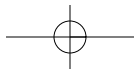
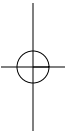
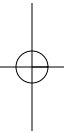
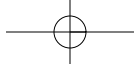


Investment **Valuation**

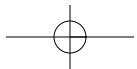
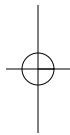
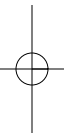




Founded in 1807, John Wiley & Sons is the oldest independent publishing company in the United States. With offices in North America, Europe, Australia and Asia, Wiley is globally committed to developing and marketing print and electronic products and services for our customers' professional and personal knowledge and understanding.

The Wiley Finance series contains books written specifically for finance and investment professionals as well as sophisticated individual investors and their financial advisors. Book topics range from portfolio management to e-commerce, risk management, financial engineering, valuation and financial instrument analysis, as well as much more.

For a list of available titles, please visit our Web site at www.WileyFinance.com.



Investment **Valuation**

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

Third Edition

ASWATH DAMODARAN

www.damodaran.com



WILEY
John Wiley & Sons, Inc.

Copyright © 2012 by Aswath Damodaran. All rights reserved.

Published by John Wiley & Sons, Inc., Hoboken, New Jersey.
Published simultaneously in Canada.

No part of this publication may be reproduced, stored in a retrieval system, or transmitted in any form or by any means, electronic, mechanical, photocopying, recording, scanning, or otherwise, except as permitted under Section 107 or 108 of the 1976 United States Copyright Act, without either the prior written permission of the Publisher, or authorization through payment of the appropriate per-copy fee to the Copyright Clearance Center, Inc., 222 Rosewood Drive, Danvers, MA 01923, (978) 750-8400, fax (978) 646-8600, or on the Web at www.copyright.com. Requests to the Publisher for permission should be addressed to the Permissions Department, John Wiley & Sons, Inc., 111 River Street, Hoboken, NJ 07030, (201) 748-6011, fax (201) 748-6008, or online at <http://www.wiley.com/go/permissions>.

Limit of Liability/Disclaimer of Warranty: While the publisher and author have used their best efforts in preparing this book, they make no representations or warranties with respect to the accuracy or completeness of the contents of this book and specifically disclaim any implied warranties of merchantability or fitness for a particular purpose. No warranty may be created or extended by sales representatives or written sales materials. The advice and strategies contained herein may not be suitable for your situation. You should consult with a professional where appropriate. Neither the publisher nor author shall be liable for any loss of profit or any other commercial damages, including but not limited to special, incidental, consequential, or other damages.

For general information on our other products and services or for technical support, please contact our Customer Care Department within the United States at (800) 762-2974, outside the United States at (317) 572-3993 or fax (317) 572-4002.

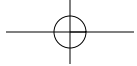
Wiley also publishes its books in a variety of electronic formats. Some content that appears in print may not be available in electronic books. For more information about Wiley products, visit our web site at www.wiley.com.

Library of Congress Cataloging-in-Publication Data:

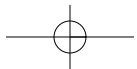
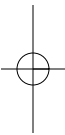
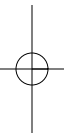
ISBN 978-1-118-01152-2

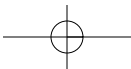
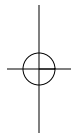
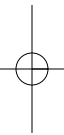
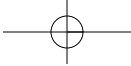
Printed in the United States of America

10 9 8 7 6 5 4 3 2 1



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.





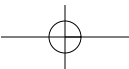
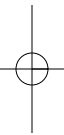
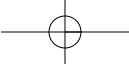
Preface to the Third Edition

This is a book about valuation—the valuation of stocks, bonds, options, futures 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 last decade has been an eventful one for those interested in valuation for several reasons. First, the growth of Asian and Latin American markets brought emerging market companies into the forefront and you will see the increased focus on these companies in this edition. Second, we saw the havoc wreaked by macro-economic factors on company valuations during the bank crisis of 2008, and a blurring of the lines between developed and emerging markets. The lessons I learned about financial fundamentals during the crisis about risk-free rates, risk premiums and cash flow estimation are incorporated into the text. Third, the last year has seen the influx of social media companies, with small revenues and outsized market capitalizations, in an eerie replay of the dot-com boom from the late 1990s. More than ever, it made clear that the more things change, the more they stay the same. Finally, the entry of new players into equity markets (hedge funds, private equity investors and high-frequency traders) has changed markets and investing dramatically. With each shift, the perennial question arises, “Is valuation still relevant in “this” market?”, and my answer remains unchanged, “Absolutely and more than ever”.

As technology increasingly makes the printed page an anachronism, I have tried to adapt in many ways. First, this book will be available in eBook format, and hopefully will be just as useful (if not more so) than the print editions. Second, every valuation in this book will be put on the web site that will accompany this book (www.damodaran.com) as will a significant number of datasets and spreadsheets. In fact, the valuations in the book will be ~~constantly~~ 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 throughout 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.



