s, when the Japanese market was rising rapidly, these same managers *underperformed* EAFE because of their below-benchmark weight in Japan. Specifically, over 1982–1989, they earned, on average, a compound annual return 3.2% lower than EAFE. Then, when the Japanese market turned downward in 1990, the same bet—underweighting Japan—began to have a positive impact on performance.[23] Viewed over the relevant time period—that is, over the whole cycle of Japanese stock market outperformance and then underperformance—the decision by US managers to underweight Japan had almost a zero net payoff.[24]

This result is unsurprising for two reasons. First, it is consistent with the expectation that active management should not have a positive payoff on average over time. Second, it reflects the reason that managers underweighted Japan in the first place: for risk control. Most managers who under-weighted Japan didn't have a directional view on that country's market; they simply wanted to control risk by avoiding too large an investment in any single country. (Stated another way, the underweight in Japan is an attempt to reduce the *correlation* of the overall international portfolio

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20 In addition, well-engineered, market-neutral long-short equity hedge funds, while having relatively high levels of active risk, may have a substantial place in this well-crafted portfolio because they do not suffer from the loss of portfolio efficiency associated with the long-only constraint that applies to traditional active managers.

21 That's before fees, and indirect costs such as transaction costs. After these deductions, active management is a negative-sum game.

22 See Exhibit 3 on page 24 of Waring and Siegel (2003b). The underlying sources of the data in this exhibit are InterSec (a division of Deutsche Bank) and MSCI.

23 On December 29, 1989, the last trading day of the year, the Nikkei closed at 38,916, the highest level ever reached, before or since, by that index.

24 Over the full 1982–2002 period, the managers studied by InterSec beat EAFE by 0.5% per year. Because the two subperiods (1982–1989 and 1990–2002) are of unequal length, the –3.2% and +2.3% benchmark-relative returns in these subperiods average to a positive, not a negative, number (but the positive number is very small).

with the market of any one country.) This concern was not entirely misplaced: over the full 1982–2002 period, the decision to underweight Japan did dampen volatility while doing almost nothing to add to return.

As Siegel (2003) pointed out, if most managers beat their benchmarks in a given asset class, or if most managers are beaten by their benchmarks, it's unlikely that the managers were collectively all that smart or stupid.[25] More likely, the benchmark

Now that Japan has a much lower weight in EAFE, managers will have less to gain, in terms of risk control, from underweighting Japan and will have to decide to over- or underweight that country based on its investment merits.

But managers are human and might be expected to put their best foot forward by only reporting results from the second half of the period, and characterizing these results as having added alpha. Investors need to see past this and analyze the results more critically. If managers were really consistently smart, if it were easy to add alpha in international markets, they would have won in Japan in both up and down periods.

By the way, active management is a zero-sum game in every period, if compared to the right benchmark and if all of the participants in a market are counted. Thus, in the 1990s, when US-based international equity managers were beating their EAFE benchmark, someone must have been underperforming the benchmark. It's likely that these losing investors were corporations, institutions and individuals in Japan. Because of the home country bias that we referred to earlier, in which investors in a given country tend to overweight the securities of issuers in that country, and because of regulations and traditions, Japanese investors held a great deal more in Japanese equities than they would have if they had held the EAFE benchmark.

was no good. That EAFE was a poor benchmark for international equities over the last few decades is pretty obvious, given the lack of float adjustment and the fact that so many managers beat it in the years since 1990. On May 31, 2002, EAFE began to be fully float-adjusted; as of December 2003, Japan constituted only 21% of EAFE. Now that Japan has a much lower weight in EAFE, managers will have less to gain, in terms of risk control, from underweighting Japan and will have to decide to over- or underweight that country based on its investment merits. Active risk will no longer give the illusion of a large payoff. Managers will have to earn their alphas in international equities, and they will have to "take a penalty" for the active risk to which they expose their investors in the pursuit of that alpha. As in any other asset class, it's all about the pursuit of information ratio—the amount of alpha earned per unit of active risk taken.

IS THE INTERNATIONAL EQUITY MARKET INEFFICIENT?

The supposedly greater inefficiency of international equity markets is the reason usually given for turning up the risk dial in those markets. Let's examine this proposition.

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25 Laurence B. Siegel, *Benchmarks and Investment Management*, Association for Investment Management and Research, Charlottesville, VA, 2003, p. 99.

