Modern Corporate Finance, Investments and Taxation
Contents

Part I Corporate Finance

1 Introduction ................................................................. 3
   References ..................................................................... 6

2 Capital Structure: Modigliani–Miller Theory ......................... 9
   2.1 The Traditional Approach ............................................ 9
   2.2 Modigliani–Miller Theory ............................................ 10
       2.2.1 Modigliani–Miller Theory Without Taxes .................. 10
       2.2.2 Modigliani–Miller Theory with Taxes ...................... 12
       2.2.3 Main Assumptions of Modigliani–Miller Theory ........... 15
       2.2.4 Modifications of Modigliani–Miller theory ................. 16
   References ..................................................................... 25

3 Modern Theory of Capital Cost and Capital Structure:
   Brusov–Filatova–Orekhova Theory (BFO Theory) .................... 27
   3.1 Companies with Arbitrary Lifetime (Arbitrary Age):
       Brusov–Filatova–Orekhova Equation .............................. 28
   3.2 Comparison of Modigliani–Miller Results (Perpetuity Company)
       with Myers Results (1-Year Company) and Brusov–Filatova–
       Orekhova Ones (Company with Arbitrary Lifetime
       (Arbitrary Age)) ....................................................... 30
   3.3 Brusov–Filatova–Orekhova Theorem .............................. 32
   3.4 From Modigliani–Miller to General Theory of Capital Cost
       and Capital Structure ................................................. 37
   3.5 BFO Theory in the Case, When the Company Ceased to Exist
       at the Time Moment $n$ ................................................. 39
       3.5.1 Application of Formula BFO-2 .............................. 41
       3.5.2 Comparison of Results Obtained from Formulas
           BFO and BFO-2 .................................................... 42
   References ..................................................................... 45
4 Banking of the Famous Trade-Off Theory ........................................ 47
4.1 Optimal Capital Structure of the Company ................................. 47
4.2 Absence of the Optimal Capital Structure in Modified
Modigliani–Miller Theory (MMM Theory) ........................................... 50
4.3 Analysis of the Trade-Off Theory Within the Brusov–Filatova–
Orekhova Theory ............................................................................. 51
4.4 The Causes of Absence of the Optimum Capital Structure in
Trade-Off Theory ............................................................................. 61
References ...................................................................................... 71

5 New Mechanism of Formation of the Company’s Optimal Capital
Structure, Different from Suggested by Trade-Off Theory .................. 73
5.1 Absence of Suggested Mechanism of Formation of the
Company’s Optimal Capital Structure Within Modified
Modigliani–Miller Theory (MMM Theory) ........................................... 73
5.2 Formation of the Company’s Optimal Capital Structure Within
Brusov–Filatova–Orekhova (BFO) Theory .......................................... 75
5.3 Simple Model of Proposed Mechanism .......................................... 88
References ...................................................................................... 91

6 The Global Causes of the Global Financial Crisis ........................... 93
References ...................................................................................... 98

7 The Role of Taxing and Leverage in Evaluation of Capital Cost
and Capitalization of the Company .................................................. 99
7.1 The Role of Taxes in Modigliani–Miller Theory ............................ 100
7.2 The Role of Taxes in Brusov–Filatova–Orekhova Theory ............... 102
  7.2.1 Weighted Average Cost of Capital
of the Company WACC .................................................................... 103
  7.2.2 Equity Cost $k_e$ of the Company ........................................... 105
  7.2.3 Dependence of WACC and $k_e$ on Lifetime (Age)
of Company ..................................................................................... 107
References ...................................................................................... 113

