
INTERNATIONAL ASSET AND CURRENCY ALLOCATION

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INTRODUCTION AND OVERVIEW

The focus of this chapter is on the long run international asset allocation issues that confront U.S. investors. These are:

- (1) International assets versus domestic assets.
- (2) International equities versus international fixed income securities.
- (3) Foreign currency exposure versus foreign asset exposure.

We will show that, when an investor considers the full opportunity set of all the world's capital markets, both equities and fixed income, the risk reward preference as revealed by domestic asset allocation choices should also be reflected in international allocation choices. In other words, an investor with a balanced domestic portfolio is likely also to prefer a balanced international portfolio.

It will also be shown that, in international investment, it is appropri-

ate to separate long run asset allocation decisions from long run currency allocation decisions. This suggests that investors will enhance their risk return opportunity set by making separately two forms of international allocation decisions, one concerning asset exposure and one concerning currency exposure. When these allocations differ, the use of continuously hedged international portfolios is implied.

We will use the results of the last 16 years to illustrate the effects of these choices. While the returns for various sub-periods differ and future returns will inevitably be different from past results, the arguments presented are quite general and should be expected to hold into the future.

INTERNATIONAL CAPITAL MARKET RETURNS AND RISKS

The world's investable capital markets excluding cash and real estate comprise some \$10 trillion as of December 1985. This forms the universe for an institutional investor (See Exhibit 1). The world fixed income markets total some \$6 trillion, while the world equity markets total \$4 trillion. The U.S. markets comprise less than half the total of world markets in both the case of fixed income and equities.

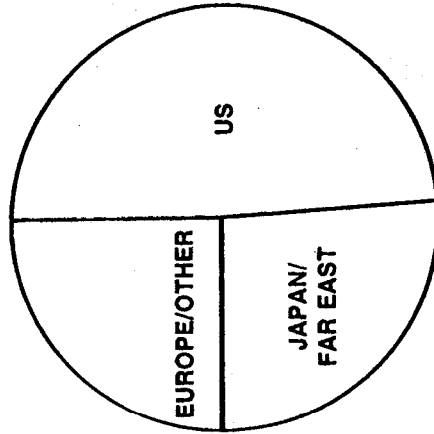
The non-U.S. markets have offered significant opportunities for U.S. investors over the last 16 years. These opportunities can be seen in the form of return enhancement and risk reduction.

Return Enhancement:

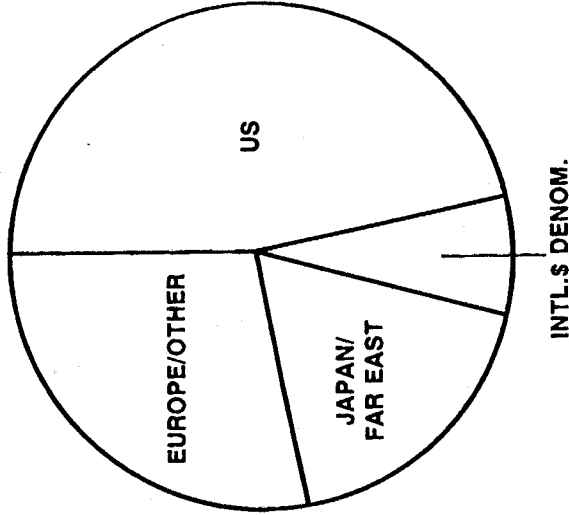
Exhibits 2 and 3 show the returns in U.S. dollars from investing in international equity and fixed income markets over the last 16 years. Both for equities and fixed income securities, non-U.S. markets have yielded significantly higher returns than their U.S. equivalents. A market weighted average of all non-U.S. equity markets returned 13.4% p.a. compared with 8.7% p.a. from the U.S. equity market. Similarly non-U.S. fixed income markets returned 11.8% compared to the U.S. fixed income return of 9.4%.

EXHIBIT 1 WORLD CAPITAL MARKETS

EQUITIES (\$4 TRILLION)

