
A Practitioner's View: The Importance of Separating Bonds and Currencies

Adrian F. Lee

The separation of bond markets and currencies is the approach used at J.P. Morgan Investment to build portfolios across the international fixed-income markets. Unless the bond decision and the currency decision are separated into two processes, clients will be provided with suboptimal portfolios.

RETURNS FROM BOND MARKETS AND CURRENCIES

Historical returns in U.S. dollars from international bond markets are shown in Figure 1. The returns over the last five years, through September 1985, indicate that international fixed-income investment outside the United States would have been a mistake, with lower returns in all but the Japanese bond market.

The previous five years provide quite a contrast. Non-dollar bonds would have been a very good investment decision over those five years. With the exception of the Canadian market, all markets were in excess of the U.S. market. Looking back still another five years, the non-U.S. markets outperformed the U.S. market, but not quite so dramatically. Over the total 15-year period a weighted average of all non-U.S. markets would have outperformed the U.S. market by an average of 200 basis points a year.

These returns are the results of two separate processes—bond movements and currency movements. Figure 2 shows local bond market performance separately from the currency movement versus the dollar. It is evident from Figure 2 that the underperformance of the non-U.S. markets over the last five or six years has been substantially owing to the negative currency impact. Currencies moved to hurt total return in U.S. dollars. Local market return was reasonable.

Looking at the previous period, 1975 through 1980, we see a very different picture. Good local market performance was enhanced by currency movements, with the exception of Canada and the United Kingdom. In the previous five years, 1970-74, on average currencies helped. So, it ap-

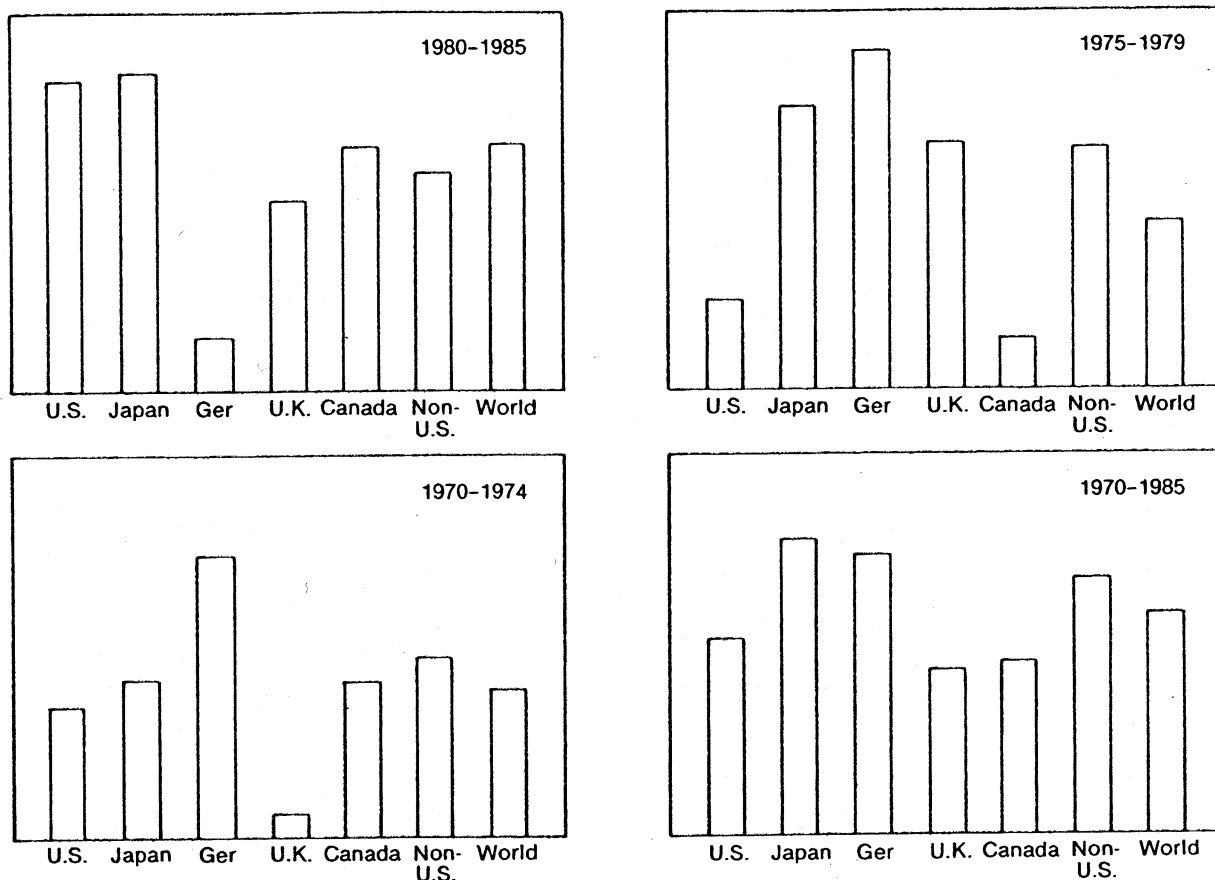
pears that currencies can help or they can hurt international returns, and there appears no systematic relationship between currency return and local market return.