It's a reasonable guess that, as we noted earlier, there is less transparency, less professional security analysis and less institutional holding of assets than in the US. All these conditions point to at least a slightly more inefficient market, a higher likelihood that in any given case the price of an asset might differ from its fair value.

But we shouldn't underestimate the level of sophistication in foreign markets. Non-US nationals are just as capable as anyone else of applying

and British investment management firms, if not locals, have adequate if not ideal coverage of every market economy in the world. A security does not have to be analyzed in the country in which it is issued for the price to be roughly fair.

And information is not perfect, nor security analysis all that reliable, in the US either—witness Enron, WorldCom and many of the technology and telecom stock "blow-ups" of the last few years.

The international equity market is just another asset class, just another benchmark to beat—and you should use the same rules to beat it (as exposited by Grinold and Kahn) that you do anywhere.

the principles of security analysis and portfolio management that are taught globally in business schools, and that are honed through lifetimes of experience. It's just that, at least on the surface, the institutional setting is not quite as highly developed outside the US, even in "developed" markets.

Extreme levels of inefficiency would be relevant to the active-risk decision. If no one analyzed securities in a given market, price would be unrelated to value. One could then earn a high alpha by selecting a few of the most undervalued securities and waiting for the market to recognize their true worth.

But such an extreme condition doesn't begin to apply, at least not in any international market that has a significant weight in global benchmarks. Absent the institutional structure that some believe makes the US market so efficient, other actors must step in to cause prices to converge to fair value, and they do. Brokers, private investors and issuers (companies) all contribute to the price-discovery process, even if buy-side security analysts are entirely absent from a given market. And there is no market in the world that buy-side analysts have completely overlooked. At the very least, US

Our conclusion is basically that the international equity market is just another asset class, just another benchmark to beat—and you should use the same rules to beat it (as exposited by Grinold and Kahn) that you do anywhere. You should separate policy and active risk, and you should be several times more averse to active than to policy risk.

The international equity market is not inefficient, in comparison to the US, by enough of a margin to be really relevant to the active-risk decision.

And, as we've already cautioned, the historical outperformance of active managers in international equities is time-specific and arises from a risk-control bet against Japan, rather than the true production of alpha. It's not a reason to take on extra helpings of active risk.

We now turn to the question of how to allocate active risk when investing in international markets. Specifically, we argue that by disaggregating the investment decision into its component dimensions—security selection, country allocation and currency management—the investor gains the ability to take as much or as little active risk in each dimension as desired.

The new international framework: Making bets in three independent dimensions

BUYING AN INTERNATIONAL SECURITY INVOLVES MULTIPLE DECISIONS

Now that we've restated the case for international equities and noted that active management presents the same risks in that asset class that it does anywhere, we turn to the multiple decisions that underlie international investing. Every international investor makes at least three decisions—either implicitly or explicitly—when he or she buys an international security:

- A security selection decision.

- A country allocation decision.

- A currency management decision.[26]

Let's say that the investor starts with an EAFE index fund, and then buys some Toyota Motor Corporation stock by proportionately reducing

- To increase the weight of Japanese equities relative to their weight in EAFE.

- To increase the weight of the Japanese yen relative to its weight in EAFE.

Now, let's think about why an investor might buy Toyota. Perhaps the investor believes that Toyota stands to win in competition with Ford, General Motors and Volkswagen in the worldwide automotive market. That is a good reason to buy Toyota, and it's the kind of logic that drives most security selection decisions. But it doesn't imply that one is bullish on either Japanese equities or the yen. In fact, one reason to be bullish on Toyota is that the yen might decline, making that company's exports more competitive.

In fact, stock selection and country allocation decisions rely on substantially different kinds of information. Stock selection focuses on company-specific characteristics that suggest that one stock will outperform another. Country allocation focuses

By disaggregating the stock, country and currency decisions, the investor has much more explicit control over the degree he or she wishes to take on active risk in each of these dimensions.

all other positions. (Our example is conveyed in "benchmark-relative" terms, since active decisions are made with the hope of adding alpha relative to a specified benchmark. One could also portray the example in absolute-return terms.) The decision to buy Toyota will have three effects:

- To increase the weight of Toyota relative to other stocks in the yen–denominated Japanese equity benchmark.

on the common drivers of all stocks within a given market—the tide that raises and lowers all boats.