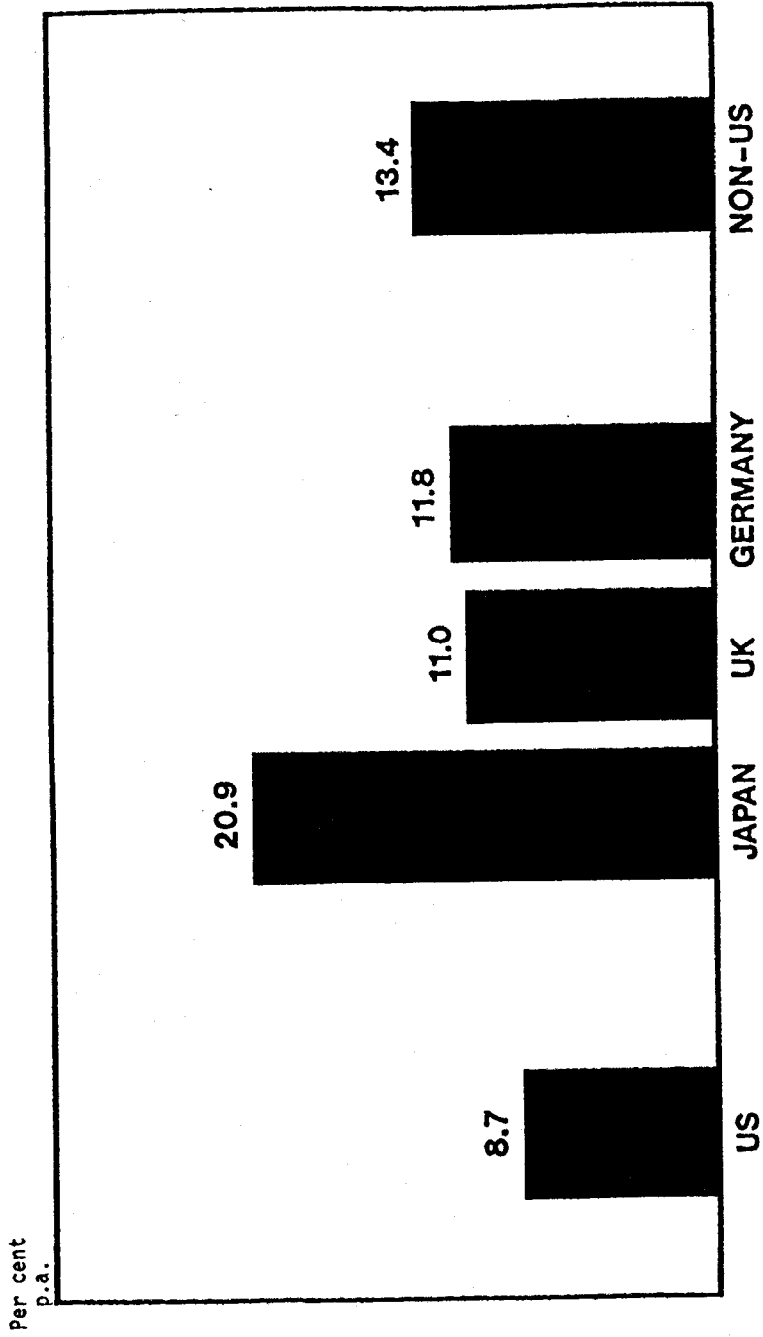


BONDS (\$6 TRILLION)

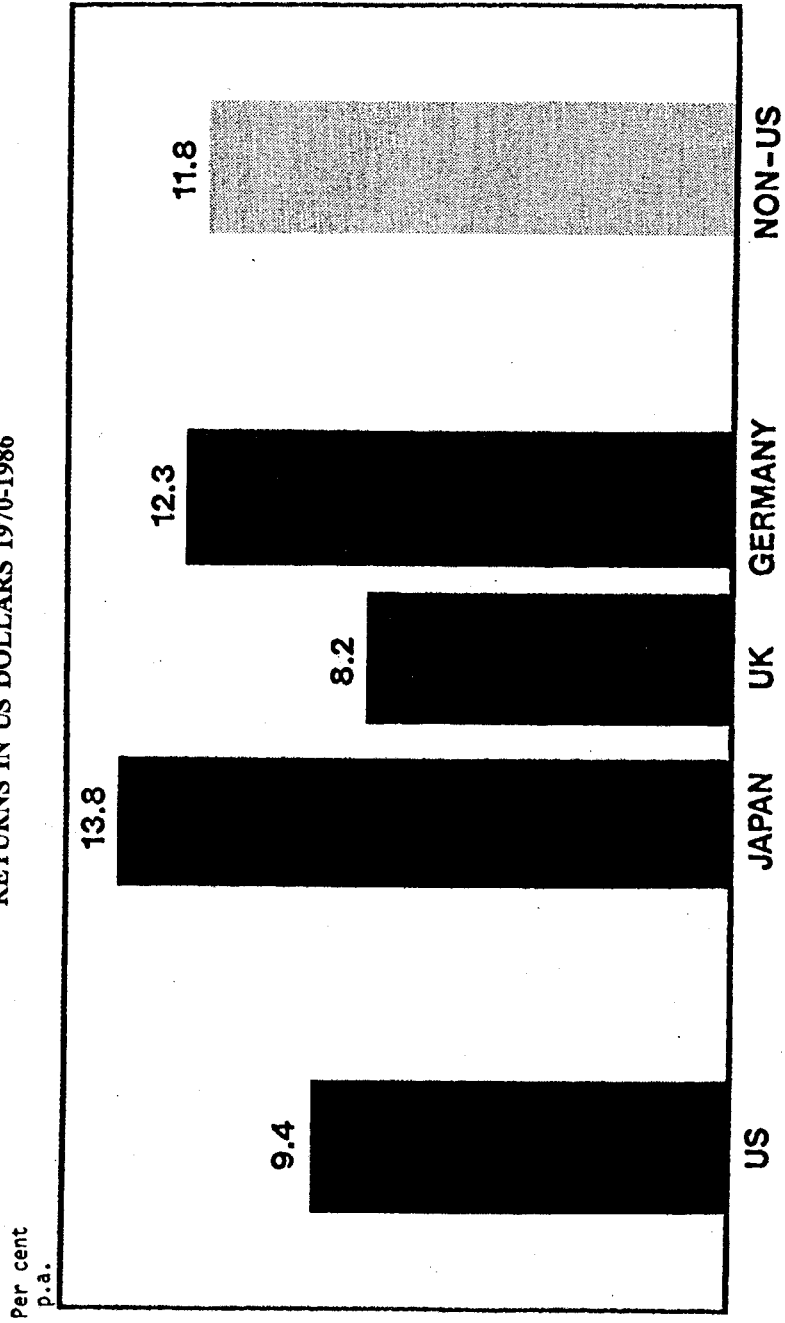


Sources: Morgan Stanley Capital International
Salomon Brothers Inc

**EXHIBIT 2 INTERNATIONAL EQUITY MARKET
RETURNS IN US DOLLARS 1970-1986**



**EXHIBIT 3 INTERNATIONAL FIXED INCOME MARKET
RETURNS IN US DOLLARS 1970-1986**



Risk Reduction:

While the non-U.S. capital markets offered a U.S. investor significant return opportunities, they did so without significantly increasing risk and in fact reduced total portfolio risk to the U.S. investor. Exhibits 4 and 5 show the annualized standard deviation of dollar return from the international markets over the period 1970-1986. While the individual international equity and fixed income markets are significantly more risky than their U.S. equivalent, a diversified portfolio of non-U.S. equities or non-U.S. fixed income securities is not significantly more risky than the equivalent domestic market. For example, a market weighted average of non-U.S. equity markets had an annual standard deviation of dollar return of 16.2% p.a., compared with 15.7% p.a. for the U.S. equity market.