Figure 2 also shows the total 15-year period and this indicates that over long periods of time, currencies do not seem to enhance or detract significantly from total international bond market performance. While this could indicate that currencies do not matter, we believe such a conclusion would be a gross simplification. These 15 years represent the sum total of three five-year periods, and what's going on within those five-year periods cannot be ignored. As we saw within the subperiods, currency movement is a significant part of total return. However, while we do not know whether currencies are going to add or lower returns, we certainly know what they are going to do to risk.

The effect of currency fluctuations on the risk of a portfolio is shown in Figure 3. The standard deviation of annual returns in the U.S. bond market over the past 15 years was 9.2 percent. Alternatively, if this money had been invested in all non-U.S. markets in proportion to their market capitalization, the volatility of that portfolio would have been 10.4 percent. Thus, despite the currency risks and the many local market risks, non-dollar bond investing in total has not been much more risky than investing in the U.S. market itself. The total volatility of these international markets is not substantial, nowhere near the risk of stocks or the risk of some other asset classes available to U.S. investors.

To determine how much of that 10.4 percent is currency risk, consider a hypothetical portfolio invested in the non-U.S. markets and continuously hedged back into the dollar. In other words, whenever there was a foreign currency exposure owing to assets held in a foreign currency, the exact amount of that currency was sold forward into the dollar. The volatility of that portfolio from 1970 through 1985 was 6.3 percent per annum, substantially less than the 10.4 associated with the unhedged portfolio. The currency risk,

FIGURE 1
International bond market returns in U.S. dollars



Source: J. P. Morgan Investment.

which thereby was eliminated, was about 400 basis points. As a percentage of total risk, the 4.0 percent currency risk was about 40 percent. Thus, international fixed income is not simply a currency game or entirely a bond game either, but rather a bond game with some currency risk.

Note the return from the hedged portfolio in Figure 3. Consistent with the observation that over a long period of time currencies do not systematically add or detract from return, the average annual return to the hedged portfolio is only slightly less than the non-U.S. portfolio unhedged, i.e., 8.9 percent compared with 10.3 percent. The reduction in the return is attributable to the hedged portfolio not sharing in foreign currency appreciation over the period.

Thus, the historical data reveal three things. First, currencies are an important contributor to and detractor from performance on a short-term basis. Second, they may not add total return over

a long period of time. Third, they will consistently add to investment risk. For these reasons, we believe the bond decision should be separated from the currency decision when investing in these markets on a day to day basis.

