

Contents

Figures	XII
Tables	XV
Abbreviations	XXV
Symbols	XXVII

1 Introduction.....1

2 The Agency Theory and its Empirical Implementation7

2.1 Overview over the Neoinstitutionalistic Theories	7
2.1.1 Transaction Cost Theory	9
2.1.2 Property Rights Approach	11
2.1.3 Asymmetric Information	12
2.2 Agency Theory	14
2.2.1 Typology of the Agency Theory	14
2.2.1.1 Owner-Manager Conflicts	14
2.2.1.2 Creditor-Owner and Other Agency Conflicts	15
2.2.2 Agency Problems and Agency Costs	17
2.2.2.1 The Concept of Agency Costs	17
2.2.2.2 The Categorization of Agency Costs by Jensen/Meckling	19
2.2.2.2.1 Monitoring Costs	19
2.2.2.2.2 Bonding Costs	20
2.2.2.2.3 Residual Loss	20
2.2.2.3 Risk Allocation and Utility Maximization as Agency Problems under Asymmetric Information	21
2.2.2.3.1 Risk Allocation	21
2.2.2.3.2 Utility Maximization	24
2.2.2.4 The Measurability of Agency Costs	25
2.2.3 Mechanisms to Reduce Agency Problems	26
2.2.3.1 Monitoring and Control Mechanisms	27
2.2.3.1.1 Internal Control Measures	27
2.2.3.1.1.1 Shareholder Voting and Block Ownership	27
2.2.3.1.1.2 The Supervisory Board	29
2.2.3.1.1.3 Internal Monitoring and Control by Non-Bank Creditors	30
2.2.3.1.1.4 Bottom-Up Monitoring	32
2.2.3.1.2 Markets as External Control Mechanisms	32
2.2.3.1.2.1 The Market for Corporate Control	33
2.2.3.1.2.2 The Bond Market	35
2.2.3.1.2.3 The Market for Managers	36

2.2.3.1.3 Banks as Controlling Instances in German Industrial Stock Companies	36
2.2.3.1.3.1 Banks as Creditors	37
2.2.3.1.3.2 Banks as Shareholders	37
2.2.3.1.3.3 Proxy Voting and Conflicts in the Principal Roles of Banks	38
2.2.3.2 Incentive and Bonding Mechanisms	39
2.2.3.2.1.1 Compensation Agreements and Managerial Ownership	40
2.2.3.2.1.2 Contractual Clauses in Debt Finance	41
2.2.3.2.1.3 Signaling as a Bonding Mechanism	42
2.2.3.3 Comparative Summary of the German and US Systems of Corporate Governance	43
2.3 The Dataset	44
2.3.1 Raw Data	44
2.3.1.1 Databases	44
2.3.1.2 Return calculation	45
2.3.1.3 Sector Classification	45
2.3.2 Agency Indicator Variables for the Empirical Research	47
2.3.2.1 Classification of the Agency Indicator Variables	47
2.3.2.2 Information Asymmetry Variables	50
2.3.2.3 Ownership Control Variables	51
2.3.2.4 Creditor Control Variables	52
2.3.2.5 Internal Control Variables	53
2.3.2.6 External Control Variables	53
2.3.2.7 Conglomerate Agency Variables	59
2.3.2.7.1 Aggregation of the Indicator Variables	59
2.3.2.7.2 Genetic Algorithms	61
2.3.2.7.2.1 A Brief Description of Genetic Algorithms	61
2.3.2.7.2.2 The Genetic Algorithm Design Used	63
2.3.2.7.2.3 Results of the Runs	64
2.4 The Statistical Methods Used in the Analysis	68
2.4.1 T-Tests for Differences in Group Means	68
2.4.2 Logistic Regressions	70
3 Financial Behavior in the Industrial Firm.....	72
3.1 Capital Structure Theory on Perfect Markets	72
3.2 Capital Structure Theory on Imperfect Markets	73
3.2.1 Internal vs. External Funds	74
3.2.2 Agency Costs of Debt and Equity	76
3.2.3 Investment and Firm Value	78
3.2.4 Debt versus Equity Finance	81
3.3 Empirical Analysis of the Financial Behavior of German Stock Corporations.....	86

