Martin Sternal

Mergers and Acquisitions by Digital Technology Giants

Three Perspectives on Value Creation
Mergers and Acquisitions by Digital Technology Giants

Three Perspectives on Value Creation
# Table of Contents

List of Figures 9

List of Tables 11

List of Abbreviations 15

1 Introduction and Motivation 17
   1.1 Research Topics and Motivation 17
   1.2 Research Goals and Course of Analysis 19

2 Digital Giants’ Mergers and Acquisitions Activity: Drivers of Value Creation and Value Dilution 23
   2.1 Introduction 23
   2.2 Literature Review and Research Hypotheses 26
      2.2.1 Digital Giants’ Characteristics and Value Drivers 28
      2.2.2 Value Creation Drivers 32
      2.2.3 Value Dilution Drivers 36
   2.3 Data and Research Methodology 40
      2.3.1 Data Sample 40
      2.3.2 Definition of Variables 43
      2.3.3 Event Study Methodology 46
      2.3.4 Multivariate Regression Methodology 50
   2.4 Empirical Results 51
      2.4.1 Value Creation in Digital Giants’ Transactions 51
      2.4.2 Relatedness Effects on Aggregated Level 53
      2.4.3 Related Transactions on Company Level 55
      2.4.4 Unrelated Transactions on Company Level 58
      2.4.5 Robustness Analysis 61
      2.4.6 Analysis of Value Drivers 65
   2.5 Discussion 69
Table of Contents

3 Competitive Dynamics in the Digital Technology Industry: Rival Effects in the Light of Digital Giants’ Mergers and Acquisitions Activity
   3.1 Introduction 72
   3.2 Literature Review and Research Hypotheses 75
      3.2.1 Digital Giants and Competition in the Digital Technology Industry 76
      3.2.2 Competitive Dynamics and Rival Effects 79
      3.2.3 “Winner-Take-All” Markets and Market Concentration Hypothesis 81
      3.2.4 Competitive Advantages and Efficiency Hypothesis 82
      3.2.5 Potential Targets and Acquisition Probability Hypothesis 85
      3.2.6 Signaling Effects and Growth Probability Hypothesis 87
      3.2.7 Overview of Hypotheses 91
   3.3 Data and Research Methodology 92
      3.3.1 Data Sample and Rival Selection 92
      3.3.2 Definition of Variables 94
      3.3.3 Research Methodology 97
   3.4 Empirical Results 100
      3.4.1 Rival Effects on Direct and Indirect Rivals 100
      3.4.2 Supplemental Analysis of Direct Rivals 106
      3.4.3 Supplemental Analysis of Indirect Rivals 113
      3.4.4 Comparison of Direct and Indirect Rival Effects 118
      3.4.5 Robustness Analysis 120
   3.5 Discussion 123

4 Dotcom Giants vs. Digital Giants: Two Groups of Leading Digital Technology Players from Different Periods 127
   4.1 Introduction 127
   4.2 Literature Review and Research Hypotheses 130
      4.2.1 The Group of Dotcom Giants 131
      4.2.2 Mergers and Acquisitions and Dotcom Giants 133
      4.2.3 Relatedness Effects and Dotcom Giants 134
      4.2.4 Liquidity Effects and Dotcom Giants 136
      4.2.5 Rival Effects between Dotcom Giants and Digital Giants 137
# Table of Contents

4.3  Data and Research Methodology  139  
  4.3.1  Data Sample and Rival Selection  139  
  4.3.2  Definition of Variables  141  
  4.3.3  Research Methodology  143  

4.4  Empirical Results  145  
  4.4.1  Value Creation in Dotcom Giants’ Transactions  145  
  4.4.2  Value Drivers in Dotcom Giants’ Transactions  149  
  4.4.3  Rival Effects Analysis  153  

4.5  Discussion  159  

5  Overall Conclusion and Contribution  162  
  5.1  Summary of Results  162  
  5.2  Implications for Research and Practice  164  
  5.3  Avenues for Future Research  167  

References  169  

Appendix  181  
  Abstract: English Version  181  
  Abstract: German Version  182
List of Figures

Figure 1.2.1: Structure of the Thesis 21

Figure 2.3.1: Event Study Methodology 47

Figure 2.4.1: CAARs for Related and Unrelated Transactions on Aggregated Level 60

Figure 3.2.1: Competitive Dynamics Model 79

Figure 3.3.1: Research Model 97

Figure 3.4.1: CAARs to Direct and Indirect Rivals for Digital Giants’ Positive and Negative Transactions 119
List of Tables

