

# PREFACE

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## PURPOSE OF THIS BOOK

### The Poorly Understood Concept of a Business

Despite the enormous literature on corporate finance, accounting, economics, management, and mathematics, two fundamental principles of business remain poorly understood: the definition of the firm and the determination of its value.

Without grasping the purpose of the firm—or naively assuming that it exists to “maximize profits” in some ill-defined way—one cannot understand how a business has market value, or how managers operate it in the face of uncertainty. Furthermore—especially given the daunting statistics on the failure rate of newly formed companies—we cannot hope to understand why an entrepreneur would start one!

### Filling the Gap: The Definition of the Firm

This book attempts to fill the yawning gap between the extant theories of business and business value and the reality faced by business managers, investors, and entrepreneurs. To do so, it starts from a fundamental question: What is a firm?

Unfortunately, we have little in the way of an answer! As will be demonstrated, various working definitions must be abandoned once they are confronted with facts.

To fill this gap, I propose a new definition of the firm that allows for a rigorous distinction between a business and the many other entities that have businesslike attributes. This same definition also distinguishes a business from a portfolio of securities. A portfolio is an essential concept in mathematical finance but not a plausible substitute for a firm. Only after properly defining the firm does the book move forward to methods of estimating the value of a firm.

### Filling the Gap: The Value of a Firm

Many readers will be familiar with the three traditional business valuation methods, commonly known as the market, asset, and income methods. Each of these has an obvious

valuation principle underlying it. However tempting (and commonplace) it is to describe these as the only valuation methods, my research found at least *nine* different well-defined valuation principles that have been articulated in the fields of economics, finance, and accounting, plus an assortment of less well-defined principles that have originated in taxation and management.

A handful of these are fixtures in theoretical work in economics and mathematical finance, and almost completely absent in practical work. Others are ubiquitous in practical work. However, these methods nearly always require significant subjective adjustments, with the adjustments often more important than the theory. In effect, the valuation approaches used in practical work are often a platform from which to make professional judgments. Professional judgment has an important place, but we should have a theory that matches the reality of business, investors, and entrepreneurs.

To these nine extant valuation approaches, I propose a novel principle that grew out of control theory. I argue in the book that this value functional principle avoids many of the shortcomings of its competitors and more correctly matches the actual motivations and information set held by entrepreneurs. However, I also acknowledge its practical limitations.

### **Colliding with Widely Accepted Notions**

The results of the research described in this book collide directly with a small handful of widely accepted notions in the corporate finance, valuation, and management literature. In the book, I argue that this handful is, unfortunately, just plain wrong. I will note three such collisions here:

1. First, I reject the notion that the objective of firms is to maximize profits. This notion, born of neoclassical economics and enshrined in popular culture as well as many fields of study, is contrary to the plain facts of life for almost any entrepreneur.
2. Second, I reject the notion that the value of a business is the estimated net present value of its future earnings. That assertion, and the neoclassical investment rule based on it, has been repeated thousands of times in books and journal articles, especially since its inclusion in the Modigliani-Miller propositions in the 1950s. It has become a pillar of corporate finance.
3. Third, I reject the notion that a portfolio of stocks and bonds issued by a firm is equivalent to the firm itself. That notion may seem odd when written starkly. However, the idea that the value of a firm is the same as the value of a portfolio of its securities—and that this equivalence remains when one buys or sells fractions of the outstanding equity and bonds—underlies much of the work in mathematical finance.

### **Matching Business Theories to Actual Business Conditions**

A valid theory of business and business value should be able to prove itself with a wide range of actual businesses. In this book, I provide some basic empirical data on businesses

in the United States and certain other countries—including their number, revenue, size of employment, and forms of organization, as well as the survival rates for the first several years after organization.

A clear finding is that *most* businesses, in the United States and the European Union (EU), are “small.” The *vast majority* are privately held. Furthermore, small and medium-sized businesses—overwhelmingly privately held—appear to be responsible for most, if not all, of the net job creation in the United States and the EU. *These* are the firms that should be the main focus of a theory of business and business value.

Unfortunately, much of our corporate finance and mathematical finance theory deals with only a narrow subset of firms: publicly traded, very large corporations. These are the exception, not the rule! Therefore, I seek in this book theories of business and business value that apply to both large corporations *and* companies that do not issue publicly traded stocks and bonds, cannot borrow without constraints, and often rely on entrepreneurs to both finance and manage their operations.

