A Note on the Behavior of Eurobond Interest Rates

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I. Introduction

Recently, a number of studies have been published dealing with the eurobond market. Most of these studies have limited their interest to a discussion of the institutional aspects, while others have treated the analysis of the market in a non-empirical fashion. It is the purpose of this paper to make some contribution to the understanding of this market by considering one part of this market using regression analysis.

II. Scope and Methodology of the Study

This study will focus its attention upon analyzing the behavior of interest rates and financial variables dealing with U.S. corporate securities in both the eurodollar and the U.S. markets. The types of securities considered are of a straight debt nature issued by well-known U.S. multinational corporations. The following form was used to explain the behavior of eurobond rates:

\[ \text{Reb} = a + (b \times \text{UKc} + c \times \text{ERd} + d \times \text{Rd}) \]

in which

\( \text{Reb} \) = Eurobond interest rates on U.S.

\( \text{UKc} \) = United Kingdom central bank rate

\( \text{ERd} \) = Eurodollar deposit rate (30 days)

\( \text{Rd} \) = U.S. Corporate Aaa Bond rate (U.S. market)

corporate straight debt denominated in dollars.

The use of the United Kingdom central bank rate was to get a reasonable proxy of the cost of borrowing in the overseas market. Although there are certain limitations, the U.S. multinational corporation financial manager must weigh alternative sources and costs of borrowing. The United Kingdom central bank rate does indicate the cost of borrowing in an important European financial market.

The use of the eurodollar thirty day deposit rate has a twofold rationale. First of all, short-term borrowing in the eurodollar is a financial alternative to eurobond financing. In addition, when eurobonds are floated, the initial deposit creation is in the form of eurodollars. Therefore, the eurodollar rate would appear to have a significant impact on eurobonds in that they have both a complement and substitute relationship with eurobonds. Independent studies have shown that the substitute characteristic is much more important than the complement relationship. R. Cunillier's work also lends support to the substitute importance of the substitute relationship between the eurodollar thirty-day deposit rate and eurobonds.
III. Empirical Results

The method used to estimate the hypothesized relationship was a single state regression model. The mathematical relationship that produced the best statistical results was:

\[ \ln \text{Reb} = B_0 + B_1 \ln \text{UKR}_{t-1} + B_2 \ln \text{ER}_{t-1} + B_3 \ln \text{RE}_{t-1} + ut \]

in which each of the independent variables was lagged one quarter.

The estimation process used quarterly data from the second quarter of 1963 through the second quarter of 1971.

The results of the regression were:

\[ \ln \text{Reb} = 1817.90230 + 776.721 \ln \text{UKR}_{t-1} - 2207.2 \ln \text{ER}_{t-1} + 3417.1 \ln \text{RE}_{t-1} \]

\[ (2.77476) \]

S.E. = 20.5145
\[ R^2 = .88 \]
\[ g = .05 \]
\[ F = 66.00 \]
\[ D.W. = 1.67 \]

The empirical results show that all three of the variables are significant at the .05 level as indicated by the t values which are in parenthesis underneath the parameter estimates. The sign in front of the United Kingdom rate is positive indicating that the eurodollars move in the same direction as do other European rates.

The negative sign of the eurodollars rate points out that there is a significant substitute relationship between eurodollars financing and eurobonds. Finally, the significant positive U.S. domestic rate indicates that Eurobond financing decisions are somewhat influenced by the cost of borrowing in U.S. markets.

IV. Conclusion

Although this study was limited to only one type of financial security that is issued on the Eurobond market, this paper hopefully provided some insights as to the financial interlinkages in the eurobond market. The study showed that foreign rates as well as eurodollar rates influence the rates on eurobonds. Further analysis is needed to investigate the nature of the behavior of eurobonds such as U.S. convertible debentures and non-U.S. foreign issues.

BIBLIOGRAPHY


Profit Maximization, Negative Costs, and Iso-elastic Demand

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This brief paper raises two issues concerning the traditional profit-maximizing condition with marginal costs equal to marginal revenue. The first generalizes the applicability of the condition by extending it to the case of negative costs; the second suggests a situation in which profit may not be maximized at the MR = MR rate of output. Both issues are fundamental and simple but do not appear in the literature in explicit form. The first is simply an extension of the traditional analysis even beyond the Cournot zero-cost case into the realm of negative cost. The implications of the second are not clear but may have significance especially for the theory of monopoly but certainly illustrate the less-than-universal nature of the traditional profit maximizing criterion.

In the case of zero marginal costs, profit is maximized at that output Q* by the usual reasoning (Fig. 1). The Cournot zero-cost condition indicates revenue (and profit) maximization at Q* leading to the usual conclusion that a monopolist will not produce at a rate within the range of price elasticity of less than 1.0 because to do so would reduce total revenue and total profit.

An exception to this rule is the case of an enterprise having negative cost of production and negative marginal cost. Figure 1 illustrates this case also. Marginal cost may be rising (MC<sub>1</sub>), constant (MC<sub>2</sub>), or falling (MC<sub>3</sub>) with the stipulation that it fall less rapidly than marginal revenue. In either instance, profit will still be maximized by producing at a rate of output where MR = MR, which rate is greater than Q* and at a price such as P<sub>*</sub> which is well below the unitary elasticity point. This case calls for output Q* where MR < 0 and Price where elasticity is less than 1.0. It follows, then, that the traditional profit-maximization condition of MR = MR is extended to the case of negative cost with the associated dictum "never produce so as to price in the inelastic portion of the demand curve" amended by adding "when marginal cost is zero of positive."