3.3.1 Hypotheses	86
3.3.2 Previous Empirical Research	92
3.3.2.1 Research on Non-Agency Determinants of Capital Structure	92
3.3.2.2 Research on the Effects of Agency Problems between Owners and Managers on Financial Behavior	94
3.3.3 Empirical Results	96
3.3.3.1 Financial Behavior Variables in the Context of this Study	96
3.3.3.2 Comprehensive Analysis	97
3.3.3.2.1 T-Tests for Differences in Mean Financial Behavior	97
3.3.3.2.2 Logistic Regressions	103
3.3.3.3 Sectoral Analysis	107
3.3.3.3.1 Results for the Machinery Sector	107
3.3.3.3.2 Results for the Utilities Sector	115
3.3.3.3.3 Results for the Other Sectors and Overview of all Sectoral Re- sults	119
3.4 Summary of the Chapter	124

4 A Test of the Managerial Theory of Performance128

4.1 Agency Theory and Performance	128
4.1.1 The Overinvestment Problem and Free Cash Flows	128
4.1.2 The Underinvestment Problem, Agency Costs of Debt and Bank Control	129
4.1.3 Managerialism and Performance	131
4.1.3.1 Growth Model	131
4.1.3.2 Utility Model	132
4.1.4 Market Forces and Competition	133
4.2 Classification of Performance Measures	135
4.2.1 Absolute vs. Relative Measures	135
4.2.2 Market vs. Book Performance	136
4.2.3 Aggregate vs. Disaggregate Measures	139
4.3 Empirical Analysis of the Performance of German Stock Corporations	142
4.3.1 Performance Measures in the Context of this Study	142
4.3.1.1 Return on Capital	142
4.3.1.2 Return on Equity	142
4.3.1.3 Sharpe Ratio	145
4.3.1.4 Tobin's q	147
4.3.2 Hypotheses	149
4.3.3 Previous Empirical Research	153
4.3.4 Empirical Results	157
4.3.4.1 Comprehensive Analysis	157
4.3.4.1.1 Descriptives of the Variables	157
4.3.4.1.2 T-Tests for Differences in Mean Performance	158

4.3.4.1.3 Logistic Regressions	161
4.3.4.2 Yearly Analysis	164
4.3.4.2.1 T-Tests for Differences in Mean Performance	166
4.3.4.2.2 Logistic Regressions	172
4.3.4.2.3 Temporal Developments	177
4.3.4.3 Sectoral Analysis	182
4.3.4.3.1 T-Tests for Differences in Mean Performance	182
4.3.4.3.2 Logistic Regressions	190
4.4 Summary of the Chapter	192
5 Agency Problems and Efficiency in the Firm	196
5.1 Efficiency and Production Theory	196
5.1.1 Efficiency	196
5.1.2 Types of Efficiency	196
5.1.2.1 X-Efficiency	196
5.1.2.2 Cost and Profit Efficiency	199
5.1.2.3 Economies of Scale and Scope	199
5.1.2.4 Information and Risk Efficiency	199
5.1.3 The Production Process	200
5.1.3.1 The Underlying Production Technology	200
5.1.3.2 Costs and Profits	201
5.1.3.3 Duality between Production and Cost Functions	203
5.1.4 Production and Efficiency in the Context of this Study	207
5.1.5 Classification of the Methods of Efficiency Measurement	210
5.1.5.1 Non-Parametric Methods	211
5.1.5.2 Parametric Methods	213
5.1.5.2.1 Non-Stochastic Methods	213
5.1.5.2.2 Stochastic Methods	215
5.2 Empirical Analysis of the Efficiency of German Stock Corporations	216
5.2.1 Hypotheses	216
5.2.2 Previous Empirical Research	218
5.2.2.1 Research on Industrial and Agricultural Firms	218
5.2.2.2 Research in Banking Firms	223
5.2.3 The Dataset	228
5.2.4 Theoretical and Econometric Considerations	229
5.2.4.1 Using Translog Functional Form to Estimate the Efficiency Measures	229
5.2.4.2 Operationalization of Efficiency Measures	233
5.2.4.3 The Stochastic Frontier Approach	234
5.2.4.3.1 Inefficiency in the Regression Residual	234
5.2.4.3.2 Econometric Description of the Panel Frontier Cost Function	236

