

GLOBAL  
EDITION

# Excel Modeling in Corporate Finance

FIFTH EDITION



Craig W. Holden

ALWAYS LEARNING

PEARSON

*To Kathryn, Diana, and Jimmy.*

Editorial Project Manager: Erin McDonagh  
Head of Learning Asset Acquisition, Global  
Edition: Laura Dent  
Editorial Assistant: Elissa Senra-Sargent  
Managing Editor: Jeff Holcomb  
Acquisitions Editor, Global Edition: Steven Jackson

Associate Project Editor, Global Edition: Binita Roy  
Production Project Manager: Karen Carter  
Operations Specialist: Carol Melville  
Cover Image: © Kurt Kleemann / Shutterstock  
Cover designer: Lumina Datamatics

Credits and acknowledgments borrowed from other sources and reproduced, with permission, in this textbook appear on the appropriate page within text.

Microsoft and/or its respective suppliers make no representations about the suitability of the information contained in the documents and related graphics published as part of the services for any purpose. All such documents and related graphics are provided "as is" without warranty of any kind. Microsoft and/or its respective suppliers hereby disclaim all warranties and conditions with regard to this information, including all warranties and conditions of merchantability, whether express, implied or statutory, fitness for a particular purpose, title and non-infringement. In no event shall Microsoft and/or its respective suppliers be liable for any special, indirect or consequential damages or any damages whatsoever resulting from loss of use, data or profits, whether in an action of contract, negligence or other tortious action, arising out of or in connection with the use or performance of information available from the services.

The documents and related graphics contained herein could include technical inaccuracies or typographical errors. Changes are periodically added to the information herein. Microsoft and/or its respective suppliers may make improvements and/or changes in the product(s) and/or the program(s) described herein at any time. Partial screen shots may be viewed in full within the software version specified.

Microsoft® and Windows® are registered trademarks of the Microsoft Corporation in the U.S.A. and other countries. This book is not sponsored or endorsed by or affiliated with the Microsoft Corporation.

---

Pearson Education Limited, Edinburgh Gate, Harlow, Essex CM20 2JE, England  
and Associated Companies throughout the world

Visit us on the World Wide Web at: [www.pearsonglobaleditions.com](http://www.pearsonglobaleditions.com)

© Pearson Education Limited 2015

The rights of Craig W. Holden to be identified as the author of this work have been asserted by him in accordance with the Copyright, Designs and Patents Act 1988.

*Authorized adaptation from the United States edition, entitled Excel Modeling in Corporate Finance, 5th edition, ISBN 978-0-205-98725-2, by Craig W. Holden, published by Pearson Education © 2015.*

All rights reserved. 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 or otherwise, without either the prior written permission of the publisher or a license permitting restricted copying in the United Kingdom issued by the Copyright Licensing Agency Ltd, Saffron House, 6–10 Kirby Street, London EC1N 8TS.

All trademarks used herein are the property of their respective owners. The use of any trademark in this text does not vest in the author or publisher any trademark ownership rights in such trademarks, nor does the use of such trademarks imply any affiliation with or endorsement of this book by such owners.

ISBN 10: 1-292-05938-9  
ISBN 13: 978-1-292-05938-9 (Print)  
ISBN 13: 978-1-292-07149-7 (PDF)

British Library Cataloguing-in-Publication Data  
A catalogue record for this book is available from the British Library

14 13 12 11 10 9 8 7 6 5 4 3 2 1

Typeset in 10.8 Times New Roman by Cypress Graphics.  
Printed and bound in Great Britain by Clays Ltd, Bungay, Suffolk.

## 10.2 Adjusted Present Value

**Problem.** Given the cash flow streams, compute the current value of the firm and the value added by the firm using Adjusted Present Value.

**Solution Strategy.** Take the Free Cash Flow to the Firm and discount at the Unlevered Cost of Equity Capital to obtain the Value of the Unlevered Firm. Take the Tax Shield Benefit and discount at the Cost of Riskfree Debt to obtain the Value of the Tax Shield. Sum the Value of the Unlevered Firm and the Value of the Tax Shield to get the Value of the Firm. Subtract Date 0 Capital to get the Value Added by the Firm.

Excel 2013

FIGURE 10.3 Firm and Project Valuation – Adjusted Present Value.

