Jochen Kiihn

Optimal Risk-Return Trade-Offs of Commercial Banks

and the Suitability of Profitability Measures for Loan Portfolios

With 35 Figures
and 1 Table

4y Springer

Contents

1 Introduction 1
1.1 Problem Statement and Research Question 1
1.2 Outline of the Dissertation 4

2 Risk Measures 7
2.1 Denning Risk 7
2.2 Variance and Standard Deviation 8
2.3 Early Downside Risk Measures 10
2.4 Lower Partial Moment 11
2.5 Value at Risk 16
2.6 Expected Shortfall 21

3 Asset Pricing 23
3.1 Market Price of Assets 23
3.2 Systematic Risk 25
3.3 Models Using Beta Representations 27
3.4 Market Price of Equity as the Target Figure of Firms ... 30

4 **Reward-to-Risk Ratios** 33
4.1 Sharpe Ratio 33
4.2 Reward-to-Shortfall Ratios 36
4.3 Measures Based on Economic Capital 39
4.4 Measures Based on Portfolio Models of Banks 42

5 Effects of Risk-Taking in Commercial Banks 45
5.1 The Neoclassical Finance Theory 46

5.2 Benefits of Risk-Taking . . . 47
5.3 Costs of Risk-Taking . . . 49
5.3-. 1 Agency Costs . . . 50
5.3.2 Market Discipline . . . 52
5.3.3 Capital Market Imperfections . . . 55
5.3.4 Taxes . . . 56
5.3.5 Regulatory Capital Requirements . . . 57

6 Risk-Return Trade-Offs for Commercial Banks . . . 61
6.1 Approach . . . 61
6.2 Assumptions . . . 62
6.3 Solving Method and Parameter Values . . . 66
6.4 Disciplining by Debtholders . . . 68
6.5 Optimal Risk-Return Trade-Offs . . . 71
6.5.1 Baseline Model[1] ' . . . 73
6.5.2 Modeling Regulatory Constraints . . . 77
6.5.3 Modeling a Fixed Portfolio Volume . . . 87
6.6 Findings . . . 89

7 Deposits and the Risk-Return Trade-Off . . . 93
7.1 Extending the Models . . . 94
7.2 Influence of Deposits . . . 95
7.2.1 Baseline Model with Deposits . . . 95
7.2.2 Modeling Regulatory Constraints with Deposits . . . 98
7.2.3 Modeling a Fixed Portfolio Volume with Deposits. 101
7.3 Findings . . . 103

8 Profitability Measures for Loan, Portfolios . . . 105
8.1 Comparison of the Risk-Return Trade-Offs . . . 106
8.2 Findings . . . 114

9 Conclusion . . . 117
9.1 Summary . . . 117
9.2 Limitations . . . 118
9.3 Implications . . . 120

A Derivations for Chapters 2 to 5 . . . 123
A.I Expected Shortfall . . . 123
A.2 Covariance . . . 124

A.3 Efficient Frontier 125
A.4 Froot et al. (1993) 127

B Derivations for Chapters 6 and 7 129
B.I Parameters as Functions of Return Moments 129
B.2 Density Functions 132
B.3 Participation Conditions 135
B.4 Specification of Equity Value and Debt Value 136
B.5 Debtholders' Necessary Participation Condition 138
B.6 Relation of Debt to Equity 139
B.7 Density Function of the Free Cash Flow with Deposits . . 140

References 141