

Corporate Financial Policy and R&D Management

The purpose of this book is to analyze the determinants of corporate research and development (R&D) expenditures in the United States during the 1952–2003 period and the impact that these expenditures have had on stockholder wealth. Our research began with a study of the interactions among the R&D, capital investment, dividend, and new debt financing decisions of major industrial corporations. We found significant interdependencies, such that one must use a simultaneous equations model to adequately analyze a firm's financial decision-making process. Even the presence of federal financing of R&D was insufficient to completely eliminate the potentially binding budget constraints on firms. A corporate planning model was developed and estimated by the authors. We found significant correlations between stock returns and our targeted variables.

Among our goals was to develop an econometric model to analyze the interdependencies of decisions in regard to research and development, investment, dividends, and new debt financing. The strategic decision makers of a firm seek to allocate resources in accordance with a set of seemingly incompatible objectives. Management attempts to manage dividends, capital expenditures, and R&D activities while minimizing reliance on external funding to generate future profits.

Each firm has a pool of resources, composed of net income, depreciation, and new debt issues, and this pool is reduced by dividend payments, investment in capital projects, and expenditures for R&D activities. Miller and Modigliani (1961) put forth the perfect markets hypothesis in regard to financial decisions, which holds that dividends are not influenced (limited) by investment decisions. There are no interdependencies between financial decisions in a perfect markets environment, except that new debt is issued to finance R&D, dividends, and investment.

The imperfect markets hypothesis concerning financial decisions holds

that financial decisions are interdependent and that simultaneous equations must be used to efficiently estimate the equations. The interdependence hypothesis reflects the simultaneous-equation financial-decision modeling work of Dhrymes and Kurz (1967), Mueller (1967), Damon and Schramm (1972), McCabe (1979), Peterson and Benesh (1983), Jalilvand and Harris (1984), Switzer (1984), Guerard and Stone (1987), Guerard, Bean, and Andrews (1987), and Guerard and McCabe (1992). Higgins (1972), Fama (1974), and McDonald, Jacquillat, and Nussenbaum (1975) found little evidence of significant interdependencies among financial decisions.

The estimation of simultaneous equations for financial decision making is the primary modeling effort of Chapters 4, 5, and 6. In Chapter 4, we estimate a set of simultaneous equations for the largest securities in the United States during the 1952–2003 period. We review the federal financing impact on financial decisions during the 1975–1982 period. Recent restructuring has greatly changed the way many corporate officers think of new debt issuance.

Security valuation and portfolio construction is a major issue and is developed in Chapters 8, 9, and 10. Chapter 8 presents our valuation analysis, using historical fundamental data from Compustat and earnings forecast data from I/B/E/S. We find statistically significant stock selection models in the United States, Europe, and Japan, using both historical and earnings forecasting data that violate the efficient markets hypothesis, which holds that securities are equilibriumly priced. Chapter 9 extends the basic portfolio strategies discussed in Chapter 8 to include market-variance efficient portfolios, and we find a much greater use of earnings forecasts in the United States. We find that R&D enhances stockholder wealth in mean-variance efficient portfolios. Socially responsible investing is examined in Chapter 10, and we find no difference between socially screened and socially unscreened portfolios. One can be socially responsible and produce efficient portfolios. In Chapter 10, we look at the impact of socially responsible investment criteria, both concerns and strengths, on security total returns. It may be possible for management to increase its R&D activities, be recognized as a better firm in the socially responsible investment community, and see its stock price rise. A brief summary and set of conclusions are presented in Chapter 11.