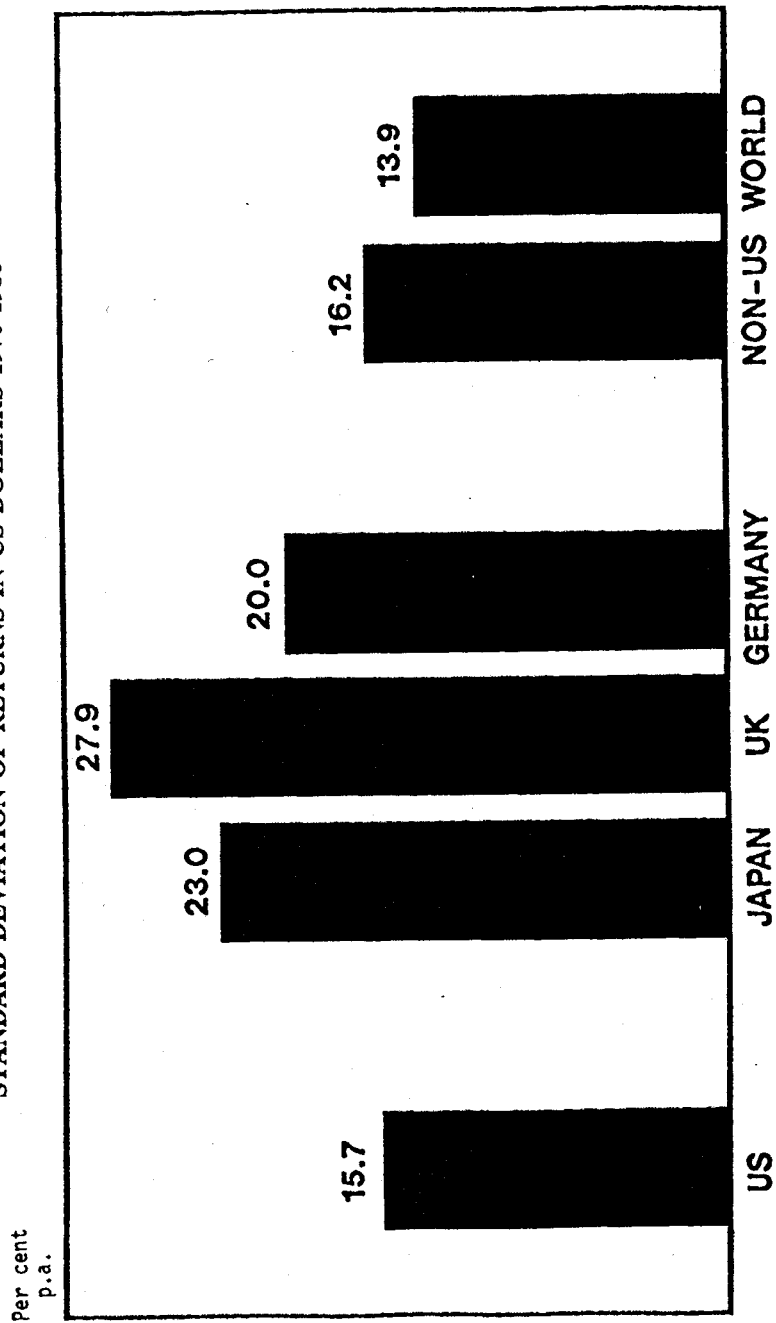
This diversification *between* international markets is significant for both equities and fixed income securities. It is important to bear in mind that international investment for any investor, U.S., or otherwise, always offers two tiers of diversification — firstly diversification out of the domestic market and secondly diversification across the many markets outside the domestic market.

In assessing the risk of international investment the relevant measure is not total risk of the international markets, but their contribution to the risk of the investor's overall portfolio. From this perspective international investment offers risk *reduction* in addition to the return opportunities described above. Both for international equities and fixed income securities a capitalization weighted world portfolio of U.S. and non-U.S. markets is less risky than the U.S. market alone. This shows that diversification into international markets in fact reduces a U.S. investor's total portfolio risk.

INTERNATIONAL ASSET ALLOCATION

Exhibit 6 illustrates the returns and risks to various asset allocation decisions over the period 1970-1986. The line joining USS and NUSS shows that returns and risks to a portfolio ranging from 100% U.S.