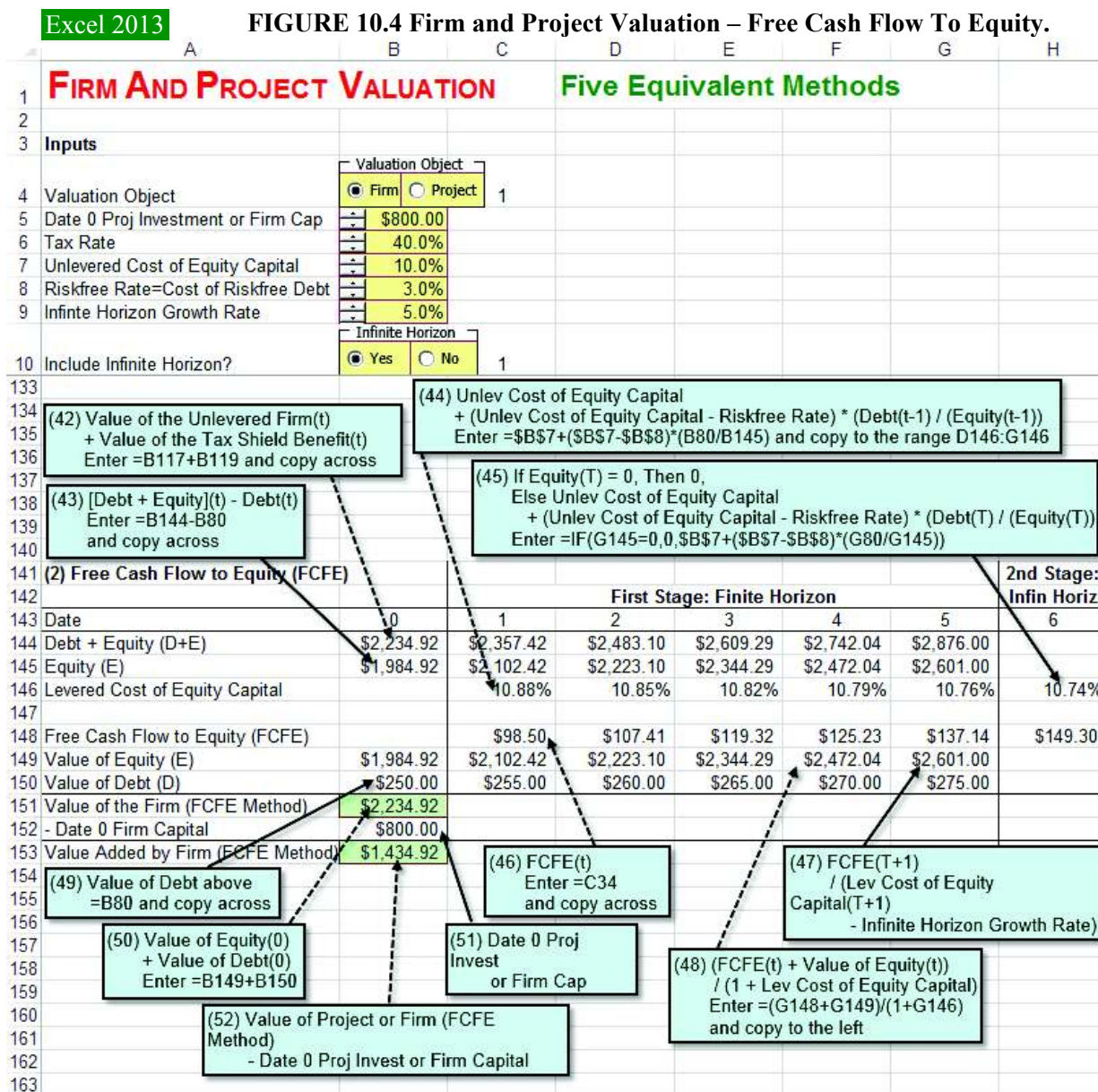
	A	B	C	D	E	F	G	H
1	<b>FIRM AND PROJECT VALUATION</b>		<b>Five Equivalent Methods</b>					
2								
3	<b>Inputs</b>							
4	Valuation Object	<input checked="" type="radio"/> Firm <input type="radio"/> Project						1
5	Date 0 Proj Investment or Firm Cap	\$800.00						
6	Tax Rate	40.0%						
7	Unlevered Cost of Equity Capital	10.0%						
8	Riskfree Rate=Cost of Riskfree Debt	3.0%						
9	Infinite Horizon Growth Rate	5.0%						
10	Include Infinite Horizon?	<input checked="" type="radio"/> Yes <input type="radio"/> No						1
106		(33) Free Cash Flow to the Firm Enter =C78 and copy across		(35) Tax Shield Benefit Enter =C69 and copy across				
107								
108								
109		(34) $(FCFF(t) + \text{Value of the Unlevered Firm}(t)) / (1 + \text{Unlevered Cost of Equity Capital})$ Enter =(C116+C117)/(1+\$B\$7) and copy to the range C117:F117		(36) $FCFF(T+1) / (\text{Unlevered Cost of Equity Capital} - \text{Infinite Horizon Growth Rate})$ Enter =H116/(B7-B9)				
110								
111								
112								
113	(1.) Adjusted Present Value (APV)						2nd Stage:	
114		First Stage: Finite Horizon					Infin Horiz	
115	Date	0	1	2	3	4	5	6
116	Free Cash Flow to the Firm (FCFF)		\$98.00	\$107.00	\$119.00	\$125.00	\$137.00	\$140.50
117	Value of the Unlevered Firm	\$2,182.16	\$2,302.37	\$2,425.61	\$2,549.17	\$2,679.09	\$2,810.00	
118	Tax Shield Benefit		\$3.00	\$3.06	\$3.12	\$3.18	\$3.24	\$3.30
119	Value of the Tax Shield Benefit	\$52.76	\$55.04	\$57.49	\$60.11	\$62.95	\$66.00	
120	Value of the Firm (APV Method)	\$2,234.92						
121	- Date 0 Firm Capital	\$800.00						
122	Value Added by Firm (APV Method)	\$1,434.92						
123		(39) Value of Unlevered Firm(0) + Value of the Tax Shield Benefit(0) Enter =B117+B119		(40) Date 0 Proj Invest or Firm Cap Enter =\$B\$5		(37) Tax Shield Benefit (T+1) / (Unlevered Cost of Equity Capital - Infinite Horizon Growth Rate) Enter =H118/(B7-B9)		
124								
125								
126								
127		(41) Value of Project or Firm (APV Method) - Date 0 Proj Invest or Firm Capital Enter =B120-B121		(38) (Tax Shield Benefit(t) + Value of Tax Shield Benefit (t)) / (1 + Unlevered Cost of Equity Capital) Enter =(C118+C119)/(1+\$B\$7) and copy to C119:F119				
128								
129								
130								

