

WILEY FINANCE

Second Edition

# Investment valuation

Tools and Techniques  
for Determining the  
Value of *Any* Asset

UNIVERSITY EDITION

Revised  
and  
Updated

ASWATH DAMODARAN

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Tools and Techniques for  
Determining the Value of *Any* Asset

Second Edition

**ASWATH DAMODARAN**

[www.damodaran.com](http://www.damodaran.com)



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Investment

# **valuation**

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I would like to dedicate this book to Michele, whose patience and support made it possible, and to my four children—Ryan, Brendan, Kendra, and Kiran—who provided the inspiration.



## **preface**

**T**his is a book about valuation—the valuation of stocks, businesses, franchises, and real assets. It is a fundamental precept of this book that any asset can be valued, albeit imprecisely in some cases. I have attempted to provide a sense of not only the differences between the models used to value different types of assets, but also the common elements in these models.

The six years between the first edition and this one have been eventful ones to say the least. We have seen the birth of a new sector—new technology—and one of the most incredible surges in value in market history as the values of these companies reached \$1.4 trillion in early 2000. In the course of this market, there were many who came to the conclusion that the old valuation metrics and principles were both stodgy and inappropriate and decided to write their own rules for this new market. The past year, however, has illustrated more clearly than ever before that the basic principles of valuation have not changed. Not surprisingly, this book considers the valuation of these young companies, often with low revenues and large operating losses. In addition, we have seen the rise and fall and rise again of emerging markets as the Asian crisis devastated equity values on that continent in 1996 and 1997 and Latin America and Russia followed soon after. I spend a great deal more time talking about country risk and how best to deal with it in this edition than in the previous one.

The surge of interest in stockholder wealth maximization the world over during the 1990s also resulted in the invention of “new and better” value enhancement measures such as economic value added and cash flow return on investment. While I believe that there is little that is new or better about these approaches, they have had the salutary effect of focusing attention on value enhancement, a topic that deserves more attention than it got in the first edition.

The times seem to have also caught up with a theme that was introduced in the first edition—the notion that option pricing models could be useful in valuing businesses and equity. Real options represent not only the theme of the moment but also a fundamental change in how we view value. I spend four chapters on the topic.

Finally, the most welcome change in the past seven years is the ease with which readers can access material online. Consequently, every valuation in this book will be put on the web site that will accompany this book ([www.damodaran.com](http://www.damodaran.com)), as will a significant number of datasets and spreadsheets. In fact, the valuations in the book will be updated online, allowing the book to have a much closer link to real-time valuations.

In the process of presenting and discussing the various aspects of valuation, I have tried to adhere to four basic principles. First, I have attempted to be as comprehensive as possible in covering the range of valuation models that are available to an analyst doing a valuation, while presenting the common elements in these models and providing a framework that can be used to pick the right model for any valuation scenario. Second, the models are presented with real-world examples,

warts and all, so as to capture some of the problems inherent in applying these models. There is the obvious danger that some of these valuations will appear to be hopelessly wrong in hindsight, but this cost is well worth the benefits. Third, in keeping with my belief that valuation models are universal and not market-specific, illustrations from markets outside the United States are interspersed through the book. Finally, I have tried to make the book as modular as possible, enabling a reader to pick and choose sections of the book to read without a significant loss of continuity.

ASWATH DAMODARAN

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# Introduction to Valuation

**E**very asset, financial as well as real, has a value. The key to successfully investing in and managing these assets lies in understanding not only what the value is, but the sources of the value. Any asset can be valued, but some assets are easier to value than others, and the details of valuation will vary from case to case. Thus, the valuation of a real estate property will require different information and follow a different format than the valuation of a publicly traded stock. What is surprising, however, is not the differences in techniques across assets, but the degree of similarity in basic principles. There is uncertainty associated with valuation. Often that uncertainty comes from the asset being valued, though the valuation model may add to that uncertainty.

This chapter lays out a philosophical basis for valuation, together with a discussion of how valuation is or can be used in a variety of frameworks, from portfolio management to corporate finance.

## **A PHILOSOPHICAL BASIS FOR VALUATION**

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It was Oscar Wilde who described a cynic as one who “knows the price of everything, but the value of nothing.” He could very well have been describing some analysts and many investors, a surprising number of whom subscribe to the “bigger fool” theory of investing, which argues that the value of an asset is irrelevant as long as there is a “bigger fool” around willing to buy the asset from them. While this may provide a basis for some profits, it is a dangerous game to play, since there is no guarantee that such an investor will still be around when the time to sell comes.

A postulate of sound investing is that an investor does not pay more for an asset than it's worth. This statement may seem logical and obvious, but it is forgotten and rediscovered at some time in every generation and in every market. There are those who are disingenuous enough to argue that value is in the eye of the beholder, and that any price can be justified if there are other investors willing to pay that price. That is patently absurd. Perceptions may be all that matter when the asset is a painting or a sculpture, but investors do not (and should not) buy most assets for aesthetic or emotional reasons; financial assets are acquired for the cash flows expected on them. Consequently, perceptions of value have to be backed up by reality, which implies that the price that is paid for any asset should reflect the cashflows it is expected to generate. The models of valuation described in this book attempt to relate value to the level and expected growth of these cash flows.

There are many areas in valuation where there is room for disagreement, in-