5.2.4.3.3 Econometric Description of the Cross-Sectional Frontier Cost Function.....	240
5.2.4.3.4 Determination of the Variables in the Cost Function	242
5.2.4.4 Tests and Properties of the Cost Function	247
5.2.5 Empirical Results	253
5.2.5.1 Cross-Sectional Cost Functions.....	253
5.2.5.1.1 Model Description.....	253
5.2.5.1.2 Estimation Results.....	254
5.2.5.1.3 Tests of the Properties of the Functions.....	256
5.2.5.1.4 T-Tests for Differences in Mean Inefficiency	260
5.2.5.1.5 Temporal Developments in Inefficiency	266
5.2.5.1.6 Logistic Regressions	270
5.2.5.2 Panel Model Overall Cost Function	274
5.2.5.2.1 Model Description.....	274
5.2.5.2.2 Estimation Results.....	275
5.2.5.2.3 Tests of the Properties of the Function	278
5.2.5.2.4 T-Tests for Differences in Mean Inefficiency	279
5.2.5.2.5 Logistic Regressions	282
5.2.5.3 Panel Model Sectoral Cost Functions.....	284
5.2.5.3.1 Model Description.....	284
5.2.5.3.2 Estimation Results.....	288
5.2.5.3.3 Tests of the Properties of the Functions.....	291
5.2.5.3.4 T-Tests for Differences in Mean Inefficiency	292
5.2.5.3.4.1 T-Tests for the Separate Sectoral Estimates	294
5.2.5.3.4.2 T-Tests for the Comprehensive Estimate by Sector	301
5.2.5.3.5 Logistic Regressions	310
5.3 Summary of the Chapter.....	316
6 Summary.....	320
A Appendix.....	330
A.1 The Agency Theory and its Empirical Implementation	330
A.2 Financial Behavior in the Industrial Firm	335
A.3 A Test of the Managerial Theory of Performance	341
A.4 Agency Problems and Efficiency in the Firm	356
B References.....	373

Figures

Figure 2-1: Systemization of the neoinstitutionalistic theories	8
Figure 2-2: Financial principal-agent relationships in a company	17
Figure 2-3: Development of the firm value by degree of managerial ownership	18
Figure 2-4: Graphical representation of the optimal level of monitoring	19
Figure 2-5: Exemplary sketch of the utility function of a risk averse person	23
Figure 2-6: Riskiness of investment policy of the management depending on the portion of performance-based compensation	41
Figure 2-7: Causality and measurability of agency problems	47
Figure 2-8: Susceptibility of the agency problem context to short-term managerial actions	48
Figure 2-9: Company and employee numbers, 1992'	56
Figure 2-10: Descriptive statistics for the sectors studied, values for 1992'	57
Figure 2-11: Crossover breeding	62
Figure 2-12: Sketch of a logistic function (before rounding).....	70
 Figure 3-1: Graphical representation of the optimal leverage theory	73
Figure 3-2: External financing under asymmetric information	75
Figure 3-3: Graphical representation of the optimal leverage according to the managerial theory.....	78
Figure 3-4: Graphical representation of the financial preferences by agency group according to hypotheses one to three	92
Figure 3-5: Average values for the financial activities by control group, using block ownership to distinguish	100
Figure 3-6: Average new long and short-term debt-to-asset ratios over all years, by sector	108
Figure 3-7: Debt ratios over all years, by sector	109
Figure 3-8: Average new equity and free cash flow-to-asset ratios over all years, by sector	109
Figure 3-9: Graphical representation of the financial preferences by agency group as confirmed or rejected in the tests of hypotheses one to three	127
 Figure 4-1: Growth model	132
Figure 4-2: Utility model	133
Figure 4-3: Profits lost to perks or competition.....	134
Figure 4-4: Development of costs due to agency problems by agency group	135
Figure 4-5: Return on Investment Diagram.....	141
Figure 4-6: Development of average returns on equity and capital over time	165
Figure 4-7: Development of average Sharpe ratios and values for Tobin's q over time.....	166

Figure 4-8: Ranking of the advantageousness of the three control groups regarding return on equity and Tobin's q for the years 1992, 1990 and 1988.....	171
Figure 4-9: Development of return on equity over time, by agency group (using block ownership to distinguish).....	178
Figure 4-10: Development of return on equity over time, by agency group (using <i>agency1</i> to distinguish).....	178
Figure 4-11: Development of return on equity over time, by agency group (using <i>agency5</i> to distinguish).....	179
Figure 4-12: Development of return on capital over time, by agency group (using the ratio of monitored to unmonitored debt to distinguish)	180
Figure 4-13: Development of Sharpe ratio over time, by agency group (using block ownership to distinguish).....	180
Figure 4-14: Development of Tobin's q over time, by agency group (using block ownership to distinguish).....	181
Figure 4-15: Average returns on equity and capital over all years, by sector ..	183
Figure 4-16: Average Sharpe ratios and values for Tobin's q over all years, by sector	183
Figure 5-1: Determinants of technical efficiency.....	197
Figure 5-2: Determinants of allocative efficiency.....	198
Figure 5-3: Determinants of distributive efficiency	198
Figure 5-4: Technically efficient production set border for the one input, one output production function	201
Figure 5-5: Cost-efficient production set border.....	202
Figure 5-6: Systemization of cost efficiency measures.....	203
Figure 5-7: Isoquants of homogeneous and homothetic functions	204
Figure 5-8: Inner (VI) and outer (VO) input requirement sets.....	205
Figure 5-9: Classification of estimation methods	210
Figure 5-10: Technical and allocative efficiency	211
Figure 5-11: Development of the mean values of the fixed and financial assets over time	246
Figure 5-12: Concavity of the cost function.....	249
Figure 5-13: Graphical demonstration of the determinant of a matrix	252
Figure 5-14: Development of <i>xineff</i> over time	266
Figure 5-15: Comparison of the development of <i>xineff</i> , σ and λ over time.....	267
Figure 5-16: Comparison of the development of <i>xineff</i> over time, by managerial and ownership control (using block ownership to distinguish)	268
Figure 5-17: Comparison of the development of <i>xineff</i> over time, by managerial and ownership control (using <i>agency1</i> to distinguish).....	269
Figure 5-18: Comparison of the development of <i>xineff</i> over time, by managerial and ownership control (using <i>agency5</i> to distinguish).....	270
Figure 5-19: Comparison of the development of the yearly values for λ and the comprehensive value	277