And currency management involves yet a third kind of information: monetary policy, trade and capital flows, and price momentum.

It is also key to note that by disaggregating the stock, country and currency decisions, the investor has much more explicit control over the degree he

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26 A sector/industry decision is also relevant. That said, unlike country and currency decisions, which can be implemented through country index futures and currency forwards, there is currently no good way to independently make an international sector/industry bet. Should a financial instrument allowing sector/industry decisions be developed, then investors would want to add that dimension to their decision-making process.

or she wishes to take on active risk in each of these dimensions. For example, recalling Grinold and Kahn's (2000) Fundamental Law of Active Management,[27] an investor might prefer to take on more active risk through stock selection than in the other two dimensions given the superior breadth involved. Conversely, an investor who has a high degree of confidence in interpreting the range of economic data affecting overall country markets and currencies may prefer to concentrate his or her bets in these two dimensions. Regardless of the specific bets one chooses to make, to disaggregate the stock, country and currency decisions presents the investor with a degree of flexibility (and with it opportunity) that is not available to an investor holding a portfolio solely based on stock decisions.

STOCK SELECTION VERSUS COUNTRY SELECTION

It's obvious that a "good" stock could be located in a "bad" country, and vice versa. Let's stick with Toyota for a moment. Exhibit 5 compares the total returns on Toyota stock, expressed in US dollars, to the MSCI Japan index, also in US dollars. Toyota had strong returns while the country benchmark was dramatically underperforming. This is far from an isolated example: In any rising country market, there are many stocks that decline, and in a falling country market, there are many stocks that rise.

To avoid holding good companies in bad countries (or bad companies in good countries where one wants to bet on the country market for macroeconomic reasons but not on "loser" stocks), it makes sense to separate the stock selection and country selection decisions. This separation can also be viewed as helpful to portfolio efficiency in a more quantitative context, which we discuss in detail later—that of the *transfer coefficient* (the amount of information in the investment manager's insights that is captured by the portfolio). If one has independent information on stock and country returns, then tying the stock and country decisions together—by allowing stock choices to dictate country weights—eliminates the benefit that could be obtained by using both streams of information independently.

There are thousands of stocks in the international markets, and an active manager can have a view on each of them. (Quantitative methods make it easier to cover such a large number of securities while having a value-added view on most or all of them.) By making a large number of independent stock bets, rather than by just betting on countries—of which there are only 23 developed markets, and 50 if one includes emerging markets—one maximizes breadth and thus the expected alpha of the portfolio.

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27 In a formal context, if one has real skill at active management, then one's active return per unit of active risk, or information ratio (IR), will be proportional to the square root of the number of independent "bets" that one can make using that information. Grinold and Kahn (2000) refer to this principle as the Fundamental Law of Active Management and express it mathematically as follows:

$$E\,(IR_{mgr}) = IC_{mgr} \cdot \sqrt{BR} \qquad (2)$$

where

$E(IR_{mgr})$ is the expected information ratio for a given manager; that is, the manager's expected alpha divided by his or her active risk or tracking error;

IC_{mgr} is the manager's information coefficient, or correlation of the manager's security-specific expected alphas with subsequent realizations (a measure of the manager's raw ability to make forecasts that differ from the consensus forecast); and

BR is breadth, "the number of independent forecasts of exceptional return we make per year." Grinold and Kahn (2000), p. 148.

Exhibit 5

Exhibit 5

COMPARATIVE PERFORMANCE OF TOYOTA MOTOR CORPORATION
AND JAPAN INDEX (IN US DOLLARS, UNHEDGED), MAY 1993–OCTOBER 2003

Toyota Motor Corp total returns in US dollars
MSCI Japan total return index in US dollars

YEARS

Source: Yahoo! finance (Toyota), MSCI (MSCI Japan).

COUNTRY SELECTION VERSUS CURRENCY SELECTION

The tendency of stocks in a given country and the currency of that country to move opposite one another is a well-known phenomenon. Exhibit 6 gives a historical example of this principle, indicating that when monetary policy was accommodative (low interest rates), stock markets were strong but currency markets were weak. When monetary policy was restrictive (high interest rates), stocks fell and currencies rallied. This pattern is widely thought to occur because low interest rates promote economic growth in a country (which helps stocks), but cause funds to flow out of the country's currency because fixed income and cash investors want to earn the highest interest rate available. Also, fixed-income investors may be concerned about unexpected inflation when a country has an "easy" monetary policy; unexpected inflation, of course, hurts bond prices.