### Other Unique Aspects of This Book

This book has certain other unique aspects that bear noting:

1. *It grounds thinking in multiple disciplines and introduces new methodologies.* This book draws on mathematics, finance, economics, accounting, and some elements of statistics and control theory. With this background, it describes existing methodologies in business valuation. It also introduces some new and unusual concepts, such as value functional equations, state and control vectors, real options, Markov decision problems, and dynamic programming.
2. *It recognizes historical development of ideas from around the world.* Much of the literature in contemporary finance and economics effectively dismisses the pioneers in favor of authors that have written in the past half century. This leaves the reader with a poverty of understanding.

In this book, I recognize the tremendous progress that originated in the United States in the last few decades, including the development of modern portfolio theory, the Black-Scholes-Merton option formula, and nearly the entire school of neoclassical finance. It also notes the twentieth-century American and European economists who laid the groundwork, including the deservedly famous such as Irving Fisher, Milton Friedman, and Joseph Schumpeter, and the improperly neglected such as Joan Robinson, John Muth, and Friedrich von Hayek.

However, one shouldn't stop there. I include the century-old contributions of the European and American scholars such as Robert Brown, Norbert Weiner, and Albert Einstein; multiple-century-old works by Adam Smith, David Ricardo, William Blackstone, Bernoulli, Fibonacci, Pacioli, and Renaissance-era Italian traders; and the vital contributions of Islamic scholars such as Al-Khowarizmi and ancient Hindu scholars such as Kautilya. Attentive readers will also learn who first sold the Brooklyn Bridge, who actually invented the Gordon growth formula, what astronomer outlined the net present value algorithm

well before corporate finance was recognized as a discipline, after what ancient scholar the term *algorithm* was named, and who described a form of accounting in India a thousand years before Luca Pacioli codified it in Italy.

### Limitations

Given its ambitious agenda, this book will invariably suffer from a few limitations:

- First, using ideas from different fields will require introducing nomenclature and mathematical techniques that are not common in other fields. For example, accountants and business school graduates may find the mathematics of dynamic programming challenging. Economists may be daunted by the discussion of accounting concepts. Finance specialists may be confronted with challenges to models that go beyond the derivations offered in most finance texts.
- Second, any pioneer inevitably treads over ground that is considered sacred by others. This will probably be the case here. I have attempted to properly present each theory before critically addressing any of its shortcomings. Inevitably, there will be some qualifications and corrections that, in a perfect world, would have been anticipated. Furthermore, there are differences in how certain recognized techniques are supposed to be used and how they are actually used. This will produce some ambiguities over whether the theory or the practitioner is faulty.
- Third, the arguments for a new definition of a firm, and the explanation of a new valuation method, will be novel. Such novelty necessarily brings with it a difficulty in explaining that, hopefully, I have largely overcome for most readers. I doubt it has been overcome for all readers. Novelty also increases the possibility of errors; those remain the fault of the author.

### MY MOTIVATION

I have an unusual background for an author of a book like this, and that background explains my motivation for spending the better part of a decade working on this book. Like most authors, I trained in the standard academic disciplines of economics and finance. However, I spent more of my career actually lending to and investing in businesses and attending the school of hard knocks as an entrepreneur. Those latter two experiences heavily color the scholarly analysis in this book.

My academic training in economics presented a wonderfully clean view of business investment decisions. It also presented a naive view, as I soon learned. The accounting classes I attended at least provided some practical guidance on business management, though the curriculum didn't really pretend to describe why and how investors made decisions.

Early in my career, I was trained in the standard corporate finance valuation methodologies in two separate financial institutions. As a bank economist, I endured the entire loan officer training course and participated in policy decisions on borrowing and lending. Later, I sat on the investment committee for an insurance company, reviewing carefully

prepared investment proposals involving real estate, construction, retail, energy, housing, and other industries, including stocks, bonds, private placements, and derivatives.

These gave me an extended education in the standard corporate finance methods, as well as their use in practice. It was in that practice that I observed their serious inadequacies. In particular, despite the seemingly rigorous use of discounted cash flow schedules and cost-of-capital models, the actual decisions were rarely made on the basis of the supposed criteria of exceeding a hurdle rate of return. Good investment managers and business executives—and I worked with some very good ones—looked for something else in the investment. If it wasn't there, we didn't do the deal—regardless of what the cash flow schedule said. If it was there, we would try to make it fit.

These experiences taught me that the existing theories of economics and corporate finance were inadequate to the task of explaining how businesses had value, and why investors supported some and abandoned others. The investors I admired most had a skill for making good investment decisions—but that skill was much different from the theory they supposedly learned in graduate school.

Later in my career I found that the most spectacular and recurring failures of the standard theories arise from their lack of understanding of entrepreneurs. I learned this the hard way—by becoming an entrepreneur myself. If I had allowed the orthodox theory to control my thinking during the early years of my business, I would have abandoned the entire enterprise several times.