Figure 5-20: Comparison of yearly and comprehensive inefficiency estimates	280
Figure 5-21: Average total assets and employees over all years, per sector	286
Figure 5-22: Average total assets and costs over all years, per sector (in millions of DM)	287
Figure 5-23: Comparison of estimates for σ , sectoral and comprehensive regressions	290
Figure 5-24: Comparison of the average <i>xineff</i> , by sector, separate regressions to the overall average <i>xineff</i>	293
Figure 5-25: Comparison of <i>xineff</i> , by sector, for the separate and comprehensive regressions	302
Figure 5-26: Sketch of efficient border in relation to machinery companies (+) with and without companies from other sectors (•) included in regression	304
Figure 5-27: Sketch of efficient border in relation to management-controlled (+) and ownership-controlled (x) machinery companies with and without companies from other sectors (•) included in regression	305
Figure A-1: Development of return on capital over time, by agency group (using <i>agency1</i> to distinguish)	348
Figure A-2: Development of return on capital over time, by agency group (using <i>agency5</i> to distinguish)	348
Figure A-3: Development of Sharpe ratio over time, by agency group (using <i>agency1</i> to distinguish)	348
Figure A-4: Development of Sharpe ratio over time, by agency group (using <i>agency5</i> to distinguish)	349
Figure A-5: Development of Tobin's q over time, by agency group (using <i>agency1</i> to distinguish)	349
Figure A-6: Development of Tobin's q over time, by agency group (using <i>agency5</i> to distinguish)	349

Tables

Table 2-1: Distribution of share ownership in the US and Germany, in percent by owner category	28
Table 2-2: Comparison of the effectivity of the main German and US governance systems	44
Table 2-3: Number of companies in the sample, by sector and year	46
Table 2-4: Ranking of the sectors by degree of competitiveness in the sales market.....	57
Table 2-5: Correlations of the agency measures, 1986-1992	58
Table 2-6: Percentages of agency variables in conglomerate agency variables, using predetermined percentages.....	60
Table 2-7: Percentages of all agency variables in conglomerate agency variables, GeneHunter combinations	64
Table 2-8: Percentages of agency variables excluding the monitored debt ratio in conglomerate agency variables, GeneHunter combinations	65
Table 2-9: Correlations of the conglomerate agency measures, 1986-1992	65
Table 2-10: Agency variables in the analysis	67
Table 3-1: Substitutional effects of risky investments on corporate value	80
Table 3-2: Preferences for financial instruments, by management and ownership control	87
Table 3-3: Hypothesis 1: Preferences for financial instruments, by management and ownership control.....	88
Table 3-4: Preferences for financial instruments, by management and creditor control	88
Table 3-5: Hypothesis 2: Preferences for financial instruments, by management and creditor control	89
Table 3-6: Preferences for financial instruments, by ownership and creditor control	89
Table 3-7: Hypothesis 3: Preferences for financial instruments, by management and creditor control	90
Table 3-8: Previous empirical studies of non-agency determinants of capital structure	94
Table 3-9: Previous empirical studies of agency determinants of the capital structure	95
Table 3-10: Calculation of the financial instrument variables	97
Table 3-11: Descriptives of the agency variables, 1986-1992	97
Table 3-12: Descriptives of the finance measures, 1986-1992	98
Table 3-13: Correlations of the agency variables.....	99
Table 3-14: Correlations between the agency and finance variables	99