Monetary policy is only the most obvious example of why one should separate country from currency decisions. There are many other scenarios under which one would have different expectations for a country's equity market and for its currency. As we've argued, country and currency decisions require a different information stream and different processing skills. And the argument we've made for separating the country and currency decision, naturally, also holds for separating the *stock* and currency decision.

THREE MYTHS OF CURRENCY MANAGEMENT

An international manager who proposes to implement the above framework will probably behave as follows:

- Start with a US dollar-denominated benchmark such as EAFE.

- Make active stock bets (by over- or underweighting stocks relative to the benchmark).

Exhibit 6

EQUITY AND CURRENCY RETURNS
IN VARIOUS MONETARY REGIMES

	Excess equity return (%)	Currency return (%)
Loose monetary policy	12.8	−1.4
Tight monetary policy	−10.4	3.1
Full period	3.4	0.1

Source: Bridgewater Associates. Average of equity and currency markets in G7 countries plus Australia from January 1970 to December 1997.

- Unwind any unintentional country or currency bets caused by the stock decisions. This will typically be accomplished using futures, exchange-traded funds (ETFs), or swaps.

- Make *intentional* country and currency bets, using the same kinds of instruments used to unwind the unintended bets.

These last two activities will have the look and feel of a country tactical asset allocation (TAA) overlay program and a currency overlay program. In our experience, managers encounter resistance when asked to consider such programs, especially with regard to the currency overlay.

This resistance arises from what we call the "three myths of currency management." Briefly stated, these myths are that:

- Currencies take care of themselves in the long run.

- The impact of currency fluctuations is insignificant in portfolios that have small or moderate allocations to international markets.

- Currencies are a zero-sum game, so it's a losing proposition to play the game.

Let's examine each of these in turn.

Currencies take care of themselves in the long run. The basic economic principle called the Law of One Price dictates that the price of a good in two locations cannot differ by more than the cost of transporting the good from one location to another. Violations of this law are prevented by arbitrageurs, who buy the good in the cheaper location and sell it in the expensive one.

The Law of One Price has been applied to currency markets to suggest that these markets are subject to a condition called Purchasing Power Parity (PPP).

PPP states that the exchange rate between two currencies, say, the dollar and the yen, adjusts so that a dollar buys the same basket of consumer goods in the US that an equivalent amount of yen, converted from dollars at market rates, buys in Japan. Arbitrage across markets for real economic goods and services are cited as the enforcement mechanism for PPP.

If PPP holds, then currencies quickly tend toward fair value and there is little or nothing to be gained from currency management.

The problem with PPP is that most economic goods cannot be transported at low cost. Water, electricity, and fresh foods are among the goods that are the most difficult or costly to transport, relative to their value. Services are even less amenable to international arbitrage: one wants one's doctor to be right here in town, not in Mexico or China. Thus the conditions for arbitrage of goods and services that could theoretically cause PPP to hold accurately are not present, and we should not expect PPP to hold except as a loose relationship.

Exhibit 7 documents variations from PPP experienced by several major currencies. As you can see, deviations from PPP have been surprisingly large and persistent. No wonder that Americans found shopping in Europe to be a gratifying experience around 1970! And we should have not been surprised that Japanese shoppers found the United States enticing in the late 1980s and early 1990s. There is simply not enough cross-border trade in consumer goods (or transportation costs are too high) for these differences to be arbitraged away.

Nevertheless, there is evidence that, over the very long run, PPP holds to within an order of approximation: the loose relationship posited above is actually observed.[28] Simple logic dictates

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28 For evidence that exchange rates trend slowly toward purchasing power parity, see, for example, Kenneth Rogoff, "The Purchasing Power Parity Puzzle," *Journal of Economic Literature*, June 1996, vol. 34, no. 2, pp. 647–668.