Table 2.2.1: Digital Technology Giants’ M&A Value Drivers  28
Table 2.2.2: Largest Publicly Traded Companies Worldwide by Market Capitalization in 2017  29
Table 2.2.3: Digital Technology Giants’ Characteristics  32
Table 2.3.1: Data Sample Selection Funnel  42
Table 2.3.2: Distribution of Deals by Acquirer, Database and Year  43
Table 2.3.3: Characteristics of Transactions and Acquirers by Digital Technology Giant  46
Table 2.4.1: CAARs for the Total Sample on Aggregated and Company Level  52
Table 2.4.2: CAARs for Related and Unrelated Transactions on Aggregated Level  54
Table 2.4.3: CAARs for Related Transactions on Company Level  57
Table 2.4.4: CAARs for Unrelated Transactions on Company Level  59
Table 2.4.5: Robustness Analysis with Alternative Benchmarks  62
Table 2.4.6: Robustness Analysis with Alternative Return Generating Models  63
Table 2.4.7: Robustness Analysis with Alternative Sample  64
Table 2.4.8: Multivariate Regression Analysis  65
Table 3.2.1: Overview of Rival Effects Hypotheses and Expected Empirical Results  91
List of Tables

Table 3.3.1: Distribution of Deals by Acquirer and Year 93
Table 3.3.2: Characteristics of Transactions and Firms by Digital Technology Giants and Rivals 96
Table 3.4.1: CAARs to Direct Rivals, Indirect Rivals and Acquirers for Related Transactions 101
Table 3.4.2: CAARs to Direct Rivals, Indirect Rivals and Acquirers for Unrelated Transactions 102
Table 3.4.3: Multivariate Regression Analysis of Direct Rivals and Indirect Rivals – Total and by Relatedness 104
Table 3.4.4: CAARs to Direct Rivals Grouped by Acquirer Return and by Relatedness 107
Table 3.4.5: Multivariate Regression Analysis of Direct Rivals – by Acquirer Return and with Interaction Variables 109
Table 3.4.6: CAARs to Indirect Rivals Grouped by Acquirer Return and by Relatedness 114
Table 3.4.7: Multivariate Regression Analysis of Indirect Rivals – by Acquirer Return and with Interaction Variables 116
Table 3.4.8: CAARs to Direct and Indirect Rivals Grouped by Acquirer Return 120
Table 3.4.9: Robustness Analysis with Alternative Samples – CAARs 121
Table 3.4.10: Robustness Analysis with Alternative Samples – Multivariate Regression Analysis 122
Table 4.2.1: Largest Publicly Traded Companies Worldwide by Market Capitalization in 2000 132
Table 4.2.2: Market Capitalization and News Coverage of Dotcom Giants in 2007 and 2017 133
List of Tables

Table 4.2.3: Market Capitalization and News Coverage of Digital Technology Giants in 2007 and 2017 139

Table 4.3.1: Distribution of Deals by Acquirer and Year 140

Table 4.3.2: Characteristics of Transactions and Acquirers by Dotcom Giants and Digital Technology Giants 143

Table 4.4.1: CAARs to Growing Dotcom Giants, Shrinking Dotcom Giants and Microsoft Grouped by Relatedness 146

Table 4.4.2: CAARs to Digital Technology Giants Grouped by Relatedness 147

Table 4.4.3: Multivariate Regression Analysis of Dotcom Giants’ Transactions 150

Table 4.4.4: CAARs to Digital Technology Giants as Rivals Grouped by Acquirer Return 154

Table 4.4.5: Multivariate Regression Analysis of Digital Technology Giants as Rivals – Total and by Acquirer Return 155

Table 4.4.6: CAARs to Dotcom Giants as Rivals Grouped by Acquirer Return 157

Table 4.4.7: Multivariate Regression Analysis of Dotcom Giants as Rivals – Total and by Acquirer Return 158
# List of Abbreviations

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>BMP-test</td>
<td>Standardized cross-sectional test developed by Boehmer et al. (1991)</td>
</tr>
<tr>
<td>CAAR</td>
<td>Cumulative average abnormal return</td>
</tr>
<tr>
<td>CAR</td>
<td>Cumulative abnormal return</td>
</tr>
<tr>
<td>CEO</td>
<td>Chief executive officer</td>
</tr>
<tr>
<td>e.g.</td>
<td>For example</td>
</tr>
<tr>
<td>et al.</td>
<td>And others</td>
</tr>
<tr>
<td>FCF</td>
<td>Free cash flow</td>
</tr>
<tr>
<td>i.e.</td>
<td>In other words</td>
</tr>
<tr>
<td>IPO</td>
<td>Initial public offering</td>
</tr>
<tr>
<td>IS</td>
<td>Information systems</td>
</tr>
<tr>
<td>M&amp;A</td>
<td>Mergers and acquisitions</td>
</tr>
<tr>
<td>N.A.</td>
<td>No author</td>
</tr>
<tr>
<td>OLS</td>
<td>Ordinary least squares</td>
</tr>
<tr>
<td>p.</td>
<td>Page</td>
</tr>
<tr>
<td>R&amp;D</td>
<td>Research and development</td>
</tr>
<tr>
<td>RQ</td>
<td>Research question</td>
</tr>
<tr>
<td>SDC</td>
<td>Securities Data Company</td>
</tr>
<tr>
<td>SIC</td>
<td>Standard Industrial Classification</td>
</tr>
<tr>
<td>US</td>
<td>United States of America</td>
</tr>
<tr>
<td>vs.</td>
<td>Versus</td>
</tr>
</tbody>
</table>