# GAINS FROM PORTFOLIO DIVERSIFICATION INTO
LESS DEVELOPED COUNTRIES' SECURITIES

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Abstract. The paper substantiates the intuitive argument for international portfolio diversification—diversification that is not limited to the developed markets, but also includes the corporate securities of less developed countries (LDCs). Such diversification, in light of all
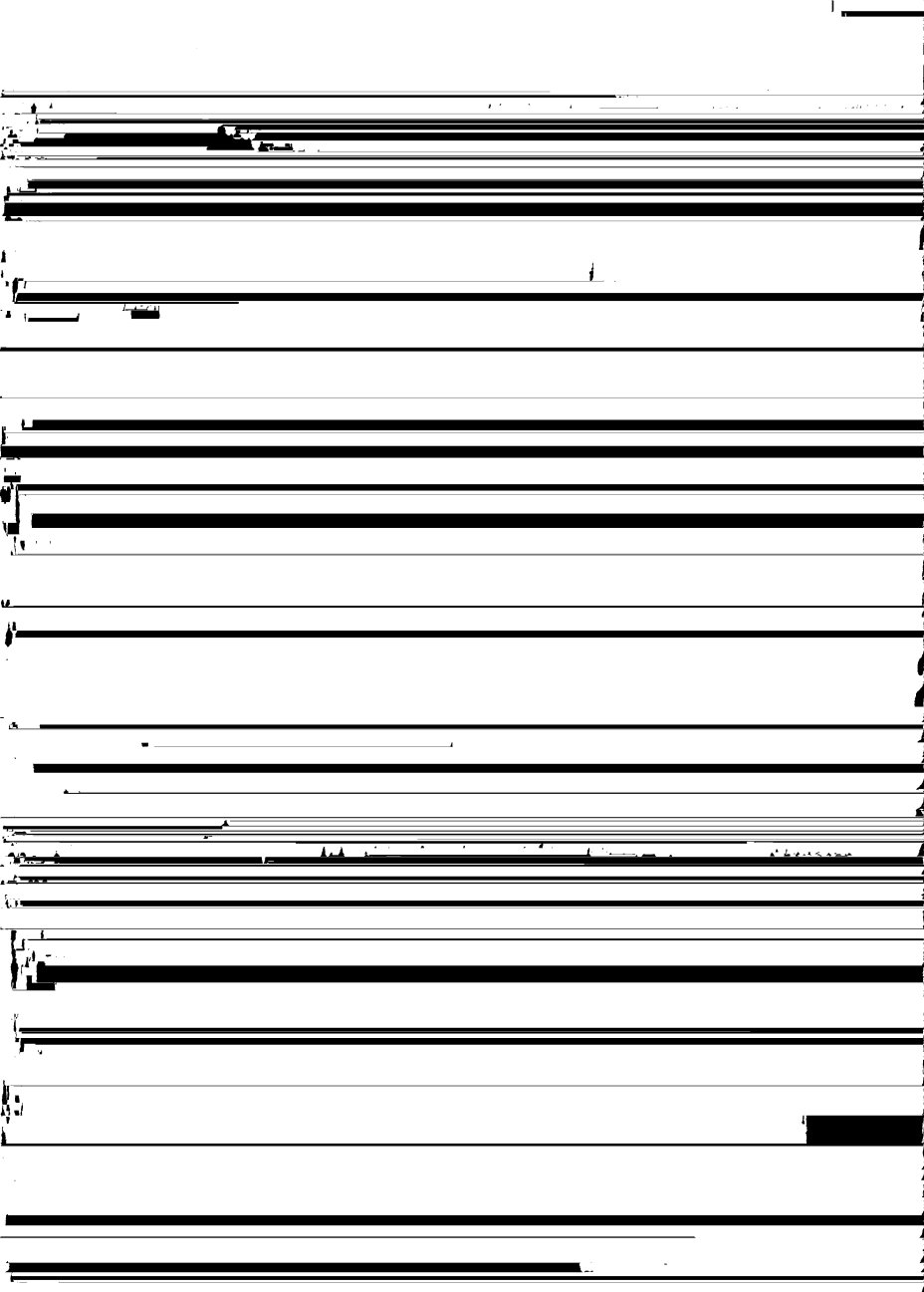
The price indices for various countries were first adjusted to reflect changes in foreign exchange rates during the given period. The exchange rates used were in terms of U.S. dollars.

Since we are interested in developing an efficient mean variance surface, assuming a one-period model, the arithmetic mean of the periodic rates of return gives the best estimate. In a quarterly context, the period is short enough so that the results differ little from an efficient portfolio in logarithmic returns (where geometric replace arithmetic means).