The value of the firm is \$2,234.92. This is the amount of money you would be willing to pay if you were going to buy the firm on Date 0, since the Date 0 Firm Capital is already sunk into the firm. Considering that the firm is currently using \$800.00 in capital, the (Net Present) Value Added by the Firm is \$1,434.92.

## 10.3 Free Cash Flow To Equity

**Problem.** Given the cash flow streams, compute the current value of the firm and the value added by the firm using Free Cash Flow to Equity.

**Solution Strategy.** Take the Free Cash Flow to Equity and discount at the Levered Cost of Equity Capital to obtain the Value of Equity. Take the Cash Flow to Debtholders and discount at the Cost of Riskfree Debt to obtain the Value of Debt. Sum the Value of Equity and the Value of Debt to get the Value of the Firm. Subtract Date 0 Capital to get the Value Added by the Firm.



As above, the Value of the Firm is **\$2,234.92** and (Net Present) Value Added by the Firm is **\$1,434.92**.

## 10.4 Free Cash Flow to the Firm

**Problem.** Given the cash flow streams, compute the current value of the firm and the value added by the firm using Free Cash Flow to the Firm.

**Solution Strategy.** Take the Free Cash Flow to the Firm and discount at the Cost of Firm Capital (WACC) to obtain the Value of Firm. Subtract Date 0 Capital to get the Value Added by the Firm.

Excel 2013

FIGURE 10.5 Firm and Project Valuation – Free Cash Flow To The Firm.

FIRM AND PROJECT VALUATION		Five Equivalent Methods					
<b>Inputs</b>							
Valuation Object	<input checked="" type="radio"/> Firm <input type="radio"/> Project						
Date 0 Proj Investment or Firm Cap	\$800.00						
Tax Rate	40.0%						
Unlevered Cost of Equity Capital	10.0%						
Riskfree Rate=Cost of Riskfree Debt	3.0%						
Infinite Horizon Growth Rate	5.0%						
Include Infinite Horizon?	<input checked="" type="radio"/> Yes <input type="radio"/> No						
<b>(3) Free Cash Flow to the Firm (FCFF)</b>			First Stage: Finite Horizon				2nd Stage: Infin Horiz
Date	0	1	2	3	4	5	6
Equity Weight (E / (D+E))	88.8%	89.2%	89.5%	89.8%	90.2%	90.4%	
Debt Weight (D / (D+E))	11.2%	10.8%	10.5%	10.2%	9.8%	9.6%	
Cost of Firm Capital (WACC)		9.87%	9.87%	9.87%	9.88%	9.88%	9.89%
Free Cash Flow to the Firm (FCFF)		\$98.00	\$107.00	\$119.00	\$125.00	\$137.00	\$140.50
Value of the Firm (FCFF Method)	\$2,234.92	\$2,357.42	\$2,483.10	\$2,609.29	\$2,742.04	\$2,876.00	
- Date 0 Firm Capital	\$800.00						
Value Added by Firm (FCFF Method)	\$1,434.92						