EXHIBIT 4 INTERNATIONAL EQUITY MARKETS
STANDARD DEVIATION OF RETURNS IN US DOLLARS 1970-1986



**EXHIBIT 5 INTERNATIONAL FIXED INCOME MARKETS
STANDARD DEVIATION OF RETURNS IN US DOLLARS 1970-1986**

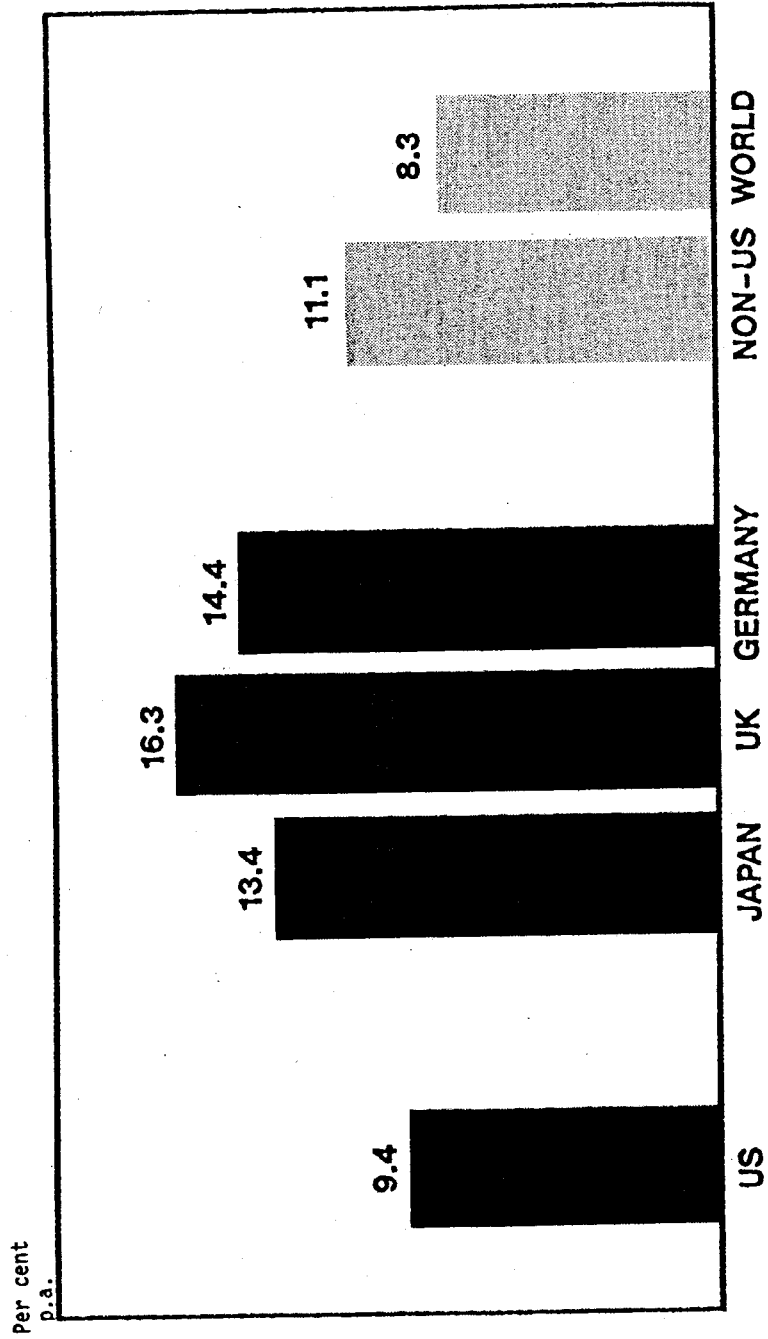
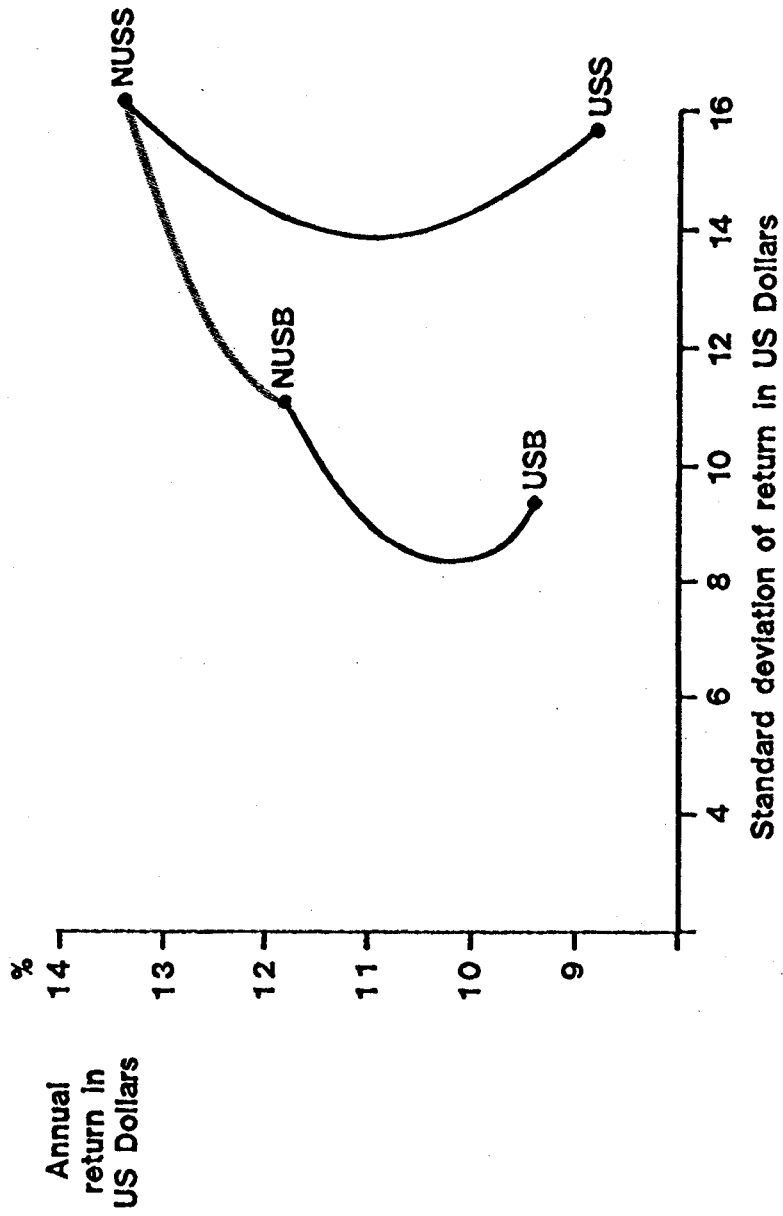


EXHIBIT 6 INTERNATIONAL EQUITY AND BOND MARKETS
RETURNS AND RISK 1970-1986



equities up to 100% non-U.S. equities. The line USB, NUSB shows portfolios ranging from 100% U.S. fixed income to 100% non-U.S. fixed income. The line NUSB, NUSS shows all combinations of international fixed income securities and international equities.