The mean periodic rates of returns ($\bar{r}_i$), the variances of returns (V_{ii}), and covariances (V_{ij}) were calculated next. After obtaining the mean rates of return and their correlation matrix, the next step was to generate an efficient surface, using the mean variance criteria. The quadratic programming system developed by Boles, Abram, and Borkon was used to calculate the composition of efficient portfolios which minimize the variances at given rates of return.[8]

The various combinations of portfolio expected return and variance were mapped on the return-standard deviation space. This efficient surface included all the attainable risk-return combinations for an investor who has the opportunity to diversify the equity

more than double the expected return as compared to the U.S. market at a slightly higher risk as indicated on page 85.

Optimal International Monetary Fund (IMF) Portfolios

The proportion of total investment in LDC and SDC securities is more than 50% for a majority of optimal portfolios. Ireland, Portugal, South Africa, and Venezuela are the major contributors. Except for Ireland—and, to some degree, Portugal—these countries have considerably lower or negative returns. Nevertheless, they are included in portfolios because of their low or negative correlations with returns in the DCs (see table 3). The U.S. is represented in a very minor way in the optimal portfolios. High correlations with other DCs is the primary reason.

Just as in the previous case, the U.S. market is dominated by optimal portfolios up to interest rates of approximately 2%. Thereafter, the internationally diversified portfolios offer much higher returns for some increase in risk.

Portfolio		Return%	Deviation%	Dominance With Respect to U.S. Index
U.S. Index		1.58	5.53	
Optimal Portfolio	@ ¼%	1.90	2.90	International Portfolio
	@ ½%	2.25	3.40	International Portfolio
	@ 1 ½%	2.50	3.90	International Portfolio
	@ 2 %	2.90	6.00	None
	@ 2 ½%	3.30	8.80	None

Effect of Time   Given the dubious nature of the risk-free interest rate in the international context and to

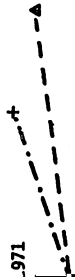PERIOD 1959-1972

1 Portfolios
Interest Rates

3½

80.6

19.4

3.96
8.88

TABLE 2

SUMMARY OF INTERNATIONAL MONETARY FUND, QUARTERLY DATA FOR PERIOD 1957-1971

Country of	Average	Standard	Composition of Optimal Portfolios

The consistent IMF dominance can be attributed to the presence of averaging in the IMF indices. Any averaging measure subtly transforms the stochastic character of the

Effect of Divi-
dend Exclusion   The unavailability of reliable aggregate dividend data for a large majority of the coun-
tries in our study has forced us to demonstrate only the directional impact that such
information would have on our conclusions. To this end, Table 4 shows computation of
the average annual dividend yields for the period 1968-1972 for a group of seven

This bias is of a complex nature, and it is not easy to assess its magnitude without simulation, which is clearly outside the scope of this work. However, a plausible

equally affected by chance variations in the estimated moments of return. As far as our results are concerned, the fact that the percentage of total number of LDCs and SDCs appearing in the efficient set is about the same or higher than that for DCs is very

Accounting Practices: Investors have to rely on financial information generated by local accounting firms. Differences in tax laws, consolidation practices, inflation adjustments, and the treatment of foreign exchange losses give rise to distortions and noncomparability of financial statements across countries.

Capital Controls: Capital inflow-outflow restrictions exist in both DCs and LDCs, ranging from none at all to complete prohibition. A detailed study conducted by the author revealed that countries with expectations of reasonable foreign exchange reserves

funds, insider trading laws, institution of strict auditing requirements, protection of minority interest, and the development of an enforcement agency like the SEC. Howev-

The Decree-Law 1401 and the accompanying resolution, No. 323, issued by the Central Bank of Brazil in May 1975, legalizes and provides incentives for foreign portfolio investments. It provides for the formation of investment companies whose capital is held in whole or in part by individuals or legal entities whether resident or domiciled abroad. At least 50% of the portfolio is invested in shares or convertible debentures of open

For any large sample of countries, there are only two coherent sources of indices:

$$V_{ii} = \frac{1}{T-1} \sum_{t=1}^{T} (r_{i,t} - \overline{r_i})^2.$$

The covariance of the ith country with j^{th} country is defined as:

$$V_{ij} = COV(r_i, r_j) = \frac{1}{T} \sum_{t=1}^{T} (r_{i,t} - \overline{r_i})(r_{j,t} - \overline{r_j})$$

FOOTNOTES

1. H. Markowitz, *Portfolio Selection: Efficient Diversification of Investments* (New York: John Wiley and Sons, Inc., 1959).

2. J. Tobin, "Liquidity Preference as Behavior Towards Risk, *Review of Economic Studies*, (February 1958), pp. 65-86.

3. H.G. Grubel, "Internationally Diversified Portfolios: Welfare Gains and Capital Inflows," *American Economic Review* 58 (December 1968): 1299-1314.