Contents

CHAPTER 1		
Introduction to Valuation		1
A Philosophical Basis for Valuation		1
Generalities about Valuation		2
The Role of Valuation		6
Conclusion		9
Questions and Short Problems		9
CHAPTER 2		
Approaches to Valuation		11
Discounted Cash Flow Valuation		11
Relative Valuation		19
Contingent Claim Valuation		23
Conclusion		25
Questions and Short Problems		25
CHAPTER 3		
Understanding Financial Statements		27
The Basic Accounting Statements		27
Asset Measurement and Valuation		29
Measuring Financing Mix		36
Measuring Earnings and Profitability		42
Measuring Risk		47
Other Issues in Analyzing Financial Statements		53
Conclusion		55
Questions and Short Problems		55
CHAPTER 4		
The Basics of Risk		58
What is Risk?		58
Equity Risk and Expected Return		59
Alternative Models for Equity Risk		71
A Comparative Analysis of Equity Risk Models		76
Models of Default Risk		77
Conclusion		81
Questions and Short Problems		82
CHAPTER 5		
Option Pricing Theory and Models		87
Basics of Option Pricing		87
Determinants of Option Value		89

Option Pricing Models	90
Extensions of Option Pricing	107
Conclusion	109
Questions and Short Problems	109
CHAPTER 6	
Market Efficiency—Definition, Tests, and Evidence	111
Market Efficiency and Investment Valuation	111
What Is an Efficient Market?	112
Implications of Market Efficiency	112
Necessary Conditions for Market Efficiency	114
Propositions about Market Efficiency	114
Testing Market Efficiency	116
Cardinal Sins in Testing Market Efficiency	120
Some Lesser Sins That Can Be a Problem	121
Evidence on Market Efficiency	122
Time Series Properties of Price Changes	122
Market Reaction to Information Events	130
Market Anomalies	134
Evidence on Insiders and Investment Professionals	142
Conclusion	149
Questions and Short Problems	150
CHAPTER 7	
Riskless Rates and Risk Premiums	154
The Risk-Free Rate	154
Equity Risk Premium	159
Default Spreads on Bonds	177
Conclusion	180
Questions and Short Problems	180
CHAPTER 8	
Estimating Risk Parameters and Costs of Financing	182
The Cost of Equity and Capital	182
Cost of Equity	183
From Cost of Equity to Cost of Capital	209
Best Practices at Firms	221
Conclusion	221
Questions and Short Problems	222
CHAPTER 9	
Measuring Earnings	228
Accounting versus Financial Balance Sheets	228
Adjusting Earnings	229
Conclusion	246
Questions and Short Problems	248

CHAPTER 10	
From Earnings to Cash Flows	249
The Tax Effect	249
Reinvestment Needs	257
Conclusion	267
Questions and Short Problems	268
CHAPTER 11	
Estimating Growth	270
The Importance of Growth	270
Historical Growth	271
Analyst Estimates of Growth	281
Fundamental Determinants of Growth	284
Qualitative Aspects of Growth	301
Conclusion	302
Questions and Short Problems	302
CHAPTER 12	
Closure in Valuation: Estimating Terminal Value	304
Closure in Valuation	304
The Survival Issue	318
Closing Thoughts on Terminal Value	320
Conclusion	321
Questions and Short Problems	321
CHAPTER 13	
Dividend Discount Models	323
The General Model	323
Versions of the Model	324
Issues in Using the Dividend Discount Model	344
Tests of the Dividend Discount Model	345
Conclusion	348
Questions and Short Problems	349
CHAPTER 14	
Free Cash Flow to Equity Discount Models	351
Measuring What Firms Can Return to Their Stockholders	351
FCFE Valuation Models	357
FCFE Valuation versus Dividend Discount Model Valuation	372
Conclusion	376
Questions and Short Problems	376
CHAPTER 15	
Firm Valuation: Cost of Capital and Adjusted Present Value Approaches	380
Free Cash flow to the Firm	380
Firm Valuation: The Cost of Capital Approach	383

Firm Valuation: The Adjusted Present Value Approach	398
Effect of Leverage on Firm Value	402
Adjusted Present Value and Financial Leverage	415
Conclusion	419
Questions and Short Problems	419
CHAPTER 16	
Estimating Equity Value per Share	423
Value of Nonoperating Assets	423
Firm Value and Equity Value	440
Management and Employee Options	442
Value per Share When Voting Rights Vary	448
Conclusion	450
Questions and Short Problems	451
CHAPTER 17	
Fundamental Principles of Relative Valuation	453
Use of Relative Valuation	453
Standardized Values and Multiples	454
Four Basic Steps to Using Multiples	456
Reconciling Relative and Discounted Cash Flow Valuations	466
Conclusion	467
Questions and Short Problems	467
CHAPTER 18	
Earnings Multiples	468
Price-Earnings Ratio	468
The PEG Ratio	487
Other Variants on the PE Ratio	497
Conclusion	508
Questions and Short Problems	508
CHAPTER 19	
Book Value Multiples	511
Price-to-Book Equity	511
Applications of Price-Book Value Ratios	521
Use in Investment Strategies	530
Value-to-Book Ratios	532
Tobin's Q: Market Value/Replacement Cost	537
Conclusion	539
Questions and Short Problems	539
CHAPTER 20	
Revenue Multiples and Sector-Specific Multiples	542
Revenue Multiples	542
Sector-Specific Multiples	571