Exhibit 6 shows that not only do international equities and fixed income securities add value when compared with their domestic counterparts, but that they offer diversification among themselves, as illustrated by the opportunity sets offered by the line NUSB, NUSS. This is the third tier of international diversification, i.e. across international equity and fixed income.

From an asset allocation perspective it is appropriate to consider the full spectrum of all international assets simultaneously, when identifying an investor's portfolio risk/reward tradeoff. The frontier USB to NUSS represents the best combinations of allocations available. It is notable that this frontier everywhere dominates the USS, NUSS line. In other words, the more traditional domestic/international allocation question is more appropriately addressed in the context of simultaneous allocation across all four asset classes — U.S. equities, U.S. fixed income, international equities and international fixed income securities.

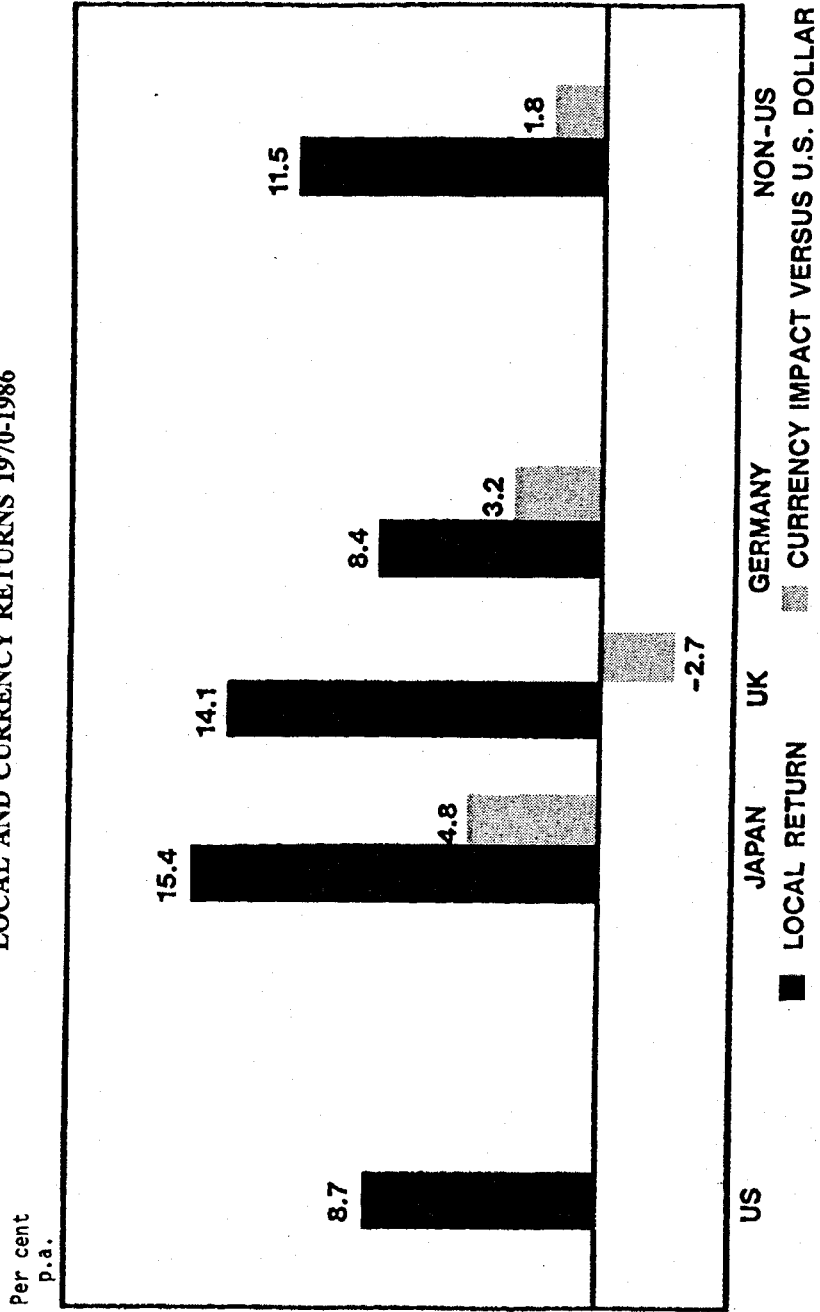
SEPARATION OF ASSETS AND CURRENCIES

Returns to a U.S. investor in international markets derive from two separate sources of return — local asset return and currency appreciation (depreciation) versus the U.S. dollar. The local and currency returns to U.S. investment in international equities and fixed income securities are shown in Exhibits 7 and 8.

The contribution of currency return to total return has been unsystematic; for some markets it has been positive and others negative and for diversified portfolios or non-U.S. markets it has been small.

In contrast, however, the contribution of currencies to investment risk is significant and systematically positive. Exhibits 9 and 10 decompose the total risk (standard deviation of return) of interna-

**EXHIBIT 7 INTERNATIONAL EQUITY MARKETS
LOCAL AND CURRENCY RETURNS 1970-1986**



**EXHIBIT 8 INTERNATIONAL FIXED INCOME MARKETS
LOCAL AND CURRENCY RETURNS 1970-1986**

Per cent
p.a.