8 A Qualitatively New Effect in Corporate Finance: Abnormal
Dependence of Equity Cost of Company on Leverage ......................... 115
8.1 Equity Cost in the Modigliani–Miller Theory ............................... 116
8.2 Equity Cost Capital Within Brusov–Filatova–Orekhova
Theory ................................................................................................ 118
  8.2.1 Dependence of Equity Cost $k_e$ on Tax on Profit Rate
$T$ at Different Fixed Leverage Level $L$ ............................................ 120
  8.2.2 Dependence of Equity Cost $k_e$ on Leverage Level
$L$ (the Share of Debt Capital $w_d$) at Different Fixed
Tax on Profit Rate $T$ ......................................................................... 121
8.3 Dependence of the Critical Value of Tax on Profit Rate $T^*$
on Parameters $n, k_0, k_d$ of the Company ........................................ 124
<table>
<thead>
<tr>
<th>Section</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>11.6</td>
<td>Modigliani–Miller Limit</td>
<td>179</td>
</tr>
<tr>
<td>11.6.1</td>
<td>With Flows Separation</td>
<td>179</td>
</tr>
<tr>
<td>11.6.2</td>
<td>Without Flows Separation</td>
<td>180</td>
</tr>
<tr>
<td>References</td>
<td></td>
<td>181</td>
</tr>
<tr>
<td>12</td>
<td>Influence of Debt Financing on the Efficiency of Investment Projects:</td>
<td>183</td>
</tr>
<tr>
<td></td>
<td>The Analysis of Efficiency of Investment Projects Within the</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Perpetuity (Modigliani–Miller) Approximation</td>
<td></td>
</tr>
<tr>
<td>12.1</td>
<td>The Effectiveness of the Investment Project from the Perspective</td>
<td>184</td>
</tr>
<tr>
<td></td>
<td>of the Equity Holders Only</td>
<td></td>
</tr>
<tr>
<td>12.1.1</td>
<td>With the Division of Credit and Investment Flows</td>
<td>184</td>
</tr>
<tr>
<td>12.1.2</td>
<td>Without Flows Separation</td>
<td>192</td>
</tr>
<tr>
<td>12.2</td>
<td>The Effectiveness of the Investment Project from the Perspective</td>
<td>200</td>
</tr>
<tr>
<td></td>
<td>of the Equity and Debt Owners</td>
<td></td>
</tr>
<tr>
<td>12.2.1</td>
<td>With the Division of Credit and Investment Flows</td>
<td>200</td>
</tr>
<tr>
<td>12.2.2</td>
<td>Without Flows Separation</td>
<td>208</td>
</tr>
<tr>
<td>References</td>
<td></td>
<td>216</td>
</tr>
<tr>
<td>13</td>
<td>The Analysis of the Exploration of Efficiency of Investment</td>
<td>217</td>
</tr>
<tr>
<td></td>
<td>Projects of Arbitrary Duration (Within Brusov–Filatova–Orekhova</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Theory)</td>
<td></td>
</tr>
<tr>
<td>13.1</td>
<td>The Effectiveness of the Investment Project from the Perspective</td>
<td>217</td>
</tr>
<tr>
<td></td>
<td>of the Equity Holders Only</td>
<td></td>
</tr>
<tr>
<td>13.1.1</td>
<td>With the Division of Credit and Investment Flows</td>
<td>217</td>
</tr>
<tr>
<td>13.1.2</td>
<td>Without Flow Separation</td>
<td>225</td>
</tr>
<tr>
<td>13.2</td>
<td>The Effectiveness of the Investment Project from the Perspective</td>
<td>234</td>
</tr>
<tr>
<td></td>
<td>of the Owners of Equity and Debt</td>
<td></td>
</tr>
<tr>
<td>13.2.1</td>
<td>With the Division of Credit and Investment Flows</td>
<td>234</td>
</tr>
<tr>
<td>13.2.2</td>
<td>Without Flow Separation</td>
<td>242</td>
</tr>
<tr>
<td>13.3</td>
<td>The Elaboration of Recommendations on the Capital Structure of</td>
<td>250</td>
</tr>
<tr>
<td></td>
<td>Investment of Enterprises, Companies, Taking into Account All the</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Key Financial Parameters of Investment Project</td>
<td></td>
</tr>
<tr>
<td>13.3.1</td>
<td>General Conclusions and Recommendations on the Definition of</td>
<td>250</td>
</tr>
<tr>
<td></td>
<td>Capital Structure of Investment of Enterprises</td>
<td></td>
</tr>
<tr>
<td>References</td>
<td></td>
<td>252</td>
</tr>
<tr>
<td>14</td>
<td>Investment Models with Uniform Debt Repayment and Their Application</td>
<td>253</td>
</tr>
<tr>
<td>14.1</td>
<td>Investment Models with Uniform Debt Repayment</td>
<td>253</td>
</tr>
<tr>
<td>14.2</td>
<td>The Effectiveness of the Investment Project from the Perspective</td>
<td>255</td>
</tr>
<tr>
<td></td>
<td>of the Equity Holders Only</td>
<td></td>
</tr>
<tr>
<td>14.2.1</td>
<td>With the Division of Credit and Investment Flows</td>
<td>255</td>
</tr>
<tr>
<td>14.2.2</td>
<td>Without Flows Separation</td>
<td>256</td>
</tr>
</tbody>
</table>
14.3 The Effectiveness of the Investment Project from the Perspective of the Owners of Equity and Debt .......................... 257
14.3.1 With Flows Separation ......................................... 257
14.3.2 Without Flows Separation ...................................... 257
14.4 Example of the Application of the Derived Formulas ........... 258
References .................................................................... 259