(55) Debt(t) / [Debt + Equity](t) Enter =B80/B144 and copy to C180:F180	(53) Equity(t) / [Debt + Equity](t) Enter =B145/B144 and copy to C179:F179	(54) If [Debt + Equity](T) = 0, Then 0, Else Equity(T) / [Debt + Equity](T) Enter =IF(G144=0,0,G145/G144)
(57) (Lev Cost of Equity Cap) * (Equity Weight) + (1 - Tax Rate) * (Cost of Riskfree Debt) * (Debt Weight) Enter =C146*B179+(1-\$B\$6)*\$B\$8*B180 and copy across	(56) If [Debt + Equity](T) = 0, Then 0, Else Debt(T) / [Debt + Equity](T) Enter =IF(G144=0,0,G80/G144)	
(61) Date 0 Proj Invest or Firm Cap Enter =\$B\$5	(58) FCFF(t) Enter =C78 and copy across	(59) If Cost of Firm Capital(T+1) - Infinite Horizon Growth Rate = 0, Then 0, Else FCFF(T+1) / (Cost of Firm Capital(T+1) - Infinite Horizon Growth Rate(T+1)) Enter =IF(H181-B9=0,0,H183/(H181-B9))
(62) Value of Project or Firm (FCFF Method) - Date 0 Proj Invest or Firm Capital Enter =B184-B185	(60) (FCFF(t) + Value of the Firm (t)) / (1 + Cost of Firm Capital(t)) Enter =(G183+G184)/(1+G181) and copy to the left	

As above, the Value of the Firm is \$2,234.92 and (Net Present) Value Added by the Firm is \$1,434.92.

## 10.5 Dividend Discount Model

**Problem.** Given the cash flow streams, compute the current value of the firm and the value added by the firm using a Dividend Discount Model.

**Solution Strategy.** Take the Dividends and discount at the Levered Cost of Equity Capital to obtain the Value of Equity. Take the Cash Flow to Debtholders and discount at the Cost of Riskfree Debt to obtain the Value of Debt. Sum the Value of Equity and the Value of Debt to get the Value of the Firm. Subtract Date 0 Capital to get the Value Added by the Firm.

Excel 2013

FIGURE 10.6 Firm and Project Valuation – Dividend Discount Model.

	A	B	C	D	E	F	G	H
1	<b>FIRM AND PROJECT VALUATION</b>			<b>Five Equivalent Methods</b>				
2								
3	<b>Inputs</b>							
4	Valuation Object	<input checked="" type="radio"/> Firm <input type="radio"/> Project		1				
5	Date 0 Proj Investment or Firm Cap	\$800.00						
6	Tax Rate	40.0%						
7	Unlevered Cost of Equity Capital	10.0%						
8	Riskfree Rate=Cost of Riskfree Debt	3.0%						
9	Infinite Horizon Growth Rate	5.0%						
10	Include Infinite Horizon?	<input checked="" type="radio"/> Yes <input type="radio"/> No		1				
199	(65) $(\text{Dividend}(t) + \text{Value of Equity}(t)) / (1 + \text{Levered Cost of Equity Capital})$ Enter =(C207+C208)/(1+C146) and copy to the range C208:F208		(63) Dividend Enter =C35 and copy across		(64) $\text{Dividend}(T+1) / (\text{Lev Cost of Equity Capital}(T+1) - \text{Infinite Horizon Growth Rate}(T+1))$ Enter =H207/(H146-B9)			
200								
201								
202								
203								
204	<b>(4) Dividend Discount Model (DDM)</b>						<b>2nd Stage: Infin Horiz</b>	
205				<b>First Stage: Finite Horizon</b>				
206	Year	0	1	2	3	4	5	6
207	Dividend		\$98.50	\$107.41	\$119.32	\$125.23	\$137.14	\$149.30
208	Value of Equity (E)	\$1,984.92	\$2,102.42	\$2,223.10	\$2,344.29	\$2,472.04	\$2,601.00	
209	Value of Debt (D)	\$250.00	\$255.00	\$260.00	\$265.00	\$270.00	\$275.00	
210	Value of the Firm (DDM Method)	\$2,234.92						
211	- Date 0 Firm Capital	\$800.00						
212	Value Added by Firm (DDM Method)	\$1,434.92						
213	(67) $\text{Value of Equity}(0) + \text{Value of the Debt}(0)$ Enter =B208+B209		(66) Value of Debt above Enter =B80 and copy					
214								
215								
216	(68) Date 0 Proj Invest or Firm Cap Enter =\$B\$5		(69) Value of Project or Firm (DDM Method) - Date 0 Proj Invest or Firm Capital Enter =B210-B211					
217								
218								