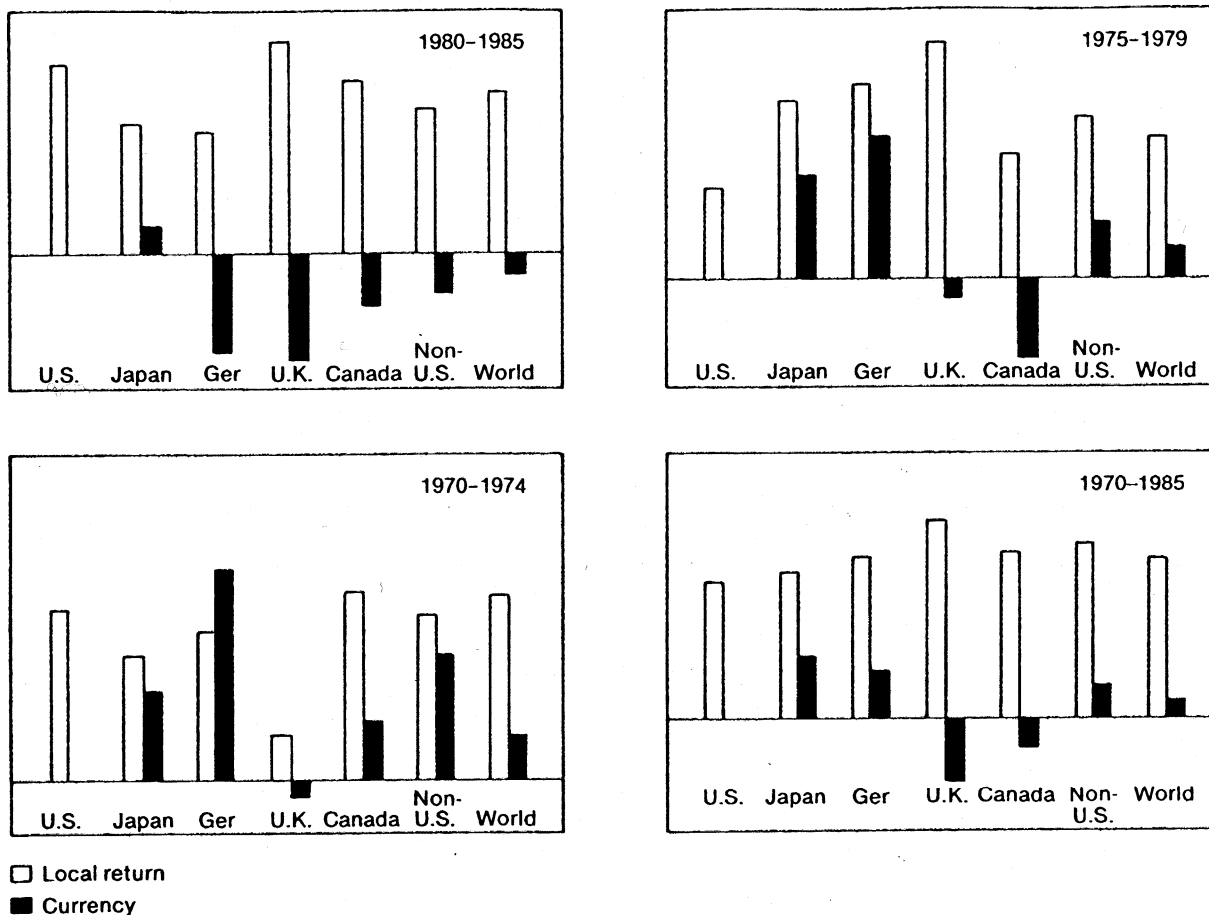
SEPARATION OF BOND MARKET AND CURRENCY DECISIONS

The active investment decision-making process at J. P. Morgan consists of four parts:

- Separating the investment process into bond market selection and currency decisions;
- Constructing portfolios that combine the most attractive bond markets with the most attractive currencies;
- Protecting against unattractive currency movements through currency hedging;

FIGURE 2

International bond market returns in local currency and currency movements versus dollar



Source: J. P. Morgan Investment.

- Exploiting inefficiencies in specific markets through issue selection and yield curve management.

We use the forward exchange market for hedging, but options or futures could be used if preferred.

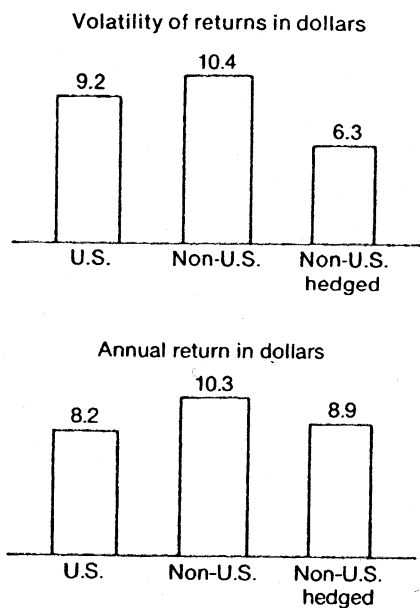
Figure 4 gives an overview of our investment decision-making process and highlights the separation of bond and currency decisions. This separation starts from a world economic outlook. The world is divided into assets on the left and currencies on the right. Next, through bond market analysis and exchange rate analysis the returns from assets and the currencies are estimated and then ranked among themselves as attractive or unattractive. Finally, from those rankings a portfolio is constructed that has an optimal bond market exposure and currency exposure.