15 Is It Possible to Increase Taxing and Conserve a Good Investment Climate in the Country? .................................... 261
15.1 Influence of Tax on Profit Rates on the Efficiency of the Investment Projects ......................................................... 261
15.2 Investment Models .................................................... 263
15.3 Borrowings Abroad .................................................... 265
15.4 Dependence of NPV on Tax on Profit Rate at Different Leverage Levels ................................................................. 267
15.5 At a Constant Value of Equity Capital (S = Const) ............. 268
15.6 Without Flow Separation ............................................. 270
15.6.1 At a Constant Value of the Total Invested Capital (I = Const) ................................................................. 270
15.6.2 At a Constant Value of Equity Capital (S = Const) ..... 272
References .................................................................... 274

16 Is It Possible to Increase the Investment Efficiency by Increasing Tax on Profit Rate? An Abnormal Influence of the Growth of Tax on Profit Rate on the Efficiency of the Investment ........ 277
16.1 Dependence of NPV on Leverage Level L at Fixed Levels of Tax on Profit Rate t ................................................................. 277
16.1.1 The Effectiveness of the Investment Project from the Perspective of the Equity Holders Only ................................. 277
16.1.2 The Effectiveness of the Investment Project from the Perspective of the Equity and Debt Holders ...................... 288
16.2 Dependence of NPV on Tax on Profit Rate at Fixed Leverage Levels L ................................................................. 294
16.2.1 The Effectiveness of the Investment Project from the Perspective of the Equity Holders Only ....................... 294
16.2.2 The Effectiveness of the Investment Project from the Perspective of the Equity and Debt Holders .................. 301
References .................................................................... 308

17 Optimizing the Investment Structure of the Telecommunication Sector Company ............................................. 309
17.1 Investment Analysis and Recommendations for Telecommunication Company "Nastcom Plus" ................................. 310
17.1.1 The Dependence of NPV on Investment Capital Structure ................................................................. 311
17.1.2 The Dependence of NPV on the Equity Capital Value and Coefficient $\beta$ ......................................................... 320
17.2 Effects of Taxation on the Optimal Capital Structure of Companies in the Telecommunication Sector 326
References 338

18 The Golden Age of the Company (Three Colors of Company’s Time) 339
18.1 Dependence of WACC on the Lifetime (Age) of the Company \( n \) at Different Leverage Levels 343
18.2 Dependence of WACC on the Lifetime (Age) of the Company \( n \) at Different Values of Capital Costs (Equity, \( k_0 \), and Debt, \( k_d \)) and Fixed Leverage Levels 345
18.3 Dependence of WACC on the Lifetime (Age) of the Company \( n \) at Different Values of Debt Capital Cost, \( k_d \), and Fixed Equity Cost, \( k_0 \), and Fixed Leverage Levels 348
18.4 Dependence of WACC on the Lifetime (Age) of the Company \( n \) at Different Values of Equity Cost, \( k_0 \), and Fixed Debt Capital Cost, \( k_d \), and Fixed Leverage Levels 352
18.5 Dependence of WACC on the Lifetime (Age) of the Company \( n \) at High Values of Capital Cost (Equity, \( k_0 \), and Debt, \( k_d \)) and High Lifetime of the Company 355
18.6 Further Investigation of Effect 361
References 364

19 Conclusion 367
References 368