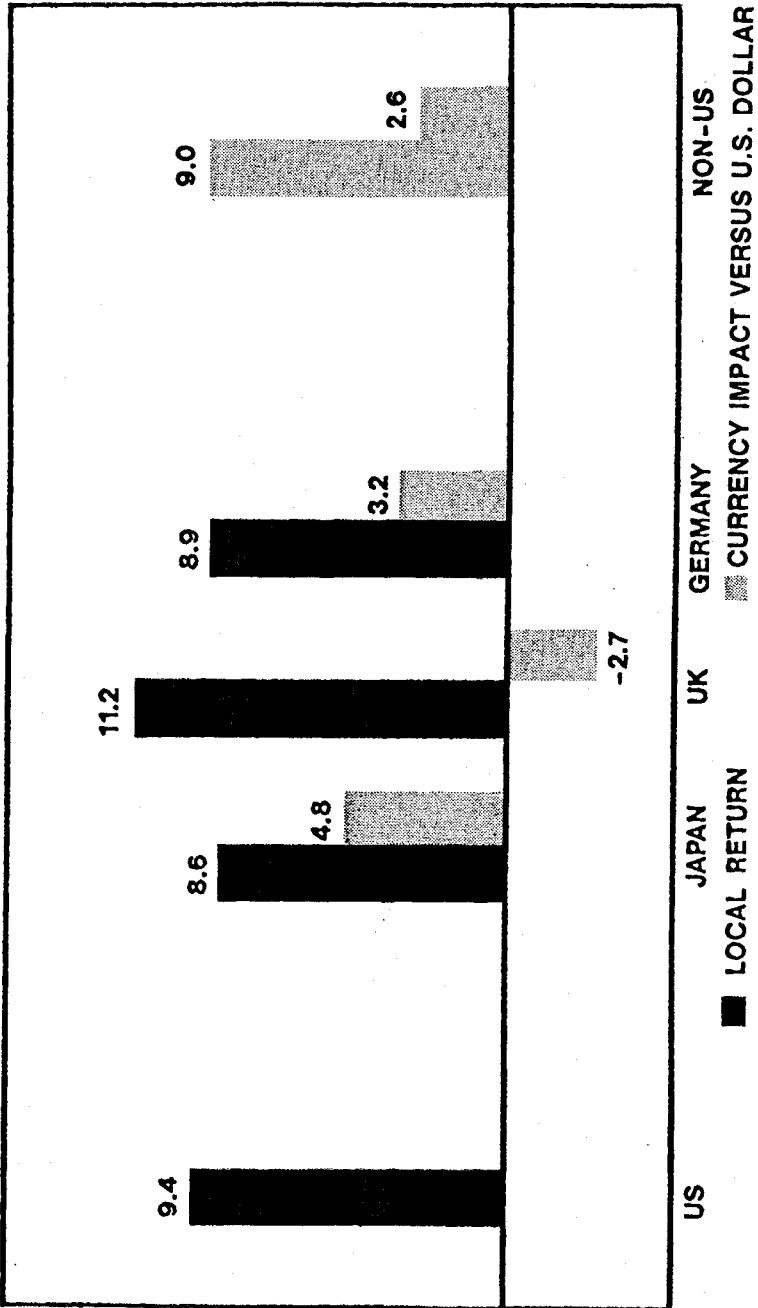
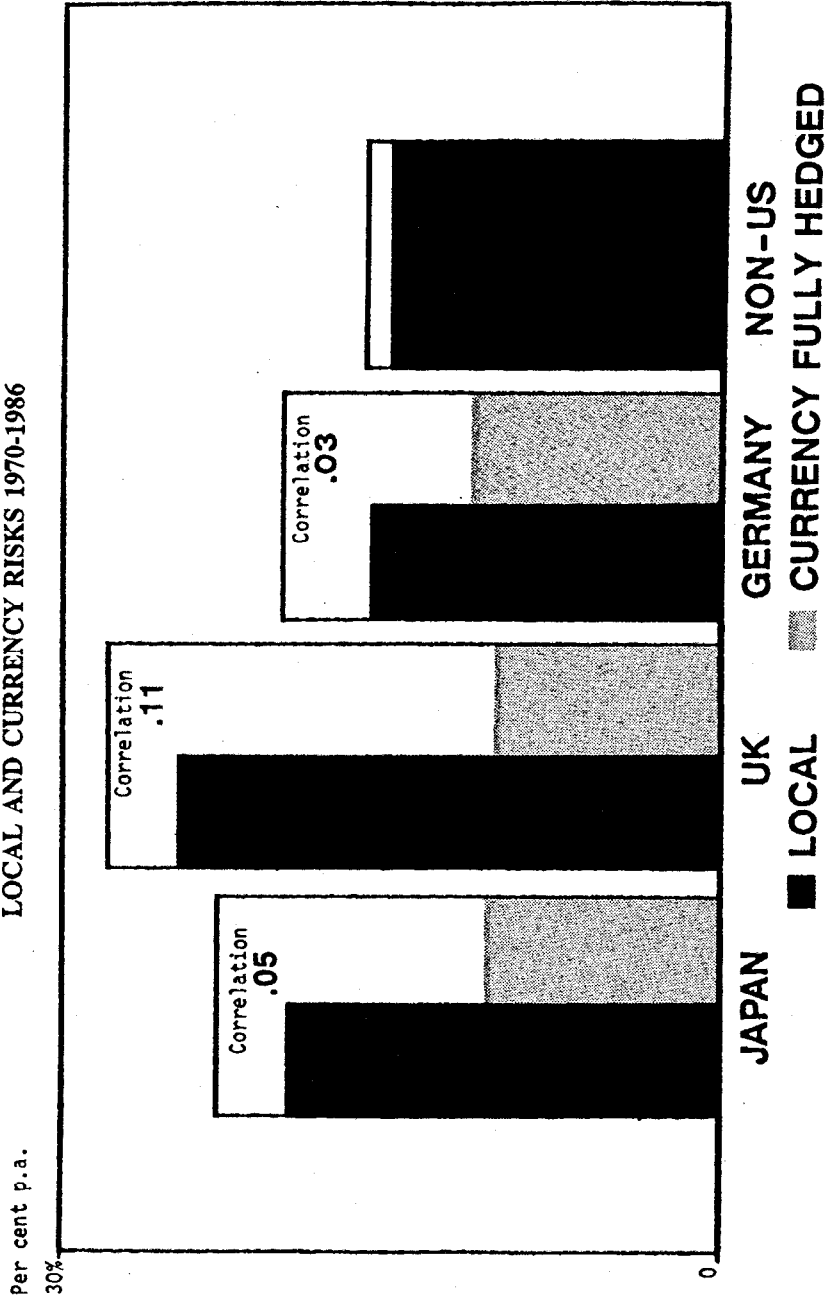
