CHAPTER I

INTRODUCTION

1.1 Some Objectives

This dissertation is a methodological study of some models of equity

valuation. The study will focus on problems associated with developing

and testing a suitable framework for determining the major factors that

explain the equity share prices of selected American corporations. There

are, of course, a number of reasons why it would be useful to be able to

explain just how the prices of equity shares are determined.

    (1) Such information could assist institutions and individuals
        in their portfolio selection decisions.

    (2) Such information could help companies decide how to acquire
        capital funds and how to allocate net revenues.

    (3) Such information could be useful in the development of aggre-
        gate flow of funds models for our economy.

    (4) Such information could have implications for more general
        theories of how investors form expectations and adjust their
        wealth positions in a dynamic environment.

Unfortunately, there is today no generally accepted model of equity valu-

ation to use as an analytic framework for dealing with these "end use"

problems. There is instead of a generally accepted model a whole host of

unverified equity valuation theories.

The primary focus of the thesis will therefore be directed toward

examining some of these different theories in an effort to ascertain

whether or not any of the theories are valid for a broad cross-section of

American stocks. The basic conjecture is that all current models of equity

valuation will fail to meet reasonable statistical tests of reliability. The term "equity valuation model" is broadly construed to include both explicit models of share price determination and models concerned with the allocation of capital, where the equity valuation variable is more likely to be a part of some cost ratio.

It seems clear that the recent proliferation of equity valuation models is leading to only a very marginal increase in our knowledge about this important subject. Part of the reason for this state of affairs may be the type of straw-man targets researchers employ. Everyone has a model that is significantly better than a simple chance model. But a better test alternative might be a comparison with the best of currently available models. Such comparisons are seldom made. This lack of inter-action seems to have led some to a stereotyped form of research where variations of the same variables are considered over and over again by different authors. To break out of this vicious circle, present models will be compared against one another, over a variety of samples, and for a number of years to study their relative performance and limitations.

From such a study of current theories, one should be able to gain insights into some of the elements that will eventually enable us to construct a better explanatory model of equity valuation. A few of these elements will be discussed in an attempt to organize a framework for future models of equity valuation. The main burden of this thesis, however, is to destroy current myths, not create new ones. The purpose of this disser-tation is (1) to provide a thoughtful challenge to the type of research methodology prevailing in the area of equity valuation, (2) to provide evidence that, contrary to currently widespread notions, we do not now

have good models of equity valuation and can make only the crudest state-
ments about underlying explanatory variables, and (3) to provide evidence
for some of the variable types that may be necessary in developing a
positive model of equity valuation.

1.2 An Historical Perspective

There have probably been attempts to find explanatory predictors
for equity share prices so long as equity securities have existed. Present-
day equities evolved from the financial instruments created in the Middle
Ages to finance exploration and trade. The lack of understanding or
knowledge about underlying real values led to some spectacular excesses
in market pricing in former times. Indeed, it may be that the entire
nation of France was bankrupted by public and private speculation in the
shares of the Mississippi Company in the early part of the Eighteenth
Century.[1]

In America, formal attempts to develop models of equity valuation seem
to closely parallel the development of analytical economics. There are
very few notable academic articles before 1945 in the area of equity
valuation models.[2] Probably the three outstanding works are the papers

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[1]See Charles Mackay, Extraordinary Popular Delusions and The Madness
of Crowds, (London: R. Bentley, 1841) (reprinted by Fraser Publishing,
Wells, Vermont [1932]), pp. 1-45.

[2]I am distinguishing here between articles on equity valuation
appearing in the academic professional journals and the more implicit
models appearing in the various publications from Wall Street. The
latter source, while it may be just as relevant, is generally not
indexed, not accessible, and not decipherable because it is mixed in
with literally tons of superfluous materials that are churned out by Wall
Street institutions.

by Macaulay,[3] Tinbergen,[4] and Williams.[5]

Since 1945 the number of articles and time spent on research in this area has rapidly expanded. Table I-1 summarizes a partial survey of the literature for the years 1951-1962. The indicated upward trend in research effort expended in this area has not diminished. There are probably several reasons for this growing interest. First, analytic procedures in economics have developed to the point where there is some hope of solving the complex issues raised in theories of equity valuation. Second, the advent of computers has meant that high speed codes for performing statistical analyses have become available. Third, service groups have begun to provide necessary financial data in a form that can be efficiently handled by computers. And finally, the extended increase in postwar stock prices has probably generated some interest. The search for the "key" to wealth may be as pervasive today as was the alchemists' search for precious metals.

Although the figures are most tenuous, there is some evidence that over twenty-five universities and at least double that number of private corporations are now (1966) engaged in various aspects of research relating to models of equity valuation.[6] Probably several million dollars are being

[3]F. R. Macaulay, "Interest Rates, Bond Yields, and Stock Prices," (New York: National Bureau of Economic Research, 1938).

[4]J. Tinbergen, "The Dynamics of Share Price Formation," Review of Economics and Statistics, 21, No. 4, pp. 153-160.

[5]John B. Williams, The Theory of Investment Value, (Cambridge, Mass.: Harvard Press, 1938).

[6]H. R. Morrison, "Compustat-Past, Present, and Future," speech delivered at the Workshop on the Use of Computers in Financial Research, December 8, 1965.

TABLE I-1

RESEARCH PUBLICATIONS RELATING TO MODELS
OF EQUITY VALUATION

| Year | Articles | | Ph.D. |
	Number	Pages	Dissertations
1951	4	40	
1952	4	45	1
1953	8	105	
1954	7	80	2
1955	8	100	3
1956	6	75	1
1957	6	65	2
1958	23	180	2
1959	22	240	5
1960	7	70	6
1961	16	190	5
1962	26	285	9

(1) Articles selected from Index of Economic
    Journals, (American Economic Association,
    R. D. Irwin, 1963) and Financial Analysts
    Journal and Barrons.

(2) Ph.D. as reported in Dissertation Abstracts
    (University Microfilm Press).

spent on this effort. Though the dollar sum may seem high, it is a small fraction compared to the 100 billion in sales on securities exchanges.[7] Whether this new outpouring of research will lead to any greater direct benefits than those obtained by the alchemists in their search for the secrets of wealth remains to be seen.

1.3 The Plan of the Study

Chapter II contains some preliminary considerations that are probably prerequisites to any theory of equity valuation. The concepts of (a) investor utility, (b) return, and (c) risk are explored as to their possible meanings and usefulness in a theory of equity valuation. Included in this discussion is a review of some of the principal issues raised by various researchers in the general area of equity valuation.

Chapter III begins the discussion of equity valuation models proper by reviewing five models that have been proposed in the literature: the Durand model, the Modigliani-Miller model, the Barges revision of the M-M model, the Benishay model, and the Gordon model. Besides indicating the variables used in each of the models, this chapter presents representative parameter estimates obtained by each of the authors and examines some of the statistical problems encountered.

Chapter IV discusses the framework in which the models are to be tested. The samples and data are described. The statistical criteria to be employed are indicated as well as some statistics applicable to all of the models. The actual test results are presented in Chapter V.

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[7]See Table pg. 9. Statistical Bulletin, Washington, D.C.: U.S. Securities and Exchange Commission, March 1965. A rough estimate of the commissions actually received on these sales might be 1% or a billion dollars.

The models were tested on four different samples for the four years 1956-1959. An attempt is made to summarize some of the results from more than one hundred regressions. Chapter VI offers some conclusions that might be inferred from the results obtained and sketches the outlines for some future research efforts.