As above, the Value of the Firm is **\$2,234.92** and (Net Present) Value Added by the Firm is **\$1,434.92**.

## 10.6 Residual Income

**Problem.** Given the cash flow streams, compute the current value of the firm and the value added by the firm using Residual Income.

**Solution Strategy.** Take the Economic Profit and discount at the Cost of Firm Capital (WACC) to obtain the Value of Economic Profit. Add the Date 0 Book Value of the Firm to get the Value of the Firm. Subtract Date 0 Capital to get the Value Added by the Firm.

Excel 2013

FIGURE 10.7 Firm and Project Valuation – Residual Income.

FIRM AND PROJECT VALUATION		Five Equivalent Methods					
<b>Inputs</b>							
Valuation Object	<input checked="" type="radio"/> Firm <input type="radio"/> Project						
Date 0 Proj Investment or Firm Cap	\$800.00						
Tax Rate	40.0%						
Unlevered Cost of Equity Capital	10.0%						
Riskfree Rate=Cost of Riskfree Debt	3.0%						
Infinite Horizon Growth Rate	5.0%						
Include Infinite Horizon?	<input checked="" type="radio"/> Yes <input type="radio"/> No						
<div style="display: flex; justify-content: space-between;"> <div style="border: 1px solid black; padding: 5px;">                     (70) Economic Profit Enter =C87 and copy across                 </div> <div style="border: 1px solid black; padding: 5px;">                     (71) If Include Infinite Horizon = Yes, Then 0 Else After-tax Salvage Value(T) - Book Value(T) Enter =IF(C10=1,0,G28-G81)                 </div> <div style="border: 1px solid black; padding: 5px;">                     (72) If Cost of Firm Cap(T+1) - Infinite Horizon Growth Rate = 0, Then 0, Else Economic Profit (T+1) / (Cost of Firm Cap(T+1) - Infinite Horizon Growth Rate) Enter =IF(H181-B9=0,0,H231/(H181-B9))                 </div> </div>							
<b>(5) Residual Income (RI)</b>		First Stage: Finite Horizon				2nd Stage: Infin Horiz	
Year	0	1	2	3	4	5	6
Economic Profit		\$29.07	\$37.05	\$48.03	\$53.01	\$63.99	\$98.98
Economic Profit on Salvage Value						\$0.00	
Value of the Economic Profit	\$1,434.92	\$1,547.42	\$1,663.10	\$1,779.29	\$1,902.04	\$2,026.00	
+ Date 0 Book Value of the Firm	\$800.00						
Value of the Firm (RI Method)	\$2,234.92						
- Date 0 Firm Capital	\$800.00						
Value Added by Firm (RI Method)	\$1,434.92						
<div style="display: flex; justify-content: space-between;"> <div style="border: 1px solid black; padding: 5px;">                     (75) Value of the Economic Profit(0) + Date 0 Book Value of the Firm Enter =B233+B234                 </div> <div style="border: 1px solid black; padding: 5px;">                     (73) Date 0 Book Value of the Firm Enter =\$B\$5                 </div> <div style="border: 1px solid black; padding: 5px;">                     (74) (Economic Profit(t) + Economic Profit on Salvage Value(t) + Value of Equity(t)) / (1 + Cost of Firm Capital(t)) Enter =(G231+G232+G233)/(1+G181) and copy to the left                 </div> </div>							
<div style="display: flex; justify-content: space-between;"> <div style="border: 1px solid black; padding: 5px;">                     (77) Value of Project or Firm (RI Method) - Date 0 Proj Invest or Firm Capital Enter =B235-B236                 </div> <div style="border: 1px solid black; padding: 5px;">                     (76) Date 0 Proj Invest or Firm Cap Enter =\$B\$5                 </div> </div>							

As above, the Value of the Firm is **\$2,234.92** and (Net Present) Value Added by the Firm is **\$1,434.92**.