Table 3-15: T-tests for differences of means of finance measures for groups with and without agency problems, by agency variable, 1986-1992	101
Table 3-16: T-tests for differences of means of the finance measures between owner-controlled and creditor-controlled companies, 1986-1992	102
Table 3-17: Coefficients and overall results of the logistic seemingly unrelated regressions on the finance dummy variables for the first hypothesis, 1986-1992.....	105
Table 3-18: Coefficients and overall results of the logistic seemingly unrelated regressions on the finance dummy variables for the second hypothesis, 1986-1992	106
Table 3-19: Overview over the validity of hypotheses one to three; 1986-1992.....	107
Table 3-20: T-tests for differences of means of finance measures for groups with and without agency problems, by agency variable, machinery sector	110
Table 3-21: T-tests for differences of means of the finance measures between owner-controlled and creditor-controlled companies, machinery sector ...	111
Table 3-22: Coefficients and overall results of the logistic seemingly unrelated regressions on the finance dummy variables for the first hypothesis, machinery sector	112
Table 3-23: Coefficients and overall results of the logistic seemingly unrelated regressions on the finance dummy variables for the second hypothesis, machinery sector	113
Table 3-24: Overview over the validity of hypotheses one to three; machinery sector	114
Table 3-25: T-tests for differences of means of finance measures for groups with and without agency problems, by agency variable, utilities sector	116
Table 3-26: T-tests for differences of means of the finance measures between owner-controlled and creditor-controlled companies, utilities sector	116
Table 3-27: Coefficients and overall results of the logistic seemingly unrelated regressions on the finance dummy variables for the first hypothesis, utilities sector	117
Table 3-28: Coefficients and results of the logistic seemingly unrelated regressions on the finance dummy variables for the second hypothesis, utilities sector	118
Table 3-29: Overview over the validity of hypotheses one to three; utilities sector	119
Table 3-30: Overview over the validity of hypotheses one to three; chemicals sector	119
Table 3-31: Overview over the validity of hypotheses one to three; electronics sector	120
Table 3-32: Overview over the validity of hypotheses one to three; food & beverages sector	121
Table 3-33: Overview over the validity of hypotheses one to three, all sectors.....	122

Table 3-34: Alternative overview over the validity of hypotheses one to four; all sectors'	124
Table 3-35: Overview over the validity of hypotheses one to four; all methods	125
Table 4-1: Calculation of the net operating result	137
Table 4-2: Calculation of the net financial result	138
Table 4-3: Calculation of the balance sheet income	138
Table 4-4: Correlations of the performance measures, 1986-1992	148
Table 4-5: Previous empirical studies of agency determinants of performance	156
Table 4-6: Descriptives of the performance measures, 1986-1992	157
Table 4-7: Descriptives of the agency variables, 1986-1992	158
Table 4-8: T-tests for differences of means of performance measures for groups with and without agency problems, by agency variable, 1986-1992	159
Table 4-9: T-tests for differences of means of the performance measures between owner-controlled and creditor-controlled companies, 1986-1992 ..	161
Table 4-10: Coefficients and overall results of the logistic regressions on the performance dummy variables, 1986-1992	163
Table 4-11: Overview over the validity of hypotheses one to three; comprehensive tests 1986-1992	164
Table 4-12: T-tests for differences of means of performance measures for groups with and without agency problems, by agency variable, 1992	167
Table 4-13: T-tests for differences of means of performance measures for groups with and without agency problems, by agency variable, 1990	168
Table 4-14: T-tests for differences of means of performance measures for groups with and without agency problems, by agency variable, 1988	169
Table 4-15: T-tests for differences of means of the performance measures between owner-controlled and creditor-controlled companies, 1992	170
Table 4-16: T-tests for differences of means of the performance measures between owner-controlled and creditor-controlled companies, 1990	170
Table 4-17: T-tests for differences of means of the performance measures between owner-controlled and creditor-controlled companies, 1988	171
Table 4-18: Coefficients and overall results of the logistic regressions on the performance dummy variables, 1992	173
Table 4-19: Coefficients and overall results of the logistic regressions on the performance dummy variables, 1990	174
Table 4-20: Coefficients and overall results of the logistic regressions on the performance dummy variables, 1988	176
Table 4-21: Overview over the validity of hypotheses one to four; yearly tests 1986-1992	182