OPTIMAL PORTFOLIO CONSTRUCTION

The following example illustrates the optimal portfolio construction process, and highlights the fact that this process will always provide better portfolios than an investment decision-making process that does not separate bond markets and currencies.

Estimated returns are given in Table 1. Under this scenario, we have made estimates of return from the local markets—United States, Japan, Germany, and the United Kingdom. Simultaneously, and under the same outlook, we have made estimates of the corresponding currencies' appreciation versus the dollar. Equally important, we have made estimates of the volatility of these returns. Interestingly enough, we estimated that

FIGURE 3
International bond market returns 1970-1985



Source: J. P. Morgan Investment.

the currency volatilities themselves are quite large.

We have developed special software that combines these returns, risks and correlations among and between bond markets and currencies to identify optimal combinations of bond market and currency exposures that maximize total portfolio return per unit of risk in dollars. Figure 5

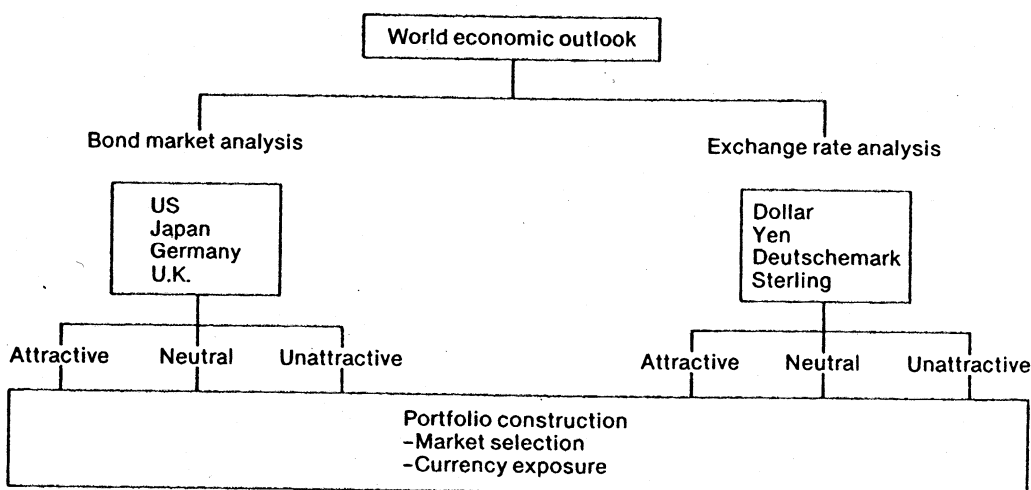
shows the result of this in the form of an efficient frontier, a chart showing portfolios with the highest expected return on the left axis, for any level of standard deviation on the right axis. We have identified six portfolios along this frontier. There is no single right portfolio. It really depends, as always, on the level of risk you want to choose.

Table 2 shows the composition of these portfolios. Portfolio 1, the least aggressive portfolio, is largely invested in Japanese and German bonds. The most aggressive portfolio is 100 percent in German bonds. That is what our inputs were telling us in terms of bonds. Our inputs were also telling us something about the currency exposure. Associated with each one of those market exposures is the currency exposure that maximizes total return per unit of risk in dollars. Portfolio 1, while in Japanese and German bonds, is not exposed to foreign currencies at all. Its currency exposure is 100 percent in the dollar, representing a hedge out of those currencies back into the base currency. On the other hand, for Portfolio 5, largely in German bonds, 50 percent of the exposure is hedged back into the dollar and 38 percent is cross-hedged into the other currencies.

The overall message of this process is that explicitly recognizing the separation of bonds and currencies inevitably leads to the possibility of portfolios that have some or all their currency exposure hedged.

To emphasize the importance of separating

FIGURE 4
Separation of bond markets and currencies—an illustration



Source: J. P. Morgan Investment.