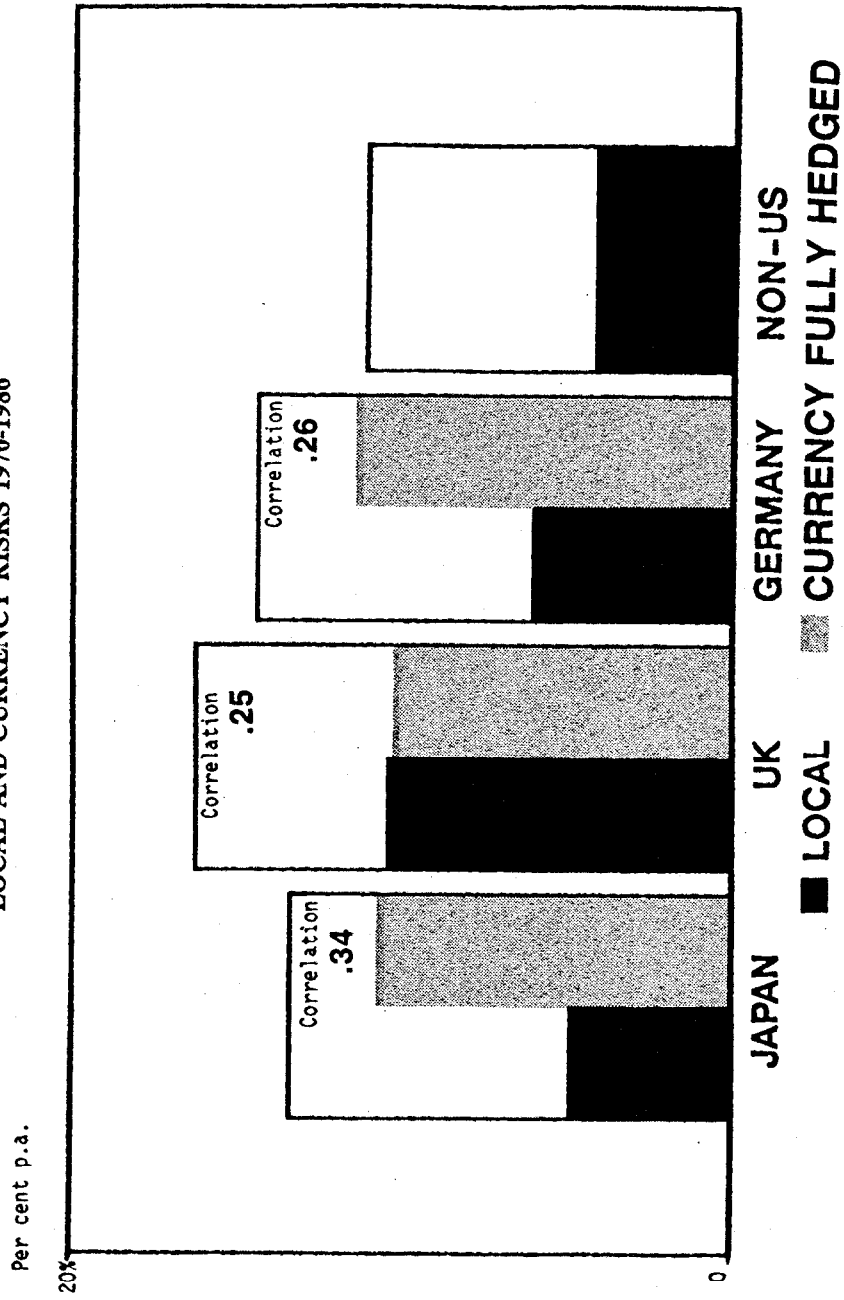