Table 4-22: T-tests for differences of means of performance measures for groups with and without agency problems, by agency variable, machinery sector 1986-1992.....	184
Table 4-23: T-tests for differences of means of performance measures for groups with and without agency problems, by agency variable, utilities sector 1986-1992.....	185
Table 4-24: T-tests for differences of means of the performance measures between owner-controlled and creditor-controlled companies, machinery sector 1986-1992.....	187
Table 4-25: T-tests for differences of means of the performance measures between owner-controlled and creditor-controlled companies, utilities sector 1986-1992	187
Table 4-26: Average values for return on equity for five sectors, over all years	188
Table 4-27: Average values for return on capital for five sectors, over all years	189
Table 4-28: Average values for Sharpe ratio for five sectors, over all years	189
Table 4-29: Average values for Tobin's q for five sectors, over all years	189
Table 4-30: Coefficients and overall results of the logistic regressions on the performance dummy variables, machinery sector	191
Table 4-31: Overview over the validity of hypotheses one to three, five and six; sectoral analyses.....	192
Table 4-32: Overview over the validity of the hypotheses; all methods.....	194
Table 5-1: Descriptives of costs and profits	209
Table 5-2: Correlations between costs and profits	209
Table 5-3: Previous empirical studies of the efficiency of industrial and agricultural firms.....	221
Table 5-4: Previous empirical studies of the efficiency of bank firms	226
Table 5-5: Sectors in Dataset for the Efficiency Analysis, by Year	228
Table 5-6: Central variables in the cost function model	245
Table 5-7: Netputs and 1992 summary statistics of the cross sectional cost function data.....	254
Table 5-8: Results of the cross-sectional maximum likelihood regressions for 1992, 1990, and 1988.....	256
Table 5-9: Results of the likelihood ratio tests for the seven yearly regressions.....	257
Table 5-10: Results of the tests of the properties of the yearly estimates of the cost functions	258
Table 5-11: T-tests for differences of means of <i>xineff</i> by agency variable, 1992.....	261
Table 5-12: T-tests for differences of means of <i>xineff</i> between owner-controlled and creditor-controlled companies, 1992	262

Table 5-13: T-tests for differences of means of <i>xineff</i> by agency variable, 1990.....	263
Table 5-14: T-tests for differences of means of <i>xineff</i> between owner-controlled and creditor-controlled companies, 1990	264
Table 5-15: T-tests for differences of means of <i>xineff</i> by agency variable, 1988.....	265
Table 5-16: T-tests for differences of means of <i>xineff</i> between owner-controlled and creditor-controlled companies, 1988	265
Table 5-17: Coefficients and overall results of the logistic regressions on the <i>xineff</i> dummy variable, by year	271
Table 5-18: Overview over the validity of hypotheses one through four, yearly regressions	273
Table 5-19: Netputs and summary statistics of the panel cost function data	274
Table 5-20: Results of the overall maximum likelihood panel regression	276
Table 5-21: Results of the likelihood ratio tests for the comprehensive panel regression	278
Table 5-22: Results of the tests of the properties of the comprehensive panel estimate of the cost function	278
Table 5-23: T-tests for differences of means of <i>xineff</i> by agency variable for the comprehensive panel regression	281
Table 5-24: T-tests for differences of means of <i>xineff</i> between owner-controlled and creditor-controlled companies, overall panel regression	282
Table 5-25: Coefficients and overall results of the logistic regressions on the <i>xineff</i> dummy variable, comprehensive regression	283
Table 5-26: Overview over the validity of hypotheses one, two and three; comprehensive panel regression	284
Table 5-27: Netputs and summary statistics of the panel cost function data for the machinery sector	285
Table 5-28: Cost/asset ratios for five sectors	287
Table 5-29: Results of the separate maximum likelihood panel regressions for five sectors	289
Table 5-30: Results of the likelihood ratio tests for the sectoral regressions ...	291
Table 5-31: Results of the tests of the properties of the sectoral estimates of the cost functions	292
Table 5-32: Average values for <i>xineff</i> for five sectors	293
Table 5-33: T-tests for differences of means of <i>xineff</i> by agency variable over the machinery industry (separate regression)	295
Table 5-34: T-tests for differences of means of <i>xineff</i> by agency variable over the chemicals industry (separate regression)	296
Table 5-35: T-tests for differences of means of <i>xineff</i> between owner-controlled and creditor-controlled companies, separate regression for the machinery sector	298