Conclusion	577
Questions and Short Problems	577
CHAPTER 21	
Valuing Financial Service Firms	581
Categories of Financial Service Firms	581
What is Unique about Financial Service Firms?	582
General Framework for Valuation	583
Discounted Cash Flow Valuation	584
Asset-Based Valuation	599
Relative Valuation	599
Issues in Valuing Financial Service Firms	605
Conclusion	607
Questions and Short Problems	608
CHAPTER 22	
Valuing Firms with Negative Earnings	611
Negative Earnings: Consequences and Causes	611
Valuing Negative Earnings Firms	615
Conclusion	639
Questions and Short Problems	639
CHAPTER 23	
Valuing Young or Start-Up Firms	643
Information Constraints	643
New Paradigms or Old Principles: A Life Cycle Perspective	644
Venture Capital Valuation	646
General Framework for Analysis	648
Value Drivers	659
Estimation Noise	661
Implications for Investors	662
Implications for Managers	663
The Expectations Game	663
Conclusion	665
Questions and Short Problems	666
CHAPTER 24	
Valuing Private Firms	667
What Makes Private Firms Different?	667
Estimating Valuation Inputs at Private Firms	668
Valuation Motives and Value Estimates	689
Valuing Venture Capital and Private Equity Stakes	693
Conclusion	699
Questions and Short Problems	699

CHAPTER 25		
Acquisitions and Takeovers		702
Background on Acquisitions		702
Empirical Evidence on the Value Effects of Takeovers		705
Steps in an Acquisition		705
Takeover Valuation: Biases and Common Errors		724
Structuring the Acquisition		725
Analyzing Management and Leveraged Buyouts		730
Conclusion		734
Questions and Short Problems		735
CHAPTER 26		
Valuing Real Estate		739
Real versus Financial Assets		739
Discounted Cash Flow Valuation		740
Comparable/Relative Valuation		759
Valuing Real Estate Businesses		761
Conclusion		763
Questions and Short Problems		763
CHAPTER 27		
Valuing Other Assets		766
Cash-Flow-Producing Assets		766
Non-Cash-Flow-Producing Assets		776
Assets with Option Characteristics		778
Conclusion		778
Questions and Short Problems		779
CHAPTER 28		
The Option to Delay and Valuation Implications		781
The Option to Delay a Project		781
Valuing a Patent		789
Natural Resource Options		796
Other Applications		802
Conclusion		802
Questions and Short Problems		803
CHAPTER 29		
The Options to Expand and to Abandon: Valuation Implications		805
The Option to Expand		805
When Are Expansion Options Valuable?		812
Valuing a Firm with the Option to Expand		815
Value of Financial Flexibility		817
The Option to Abandon		820
Reconciling Net Present Value and Real Option Valuations		823
Conclusion		823
Questions and Short Problems		824

CHAPTER 30	
Valuing Equity in Distressed Firms	826
Equity in Highly Levered Distressed Firms	826
Implications of Viewing Equity as an Option	828
Estimating the Value of Equity as an Option	831
Consequences for Decision Making	836
Conclusion	839
Questions and Short Problems	839
CHAPTER 31	
Value Enhancement: A Discounted Cash Flow Valuation Framework	841
Value Creating and Value-Neutral Actions	841
Ways of Increasing Value	842
Value Enhancement Chain	859
Closing Thoughts on Value Enhancement	864
Conclusion	865
Questions and Short Problems	865
CHAPTER 32	
Value Enhancement: Economic Value Added, Cash Flow Return on Investment, and Other Tools	869
Economic Value Added	870
Cash Flow Return on Investment	884
A Postscript on Value Enhancement	890
Conclusion	891
Questions and Short Problems	891
CHAPTER 33	
Probabilistic Approaches in Valuation: Scenario Analysis, Decision Trees, and Simulations	894
Scenario Analysis	894
Decision Trees	899
Simulations	908
An Overall Assessment of Probabilistic Risk-Assessment Approaches	919
Conclusion	921
Questions and Short Problems	921
CHAPTER 34	
Overview and Conclusion	925
Choices in Valuation Models	925
Which Approach Should You Use?	926
Choosing the Right Discounted Cash Flow Model	929
Choosing the Right Relative Valuation Model	933
When Should You Use the Option Pricing Models?	937
Conclusion	938
References	939
Index	954