Exhibit 7
DEVIATIONS FROM PURCHASING POWER PARITY
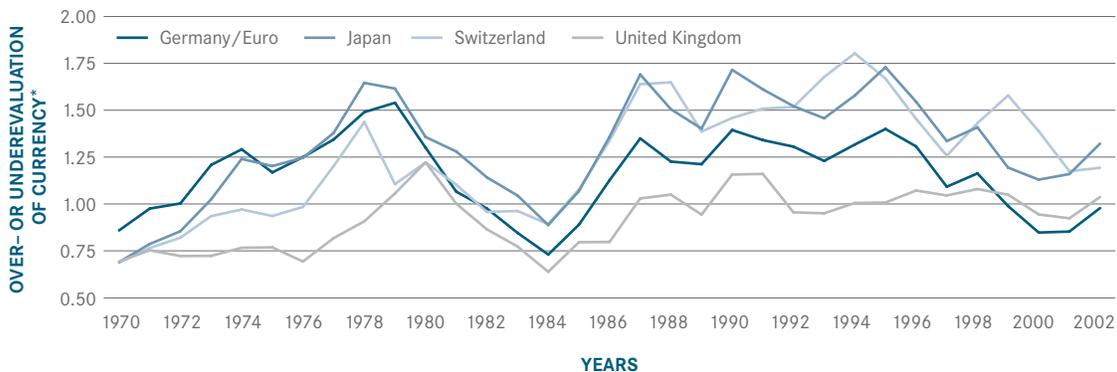
*Relative to US dollar (market exchange rate/PPP exchange rate.
Source: Sauder School of Business, University of British Columbia, OECD.

that gross violations of PPP cannot hold for long; while the US dollar price of a Big Mac (the consumer good used by *The Economist* magazine to test PPP because it is said to be a paragon of global uniformity) may vary in a three- or even five-to-one range between expensive locales and cheap ones, it cannot vary in, say, a 10,000-to-one range. There is no place, and logic dictates that there cannot be a place, where a Big Mac costs one cent or a hundred dollars. The *idea* behind PPP is not wrong.

But as Exhibit 7 documents, the long run, in which PPP is said to hold and in which currency fluctuations "work themselves out" by converging to fair value, can be very, very long, measured in decades and far beyond the planning horizon or even the career horizon of a plan sponsor. In any time frame—quarters, years or several-year periods—that matters to the plan sponsor in practice, currency fluctuations do not "work themselves out," and currency management is needed to address the risk caused by these fluctuations.

Currency impact is insignificant for small allocations to international. No, it's not. Currency fluctuations can be large, and they have the same impact on total portfolio returns as security price fluctuations.

In the first few years of its life, the euro fell 30% relative to the US dollar. The weight of the euro zone in EAFE is 35%, so that an unhedged portfolio indexed or benchmarked to EAFE lost $0.30 \times 0.35 = 10.5\%$ in US dollar terms due to currency depreciation alone. If the typical plan sponsor's allocation to international equities is 15% of the total fund (which is 25% of the equity allocation in a "60/40" equity/fixed income mix), the impact of the euro's decline is $0.105 \times 0.15 = 1.6\%$. A 1.6% "hit" to fund performance is dramatically large, whether one compares it to the expected return on assets, the spread between high and low performing funds, the cash flows into a typical pension or endowed-institution portfolio, or the cash flows out of it. There is nothing insignificant about it.

The euro exposure in an EAFE portfolio should have been at least partially hedged. Even a passive currency hedge provides protection against such moves in currencies. Active management might have been able to add further value.

Currencies are a zero-sum game. Like any asset class, currencies are indeed a zero-sum game relative to an appropriately specified benchmark. However, in contrast to equity and other asset

markets where just about all participants seek return and shun risk, currency markets are heavily populated by participants who have other motives:

In such an environment, it seems outright imprudent to invest passively. If ever there were an area where active management is justified by the fundamentals, it's currency.

The active international manager, then, must transform the information regarding individual securities, countries and currencies into alpha, or outperformance relative to the asset-class benchmark. How can he or she do this more efficiently?

- *Central banks.* Central banks typically act to defend currencies, which means buying currencies that are declining in value, or that the central bank fears will decline. While there's only a finite amount of money they can spend in such activities, they expect to lose money. Central banking activity is one reason why price momentum may be an effective predictor of currency returns.

- *Corporate hedgers.* Many corporations use currency forward contracts to lock in the prices of goods and services they know they will need to purchase or sell. They are willing to pay an insurance premium, or risk premium, in exchange for the knowledge that they will be able to exchange currency at a rate known in advance.

- *Tourists.* Tourists hold surprisingly large currency balances. Their motivations are like those of corporate hedgers—they are trying to lock in the prices of goods they intend to buy.

- *International equity managers.* International equity managers trade currencies to effect their positions. Most do so without information on the currencies.