Table 5-36: T-tests for differences of means of <i>xineff</i> between owner-controlled and creditor-controlled companies, separate regression for the chemicals sector	298
Table 5-37: T-Test for differences in sector means of <i>xineff</i> , separate regressions.....	299
Table 5-38: T-tests for <i>xineff</i> mean differences, by sector pairs for the separate regressions.....	300
Table 5-39: T-Test for differences in sector means of <i>xineff</i> , comprehensive regression	302
Table 5-40: T-tests for differences of means of <i>xineff</i> by agency variable over the machinery industry (comprehensive regression)	305
Table 5-41: T-tests for differences of means of <i>xineff</i> by agency variable over the chemicals industry (comprehensive regression)	307
Table 5-42: T-tests for differences of means of <i>xineff</i> between owner-controlled and creditor-controlled companies, comprehensive regression for the machinery sector	308
Table 5-43: T-tests for differences of means of <i>xineff</i> between owner-controlled and creditor-controlled companies, comprehensive regression for the chemicals sector	308
Table 5-44: Average values for <i>xineff</i> for five sectors, comprehensive regression	309
Table 5-45: T-tests for <i>xineff</i> mean differences, by sector pairs for the comprehensive regression	309
Table 5-46: Coefficients and overall results of the logistic regressions on the <i>xineff</i> dummy variable, by sector (separate regressions)	311
Table 5-47: Coefficients and overall results of the logistic regressions on the <i>xineff</i> dummy variable, comprehensive regressions by sector	312
Table 5-48: Overview over the validity of hypotheses one, two, three, five and six for five sectors; separate sectoral regressions	314
Table 5-49: Overview over the validity of hypotheses one, two, three, five and six for five sectors; comprehensive panel regression	315
Table 5-50: Overview over the validity of the six hypotheses for all models	317
Table 6-1: Overview over the validity of the financial behavior hypotheses	322
Table 6-2: Overview over the validity of the performance hypotheses	325
Table 6-3: Overview over the validity of the efficiency hypotheses	327
Table A-1: Companies included in the analyses	335
Table A-2: T-tests for differences of means of finance measures for groups with and without agency problems, by agency variable, chemicals sector	335
Table A-3: T-tests for differences of means of finance measures for groups with and without agency problems, by agency variable, electronics sector	336

Table A-4: T-tests for differences of means of finance measures for groups with and without agency problems, by agency variable, food & beverages sector.....	336
Table A-5: T-tests for differences of means of the finance measures between owner-controlled and creditor-controlled companies, chemicals sector	337
Table A-6: T-tests for differences of means of the finance measures between owner-controlled and creditor-controlled companies, electronics sector ..	337
Table A-7: T-tests for differences of means of the finance measures between owner-controlled and creditor-controlled companies, food & beverages sector.....	337
Table A-8: Coefficients and overall results of the logistic seemingly unrelated regressions on the finance dummy variables for the first hypothesis, chemicals sector.....	338
Table A-9: Coefficients and overall results of the logistic seemingly unrelated regressions on the finance dummy variables for the first hypothesis, electronics sector.....	339
Table A-10: Coefficients and overall results of the logistic seemingly unrelated regressions on the finance dummy variables for the first hypothesis, food & beverages sector.....	339
Table A-11: Coefficients and overall results of the logistic seemingly unrelated regressions on the finance dummy variables for the second hypothesis, chemicals sector.....	340
Table A-12: Coefficients and overall results of the logistic seemingly unrelated regressions on the finance dummy variables for the second hypothesis, electronics sector	340
Table A-13: Coefficients and overall results of the logistic seemingly unrelated regressions on the finance dummy variables for the second hypothesis, food & beverages sector.....	340
Table A-14: T-tests for differences of means of performance measures for groups with and without agency problems, by agency variable, 1986	341
Table A-15: T-tests for differences of means of performance measures for groups with and without agency problems, by agency variable, 1987	341
Table A-16: T-tests for differences of means of performance measures for groups with and without agency problems, by agency variable, 1989	342
Table A-17: T-tests for differences of means of performance measures for groups with and without agency problems, by agency variable, 1991	342
Table A-18: T-tests for differences of means of the performance measures between owner-controlled and creditor-controlled companies, 1986	343
Table A-19: T-tests for differences of means of the performance measures between owner-controlled and creditor-controlled companies, 1987	343
Table A-20: T-tests for differences of means of the performance measures between owner-controlled and creditor-controlled companies, 1989	343

