

## Table of content

Preface .....	2
Abstract.....	3
LIST OF FIGURES .....	5
LIST OF TABLES .....	6
Nomenclature.....	7
1 Introduction.....	8
1.1 Background .....	8
1.2 Thesis Outline .....	9
2 Theory and Literature Review .....	10
2.1 Theories of Business Performance.....	10
2.1.1 The Theory of Behavioral Finance Perspective .....	10
2.1.2 Investor Behavior in the Context of ESG.....	11
2.2 Stakeholder Theory .....	13
2.3 Legitimacy Theory .....	16
2.4 ESG Ratings and Financial Performance.....	17
2.4.1 Evolution of ESG Concept and ESG Ratings .....	18
2.4.2 ESG Ratings and Business Performance.....	19
2.4.3 ESG Practices and Stock Returns.....	20
2.5 Industry-Specific Analysis: Battery Manufacturing for Electric Vehicles .....	22
2.5.1 Environmental Effects of Battery Manufacturing .....	22
2.5.2 The Social Impact of Battery Production .....	24
2.5.3 Governance Considerations in Battery Companies.....	24
3 Methodology.....	25
3.1 Research Design.....	25
3.2 Data Collection .....	25
3.2.1 ESG Ratings .....	26
3.2.2 Financial Performance Metrics .....	26
3.3 Sample Selection.....	26
3.4 Data Analysis Techniques .....	27
3.4.1 Regression Analysis .....	28
4 Findings .....	29

4.1 Climate-Friendly Automakers vs ICE Manufacturer's CAPM and Regression .....	29
4.1.1. RQ1: The Interpretation of the CAPM Regression Analysis Results .....	31
4.1.2 RQ1: Analysis of the findings of ESG EV .....	32
4.1.3 RQ2: Climate-friendly Automakers and Pure ICE Automaker's CAPM Results ...	54
4.1.4 Low ESG-Risk-Rated Climate-Friendly vs Pure ICE Automaker's Linear Model.	57
4.1.5 RQ2: Medium ESG-Risk-Rated Climate-friendly vs Pure-ICE Automaker's Regression .....	59
4.1.6 RQ2: High-ESG-Risk-Rated Climate-friendly vs Pure ICE Automakers .....	61
4.1.7 Summary of Findings .....	63
4.2 Investor Behavior and Stock Performance .....	65
5 Discussion .....	66
5.1 Interpretation of Results .....	66
5.1.1 Summary of Key Findings and Answer to RQ1 .....	66
5.1.2 Findings and Answer to RQ2 .....	68
5.2 Comparison with Previous Studies .....	69
5.3 Limitations of Study .....	69
6 Conclusion .....	71
6.1 Theoretical and Practical Implications .....	71
6.2 Recommendations for Future Research .....	72
6.3 Conclusions .....	72
7 References .....	73
8 Appendices .....	80
Appendix 1: 12 EV Manufacturers .....	80
Appendix 2: 28 EV/ICE Manufacturers (Mixed ICE and EV) .....	81
Appendix 3: 25 EV Battery Manufacturers and Others in the EV Supply Chain .....	82
Appendix 4: 8 Internal Combustion Engine (ICE) Manufacturers .....	83
Appendix 5: ESG Rating dataset from Python with importing yesg library .....	84

## LIST OF FIGURES

Figure 1: Explanation of The Theory of Behavioral Finance .....	10
Figure 2: Stakeholder Theory Model .....	13

Figure 3: The Relationship Between Legitimacy Theory and ESG Ratings.....	16
Figure 4: Corrplot to Illustrate Multicollinearity in Low, Medium, and High-ESG-EV Tiers	33
Figure 5: VIF After Eliminating Variables with Multicollinearity Problem .....	35
Figure 6: SML and Actual vs Predicted EV CAPM and Regression .....	41
Figure 7: Assessment of Multicollinearity Across Low-ESG Climate-Friendly and PureICE Automaker Variables.....	46
Figure 8: Assessment of Multicollinearity Across Medium-ESG Climate-Friendly and Pure-ICE Automaker Variables.....	47
Figure 9: Assessment of Multicollinearity Across High-ESG Climate-Friendly and Pure-ICE Automaker Variables.....	47

## LIST OF TABLES

Table 1: EV CAPM Result.....	30
Table 2: Assessment of Variable Inflation Factors Across All ESG-Risk EV Tiers.....	36
Table 3: EV Regression Results .....	37
Table 4: VIF for low-ESG Climate-friendly Versus Pure-ICE Automakers .....	49
Table 5: VIF for medium-ESG Climate_friendly Versus Pure ICE Automakers.....	50
Table 6: VIF for High-ESG-Risk-Rated Climate-friendly Versus Pure-ICE Automakers.....	51
Table 7: Two Sample T-tests for Climate-Friendly Vs Pure-ICE Automakers .....	52
Table 8: EV vs ICE Automaker's CAPM Results .....	54
Table 9: Low ESG-Risk-Rated Climate-Friendly vs ICE Automaker's Regression Results ...	57
Table 10: Medium ESG-Risk-Rated Climate-friendly vs ICE Regression Results .....	59
Table 11: High ESG-Risk-Rated Climate-friendly vs ICE Regression Results.....	61