LET'S NOT THROW AWAY INFORMATION: MAXIMIZING THE TRANSFER COEFFICIENT

The active international manager, then, must transform the information regarding individual securities, countries and currencies into alpha, or outperformance relative to the asset-class benchmark. How can he or she do this more efficiently?

Recall, from earlier (see footnote 29), Grinold and Kahn's equation (2). This equation is a general framework for estimating the expected information ratio of a portfolio, but it holds only if there are no artificial constraints, such as the long-only constraint, handicapping the efficiency of the portfolio.

The effectiveness of a portfolio in turning information into alpha is called the transfer coefficient, TC. Formally, as described by Clarke, de Silva, and Thorley, it is the cross-sectional correlation, across the securities in the portfolio, between the forecasted alpha of each security and the actual weight of that security in the portfolio.[29]

In the absence of any portfolio constraints, all of the information in the alpha forecasts is incorporated in the portfolio holdings weights, and $TC = 1$. As one adds constraints, TC drops sharply. Clarke

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29 Roger Clarke, Harindra de Silva, and Steven Thorley, "Portfolio Constraints and the Fundamental Law of Active Management," *Financial Analysts Journal*, September/October 2002. The formal derivation of TC is in the article, which is an elaboration of a point in Richard C. Grinold, and Ronald N. Kahn, "The Surprisingly Large Impact of the Long-Only Constraint," *Investment Insights*, Barclays Global Investors, San Francisco, May 2000 (vol. 3, no. 2).

et al. use simulation to test the effect on *TC* of various portfolio constraints and combinations of constraints. Their results range from 0.31 (multiple constraints) to 0.78 (long-only with a tracking error of 2%); a long-only portfolio with a tracking error of 5%—typical of traditional, medium-risk active managers—has a *TC* of only 0.58.

When one adopts a portfolio construction process that ties together naturally separate decisions, such as the stock, country and currency decisions in an international equity portfolio, the effect on *TC* is similar to that caused by the constraints that Clarke et al. tested. In the traditional or tied-together international equity portfolio, not only are the stocks constrained to be long-only, the countries are constrained (1) to be long-only and (2) to have the same country weights as the stocks (whatever those weights happen to be). Yet another, similar constraint comes from currency weights being set to whatever exposures the stocks happen to deliver. While we don't have simulation results for a traditional international equity portfolio, logic suggests that *TC* is quite low.

TC has a direct, multiplicative impact on alpha (and it always hurts, never helps—it is less than or equal to one by definition). Clarke et al. revise equation (2)—Grinold and Kahn's Fundamental Law of Active Management—to read as follows:

$$E(IR_{mgr}) = TC_{mgr} \cdot IC_{mgr} \cdot \sqrt{BR} \qquad (3)$$

where TC_{mgr} is the transfer coefficient for a given manager, and other variables are as defined earlier.

To the extent it's realistic to do so, investors want *TC* to be as high as possible. They don't want to throw away information. In other words, they want to avoid constraints that hurt the portfolio's efficiency. Using the new framework for international active equity management that we've presented, several damaging constraints are removed (although some sort of less binding budget constraint may remain) and portfolio efficiency, as measured by the expected information ratio, should be greatly improved.

Conclusion

International equity markets are like most other markets: they're efficient enough to frustrate most active managers. US investors in international equities should invest like US investors in domestic equities. They should first decide how much policy or beta risk to take. Then they should decide whether or not to take active risk. If the decision is to take active risk, it should be done moderately and with careful attention to the tradeoff between active return (which is not guaranteed, no matter how smart the manager is) and active risk (the delivery of which is guaranteed).

Most active international equity portfolios not only take too much active risk, they do it *inefficiently*. They get too little return for the risk taken. That is because active decisions are typically made at the stock-selection level, with the result that country and currency weights are the accidental by-product of the stock-selection decisions and ignore any information one might have about the countries and the currencies. When you tie together decisions that are naturally separate, you lose a lot of efficiency.

So let's "untie" the decisions. The stock-selection, country and currency holdings should be managed separately. Remember that successful active management (of any kind of portfolio) is concerned with maximizing the information ratio, or expected alpha *per unit of active risk*. When one decides the stock, country and currency weights independently of one another, the portfolio uses a much greater proportion of information gathered, and thus has a better chance of maintaining a superior information ratio over the long run.

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