EXHIBIT 9 INTERNATIONAL EQUITY MARKETS
LOCAL AND CURRENCY RISKS 1970-1986



**EXHIBIT 10 INTERNATIONAL FIXED INCOME MARKETS
LOCAL AND CURRENCY RISKS 1970-1986**



tional equities and fixed income markets into risk from local return volatility and currency volatility versus the dollar. Total risk is given by the outlined bar, and component risks are given by the inside bars. It can be seen that currency risk is approximately equal to 50% of the local risk of equity markets and more than 100% of the risk of local fixed income markets. It is worth pointing out that the total risk as indicated by the outlined bar is not equal to the addition of the two component risks, because standard deviations are not additive.

International portfolios that only have exposure to local asset return can be constructed by hedging the currency exposure of the underlying asset back into the dollar. The standard deviation of return of such hedged portfolios of all non-U.S. markets is also given in Exhibits 9 and 10. These risks show that hedged portfolios with only exposures to international assets and not currencies, can avoid the significant currency risks associated with international investment.

The correlations of local asset return and currency appreciation are also shown in Exhibits 9 and 10. These correlations are consistently small especially for international equities. This observation, combined with the fact that currency risk is a significant source of investment risk in international portfolios suggests:

- (1) Currency risk should be managed and not simply assumed.
- (2) Currency exposure decisions should be made separately from asset exposure decisions.

INTERNATIONAL ASSET ALLOCATION AND CURRENCY EXPOSURE

When an investor considers international asset allocation decisions separately from currency exposure, the risk reward opportunity set is greatly enhanced. This is illustrated in Exhibit 11 for the period 1970-1986.

By allowing hedged portfolios of international equities (NUSSH) and international fixed income securities (NUSBH), as an allocation

EXHIBIT 11 INTERNATIONAL EQUITY AND BOND MARKETS
 RETURNS AND RISK 1970-1986

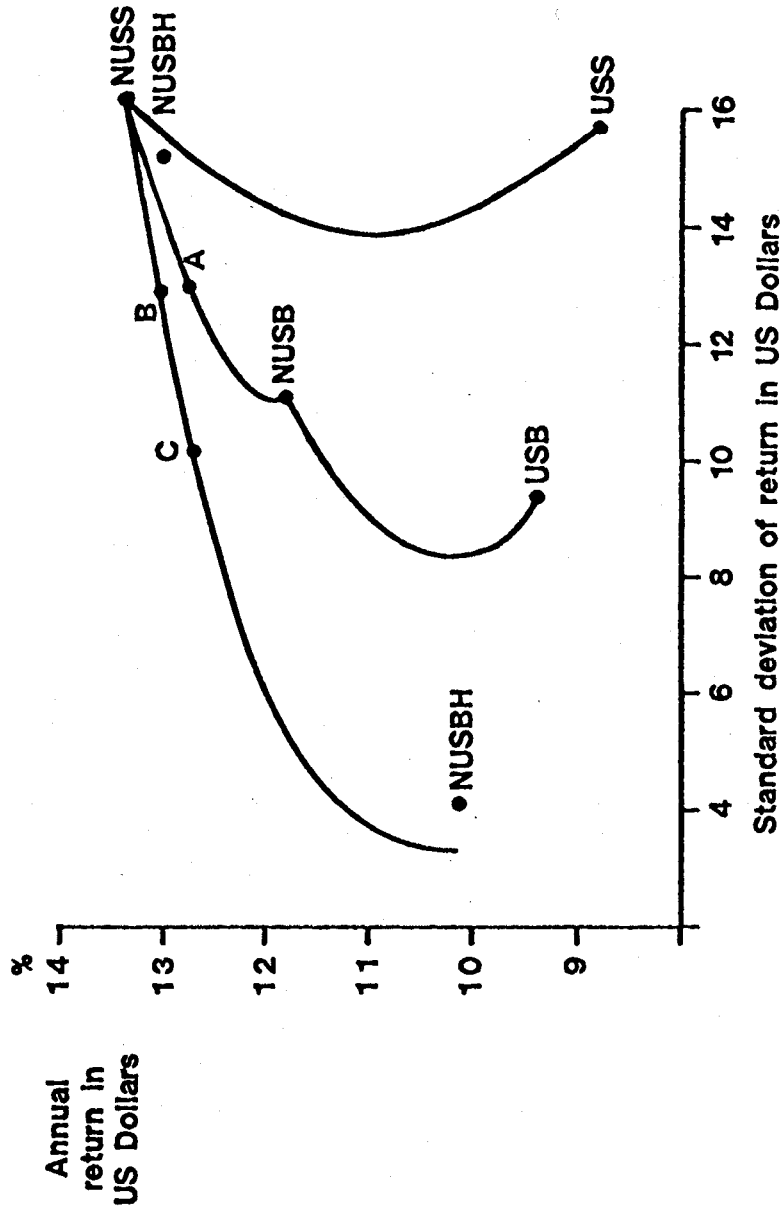


EXHIBIT 12 INTERNATIONAL EQUITY AND BOND MARKETS
RETURNS AND RISK 1970-1986
OPTIMAL ASSET AND CURRENCY ALLOCATION %

	A	B	C
International Equities Assets:	50	75	40
International Bonds Assets:	50	25	60
International Currencies:	100	75	60

to assets independent of currencies, into the investors opportunity set, the risk reward frontier is shifted up and to the left. This is illustrated by comparing portfolios A, B and C.

Portfolio A is a 50/50 portfolio of international equities and fixed income securities where currency exposure is equal to asset exposure.

Portfolio B has higher return but the same risk. This is achieved by a 75% allocation to international equity and 25% to international fixed income, but controlling risk by allowing a reduction in the currency exposure from 100% to 75% (see Exhibit 12). This reduction in currency exposure was achieved by continuously hedging 25% of the portfolio currency exposure back into the U.S. dollar.

Portfolio C has the same return as Portfolio A but less risk due to its 60% allocation to international fixed income securities and only 60% exposure to currencies.

SUMMARY

In considering international investment allocations a U.S. investor should address the question in the context of allocations across domestic equity, domestic fixed income, international equities and fixed income securities simultaneously. Domestic allocations may have inferences for international equity/fixed income allocations. In addition to the asset allocation question, the investor also faces a separate currency allocation decision. The identification of separate solutions to these questions greatly enhances the opportunity set of the U.S. investor.