Since then, I have studied other entrepreneurs and their businesses. I questioned them personally on their experiences. I visited their business premises. They are an interesting, compelling bunch—and rarely do they describe their critical business decisions using the jargon of corporate finance or the nomenclature of economics!

We entrepreneurs—I'll count myself among the research subjects this time—do not fit into the standard models of corporate finance, or neoclassical economics, or modern portfolio theory, or mathematical finance. We know that most fledgling firms disappear within about five years, but we start businesses anyway. We flout the standard probability-weighted net present value rule, usually risking our own money and reputation along the way.

Why do we do that? I think that question deserves a better answer.

## **SUGGESTED READING PLANS**

I suggest the following reading plans oriented to readers of different interests.

### **General Reader**

In general, I recommend reading in the following order:

- First, the entire Part I, including Chapter 1, “Modern Value Quandaries,” and the following chapters in which differing theories of value are presented and the failure of the neoclassical investment rule is demonstrated. These chapters cover essential material not included in standard finance, economics, and valuation texts.

- Part II, “The Nature of the Firm,” which rigorously defines a firm and distinguishes it from other organizations. It also provides useful (and often overlooked) data on businesses in the United States and certain other countries. These data are the basis for several arguments presented elsewhere in the book and would be relevant to nearly all readers.
- Any of the chapters on the economics, finance, or traditional methods of valuation. Most readers will be familiar with one or more of these methods. However, these chapters discuss the historical development and the theoretical basis of each method, which is sadly neglected in most practical texts.
- If the reader wishes to understand the value functional method, Chapters 9, 15, and 16.
- Any of the appendixes, such as Appendix A, “Key Formula and Notation Summary,” that are relevant.

### **Scholar in Finance, Mathematics, or Economics**

I assume that scholars would already have developed basic mathematical skills, have familiarity with the standard microeconomic model, have some accounting knowledge, and may have also become familiar with the standard corporate finance valuation models. For these readers, I recommend the following:

- All the chapters in Parts I and II, for the reasons discussed earlier.
- Selected chapters in Parts III and IV. In addition, finance scholars may wish to concentrate on Part IV, and economists on Part III, although each could learn from looking at the other part.
- As academic curricula tends to understate the importance of the practical methods described in Part V, my advice to scholars is to recognize that traditional methods, with all their inadequacies, should be accorded respect because they are actually used. The degree to which the practical methods recurrently require adjustments is an interesting focus.
- The novel value functional method presented in Part V, which probably requires also reading the earlier chapter on the modern recursive method.

### **Advanced Valuation Practitioner**

A valuation practitioner is likely to have knowledge of the discounted cash flow methodology and prevailing standards in the fields of valuation; may have completed a degree in accounting, business, finance, or economics; and may have additional professional designations. For such individuals who are interested in studying advanced techniques and identifying the weaknesses of traditional techniques, I recommend concentrating on the following material:

- All the chapters in Part I, which describe nine different valuation methods and introduce a tenth. Valuation practitioners should expect orthodoxies to be challenged here, including the idea that there are only three generally accepted methods

of valuation. I ask readers who want to argue with my observations in Part I about the inadequacies of traditional methods to allow that argument to be developed fully in Part V.

- The sections in Part III (on economics theories) and Part IV (on finance theories) that are of particular interest. Chapter 12, “Real Options and Expanded Net Present Value,” should not be overlooked if the practitioner performs work on firms that have significant growth options, intellectual property investments, or natural resources interests.
- Any of the topics covered in Part V on traditional methods. Most practitioners will be familiar with these methods but may or may not be aware of their serious limitations. Practitioners can compare their own experience with mine on the frequent use of adjustments in traditional methods.
- The novel value functional method presented in Chapters 15 and 16. Some practitioners will want to only understand the theory; some will want to try out the method and review examples as well.
- If the practitioner wishes to see how the methods described in the book actually work, he or she should also review the three sample firms in Appendix C, “Description of Subject Companies.” These are *actual* firms. Using these firms provides a vivid test of whether valuation methods actually work on real companies.

### **SOLUTIONS MANUAL AND ADDITIONAL RESOURCES**

To accompany this book, I have prepared a *Solutions Manual*. An electronic copy of this is available for download free of charge to book purchasers. This volume includes a guide to the mathematics used in the book; additional business data; valuation standards; hints to problems; intermediate results; and notes on software used in the examples presented in this book. See Appendix B, “Guide to the Solutions Manual,” for information on obtaining this *Solutions Manual* and an outline of its contents. The *Solutions Manual* can be found at <http://www.andersoneconomicgroup.com/books>.

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