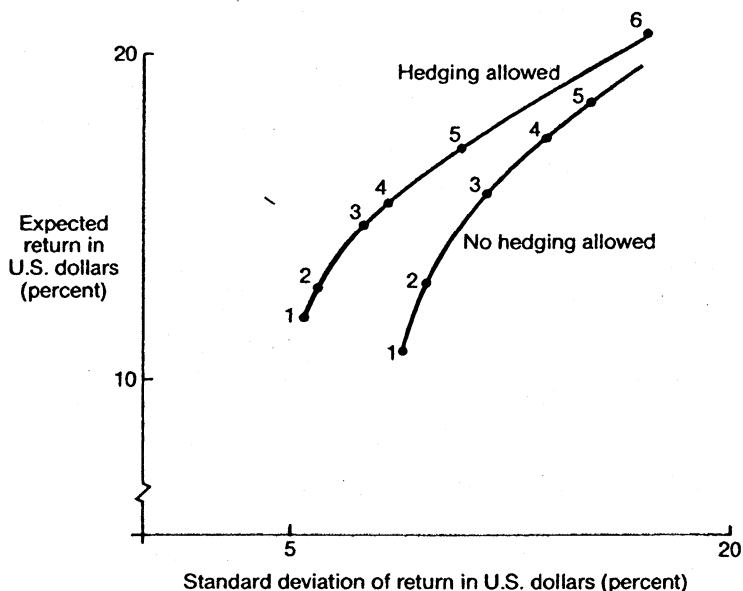
TABLE 1. Portfolio construction—an illustration

<i>Bond market</i>	<i>Expected local return</i>	<i>Standard deviation</i>	<i>Expected return in dollars</i>	<i>Standard deviation</i>
U.S.	9.3	9.2	9.2	9.3
Japan	9.2	6.5	17.6	19.1
Germany	10.0	7.0	19.0	15.9
U.K.	11.9	10.8	17.1	15.1

<i>Currency</i>	<i>Expected appreciation versus dollar</i>	
Yen	8.4	15.7
Deutschemark	9.0	11.8
Sterling	5.2	16.9

Source: J. P. Morgan Investment.

FIGURE 5
Efficient international fixed-income portfolios



Source: J. P. Morgan Investment.

TABLE 2. Efficient international fixed-income portfolios—hedging allowed

<i>Portfolio no.</i>	<i>Bonds market exposure (percent)</i>				<i>Currency exposure (percent)</i>				<i>Expected return in dollars</i>	<i>Standard deviation in dollars</i>
	<i>U.S.</i>	<i>Japan</i>	<i>Germany</i>	<i>U.K.</i>	<i>Yen</i>	<i>DM</i>	<i>Sterling</i>	<i>Dollars</i>		
1	15	48	28	9	0	0	0	100	11.7	5.5
2	5	43	48	4	0	0	2	98	12.5	5.7
3	0	19	81	0	5	0	11	84	14.5	7.4
4	0	6	94	0	9	2	15	74	15.5	8.6
5	0	0	100	0	15	12	23	50	17.0	15.8
6	0	0	100	0	25	20	55	0	20.5	16.8

Source: J. P. Morgan Investment.

TABLE 3. Efficient internal fixed-income portfolios—no hedging allowed

Portfolio no.	Bond and currency exposure percent				Expected return	Standard deviation
	U.S.	Japan	Germany	U.K.		
1	84	6	10	0	10.8	8.9
2	60	9	29	2	13.0	9.6
3	30	14	49	7	15.8	11.7
4	11	17	63	9	17.5	13.6
5	0	18	70	12	18.5	14.7

Source: J. P. Morgan Investment.

bond and currency considerations, let us compare the previous example with the traditional approach of adding the currency return and the bond return into one number and therefore not allowing separation of the bond and currency decision. Applying the same sort of quantitative techniques towards developing efficient portfolios across these asset classes and coming up with optimal portfolios gives the second efficient frontier, plotted in Figure 5. Table 3 gives the composition of these portfolios. These two sets of portfolios are rather different. Whereas the lowest risk portfolio in the previous case was invested in Japanese and German bonds hedged into the

dollar, the lowest risk portfolio in this situation remains 84 percent in the dollar assets. In all cases, not considering the currency separately from the bond market results in a substantial loss of expected return at any given level of risk, or considerably greater risk at any given level of return.

In conclusion, currency considerations can have an important effect on investment returns and risks. It is therefore important to separate the investment process into two components—bond market selection and currency decisions. If you do not do so, you may systematically reduce the return to an international fixed-income portfolio or increase its risk.