Table A-21: T-tests for differences of means of the performance measures between owner-controlled and creditor-controlled companies, 1991	343
Table A-22: Coefficients and overall results of the logistic regressions on the performance dummy variables, 1986	344
Table A-23: Coefficients and overall results of the logistic regressions on the performance dummy variables, 1987	345
Table A-24: Coefficients and overall results of the logistic regressions on the performance dummy variables, 1989	346
Table A-25: Coefficients and overall results of the logistic regressions on the performance dummy variables, 1991	347
Table A-26: T-tests for differences of means of performance measures for groups with and without agency problems, by agency variable, chemicals sector 1986-1992	350
Table A-27: T-tests for differences of means of performance measures for groups with and without agency problems, by agency variable, electronics sector 1986-1992	350
Table A-28: T-tests for differences of means of performance measures for groups with and without agency problems, by agency variable, food & beverages sector 1986-1992	351
Table A-29: T-tests for differences of means of the performance measures between owner-controlled and creditor-controlled companies, chemicals sector 1986-1992	351
Table A-30: T-tests for differences of means of the performance measures between owner-controlled and creditor-controlled companies, electronics sector 1986-1992	351
Table A-31: T-tests for differences of means of the performance measures between owner-controlled and creditor-controlled companies, food & beverages sector 1986-1992	352
Table A-32: Coefficients and overall results of the logistic regressions on the performance dummy variables, chemicals sector 1986-1992	353
Table A-33: Coefficients and overall results of the logistic regressions on the performance dummy variables, electronics sector 1986-1992	354
Table A-34: Coefficients and overall results of the logistic regressions on the performance dummy variables, food & beverages sector 1986-1992	355
Table A-35: Coefficients and overall results of the logistic regressions on the performance dummy variables, utilities sector 1986-1992	356
Table A-36: Netputs and 1986 summary statistics of the cross sectional cost functions	356
Table A-37: Netputs and 1987 summary statistics of the cross sectional cost functions	357
Table A-38: Netputs and 1988 summary statistics of the cross sectional cost functions	357
Table A-39: Netputs and 1989 summary statistics of the cross sectional cost functions	357

Table A-40: Netputs and 1990 summary statistics of the cross sectional cost functions.....	358
Table A-41: Netputs and 1991 summary statistics of the cross sectional cost functions.....	358
Table A-42: Results of the cross-sectional maximum likelihood regressions for 1986 and 1987.....	359
Table A-43: Results of the cross-sectional maximum likelihood regressions for 1989 and 1991.....	360
Table A-44: T-tests for differences of means of <i>xineff</i> by agency variable, 1986.....	361
Table A-45: T-tests for differences of means of <i>xineff</i> between owner-controlled and creditor-controlled companies, 1986	361
Table A-46: T-tests for differences of means of <i>xineff</i> by agency variable, 1987.....	362
Table A-47: T-tests for differences of means of <i>xineff</i> between owner-controlled and creditor-controlled companies, 1987	362
Table A-48: T-tests for differences of means of <i>xineff</i> by agency variable, 1989.....	363
Table A-49: T-tests for differences of means of <i>xineff</i> between owner-controlled and creditor-controlled companies, 1989	363
Table A-50: T-tests for differences of means of <i>xineff</i> by agency variable, 1991.....	364
Table A-51: T-tests for differences of means of <i>xineff</i> between owner-controlled and creditor-controlled companies, 1991	364
Table A-52: Netputs and summary statistics of the panel cost function data for the chemicals sector	364
Table A-53: Netputs and summary statistics of the panel cost function data for the electronics sector.....	365
Table A-54: Netputs and summary statistics of the panel cost function data for the food sector.....	365
Table A-55: Netputs and summary statistics of the panel cost function data for the utilities sector.....	365
Table A-56: T-tests for differences of means of <i>xineff</i> by agency variable over the electronics industry (separate regression)	366
Table A-57: T-tests for differences of means of <i>xineff</i> between owner-controlled and creditor-controlled companies, separate regression for the electronics sector	367
Table A-58: T-tests for differences of means of <i>xineff</i> by agency variable over the electronics industry (comprehensive regression)	367
Table A-59: T-tests for differences of means of <i>xineff</i> between owner-controlled and creditor-controlled companies, comprehensive regression for the electronics sector	368

Table A-60: T-tests for differences of means of <i>xineff</i> by agency variable over the food & beverage industry (separate regression)	368
Table A-61: T-tests for differences of means of <i>xineff</i> between owner-controlled and creditor-controlled companies, separate regression for the food & beverages sector	369
Table A-62: T-tests for differences of means of <i>xineff</i> by agency variable over the food & beverage industry (comprehensive regression)	369
Table A-63: T-tests for differences of means of <i>xineff</i> between owner-controlled and creditor-controlled companies, comprehensive regression for the food & beverages sector	370
Table A-64: T-tests for differences of means of <i>xineff</i> by agency variable over the utilities industry (separate regression)	370
Table A-65: T-tests for differences of means of <i>xineff</i> between owner-controlled and creditor-controlled companies, separate regression for the utilities sector	371
Table A-66: T-tests for differences of means of <i>xineff</i> by agency variable over the utilities industry (comprehensive regression)	371
Table A-67: T-tests for differences of means of <i>xineff</i> between owner-controlled and creditor-controlled companies, comprehensive regression for the utilities sector	372