OPTIMAL PORTFOLIOS AND CURRENCY OF CHOICE

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Although co-movements of changes in currency values and stock prices are central to portfolio management, little explicit thought is given to its practical implications in finance literature. No doubt returns on foreign stocks denominated in local currencies, say in Brazilian real, will show gains in USD terms when the real appreciates against the dollar, even when the local currency return is zero. The USD returns of foreign securities are determined by currency fluctuations as much as security price movements in the local currency. Hence, anticipating the rise/fall of local currencies against the dollar and correctly incorporating these currency movements into an investment plan is crucial to good portfolio management. The question remains, however, how to best incorporate one's views on currency movements into a portfolio selection model?

As a concrete example, consider an investment management team who must invest in securities listed on the Tokyo Stock Exchange but whose principal clients are U.S. domiciled investors, hence interested only in USD returns. The team could conduct the portfolio selection process in local currency terms, preparing estimates of future returns and correlations of security returns in Japanese yen (JPY). The team would generate an efficient frontier in local currency and select a portfolio based upon a specific criterion. Alternatively, the team could prepare estimates of expected returns and covariance of returns in USD terms thereby taking into account the co-variability of local security returns and USD/JPY exchange rates. The question is whether the resulting efficient portfolios are identical.

The short answer is that they need not be the same. The best portfolio in locally denominated currency could turn out to be a bit less promising to a U.S. domiciled investor. As may be anticipated, what matters is the co-movement of exchange rates and local stock returns.

A simple experiment conducted by our investment team illustrates this point. We explored whether a portfolio denominated in local currency that is optimal for a Japanese investor would remain the best in U.S. dollars. If not, that JPY portfolio delivering a return stream in USD would be sub-optimal.

The data used in the experiment consisted of the weekly returns of the 33 industry groups of the Tokyo Stock Price Index (TOPIX). The TOPIX is a cap-weighted index of all companies on the first section of the Tokyo Stock Exchange. Returns are calculated in both local JPY terms as well as foreign USD currency terms. The exchange rate used to convert a local return to foreign return was the prevailing spot London market close.

The period studied was April 30, 2004 through May 1, 2009. It was a period in which the Japanese yen appreciated against the U.S. dollar from 110.52 to 99.11 or by 2.2% per year geometrically. The appreciation of the yen versus the dollar was accompanied by large negative average returns of finance groups such as TOPIX Other Financing Business Index (TPFINC) and TOPIX Security Index (TPSERV). In contrast, there were large positive average returns in materials such as TOPIX Iron and Steel Index (TPIRON) and the TOPIX Mining Index (TPMINN).

What our investment team found in their study of Japanese Index returns was remarkable. Aggressive investors who select higher up on the efficient frontier would be indifferent to currency co-movements. However, a more conservative investor, who naturally prefers a portfolio further down the frontier, would most certainly pick a different portfolio than his Japanese counterpart. This difference is based on the fact that covariance's (co-movement) of security returns play a larger role in the computation of efficient portfolios as we move further down the curve.

The table below shows the changes in weights for a U.S. investor from the optimal portfolio that would be selected by a Japanese investor. Both investors have the same risk tolerance regardless of domicile. As we see in the table, a U.S. investor would underweight some indices and would overweight others, although his risk tolerance level is identical to that of the Japanese investor. Note that the two optimal portfolios differ significantly, and the portfolio selected in JPY terms would be sub-optimal for the U.S. investor.

TOPIX INFO & COMM INDEX	-4.29%
TOPIX INSURANCE INDEX	+0.24%
TOPIX MACHINERY INDEX	+2.16%
TOPIX MARITIME TRAN INDEX	+0.27%
TOPIX PREC INSTRUMENT INDEX	+4.76%
TOPIX SERVICES INDEX	-3.14%

(negative/positive means a reduction/addition to JPY portfolio weights)

Examples of U.S.-listed funds delivering a return stream in USD are the Japan Equity Fund (JEQ) or The Japan Smaller Capitalization Fund (JOF), both closed-end funds listed in the U.S. but focused on the Japanese stock market. The principal investors in each fund are U.S. entities according to recent 13F U.S. regulatory filings. Additionally, there are more complicated examples of funds with multiple share classes (GBP, USD and EUR). Whether the fund manages the portfolio as a single entity in one of the local currencies or in all three home currencies, taking into account the co-variability and security returns and exchange rates is a decision that must be made by the fund manager.

The investment team at Gramercy manages several global equity portfolios with securities denominated in a variety of currencies. The benchmarks of each are denominated in USD and all the security returns are adjusted to USD. Our estimates of expected returns and covariance of returns are in agreement with the "currency of choice."

The simple fact is that a great many investment managers do anticipate currency movements but fail to properly take into account the co-movements of stock returns and currency movements. At Gramercy, correctly incorporating currency movements is central to our investment process.

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