## Contents

Preface to the Third Edition  
1 Introduction  
   1.1 What Is a Bank, and What Do Banks Do?  
   1.2 Liquidity and Payment Services  
      1.2.1 What Came First: Money or Credit?  
      1.2.2 Money Is Memory  
      1.2.3 Money as a Bubble  
      1.2.4 The Three Functions of Money  
      1.2.5 Money Changing  
      1.2.6 Payment Services  
   1.3 Managing Financial Risks  
      1.3.1 Transformation Risk  
      1.3.2 Credit Risk  
      1.3.3 Financial Markets Risk  
   1.4 Alleviating Asymmetric Information Problems  
      1.4.1 Ex Ante Asymmetric Information  
      1.4.2 Interim Asymmetric Information  
      1.4.3 Ex Post Asymmetric Information  
   1.5 Banking in a World without Frictions  
      1.5.1 The Consumer  
      1.5.2 The Firm  
      1.5.3 The Bank  
      1.5.4 The Competitive Equilibrium  
   1.6 Outline of the Book  
   1.7 Problem  
   1.8 Solution  
   Notes  
   References  

---

1. Preface to the Third Edition

1. Introduction

1.1 What Is a Bank, and What Do Banks Do?
1.2 Liquidity and Payment Services
   1.2.1 What Came First: Money or Credit?
   1.2.2 Money Is Memory
   1.2.3 Money as a Bubble
   1.2.4 The Three Functions of Money
   1.2.5 Money Changing
   1.2.6 Payment Services
1.3 Managing Financial Risks
   1.3.1 Transformation Risk
   1.3.2 Credit Risk
   1.3.3 Financial Markets Risk
1.4 Alleviating Asymmetric Information Problems
   1.4.1 Ex Ante Asymmetric Information
   1.4.2 Interim Asymmetric Information
   1.4.3 Ex Post Asymmetric Information
1.5 Banking in a World without Frictions
   1.5.1 The Consumer
   1.5.2 The Firm
   1.5.3 The Bank
   1.5.4 The Competitive Equilibrium
1.6 Outline of the Book
1.7 Problem
1.8 Solution
Notes
References
## 2 Banks and Informational Frictions

- **2.1 Introduction**
- **2.2 Maturity Transformation and Liquidity Insurance**
  - 2.2.1 The Diamond-Dybvig Model
  - 2.2.2 The Symmetric Pareto Optimal Allocation
  - 2.2.3 Autarky
  - 2.2.4 Financial Markets
  - 2.2.5 Bank Deposit Contracts
- **2.3 Financial Intermediation as Delegated Monitoring**
- **2.4 Moral Hazard and the Monitoring Role of Banks**
- **2.5 Credit Risk and Dilution Costs**
  - 2.5.1 The Model
  - 2.5.2 Bond Financing
  - 2.5.3 Equity Issue
  - 2.5.4 Bank Loan
- **2.6 Further Reading**
- **2.7 Problems**
  - 2.7.1 Market versus Bank Finance
  - 2.7.2 Banks and Moral Hazard
- **2.8 Solutions**
  - 2.8.1 Market versus Bank Finance
  - 2.8.2 Banks and Moral Hazard

---

## 3 The Industrial Organization Approach to Banking

- **3.1 The Old Approach to Monetary Policy: Money and Credit Multipliers**
- **3.2 Perfectly Competitive Banking**
  - 3.2.1 The Model
  - 3.2.2 How Do Interest Rates Influence the Volumes of Deposits and Loans?
  - 3.2.3 The Competitive Equilibrium
- **3.3 Imperfect Competition**
  - 3.3.1 The Monti-Klein Model of a Monopoly Bank
  - 3.3.2 The Oligopoly Version
  - 3.3.3 Product Differentiation
  - 3.3.4 Empirical Evidence
<table>
<thead>
<tr>
<th>3.4</th>
<th>Is There a Trade-off between Competition and Financial Stability?</th>
<th>47</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.4.1</td>
<td>The Fragility View</td>
<td>47</td>
</tr>
<tr>
<td>3.4.2</td>
<td>The Stability View</td>
<td>48</td>
</tr>
<tr>
<td>3.4.3</td>
<td>The Impact of Capital Requirements</td>
<td>48</td>
</tr>
<tr>
<td>3.4.4</td>
<td>Empirical Evidence</td>
<td>49</td>
</tr>
<tr>
<td>3.5</td>
<td>Competition and Lending Standards</td>
<td>50</td>
</tr>
<tr>
<td>3.5.1</td>
<td>The Screening Externality</td>
<td>50</td>
</tr>
<tr>
<td>3.5.2</td>
<td>Lending Standards through the Business Cycle</td>
<td>51</td>
</tr>
<tr>
<td>3.5.3</td>
<td>Empirical Evidence</td>
<td>51</td>
</tr>
<tr>
<td>3.6</td>
<td>Relationship Banking</td>
<td>52</td>
</tr>
<tr>
<td>3.6.1</td>
<td>A Simple Model</td>
<td>52</td>
</tr>
<tr>
<td>3.6.2</td>
<td>Public and Private Information about Borrowers</td>
<td>53</td>
</tr>
<tr>
<td>3.6.3</td>
<td>Empirical Evidence</td>
<td>53</td>
</tr>
<tr>
<td>3.7</td>
<td>Platform Competition and Two-Sided Markets</td>
<td>55</td>
</tr>
<tr>
<td>3.7.1</td>
<td>A Model of the Payment Card Industry</td>
<td>56</td>
</tr>
<tr>
<td>3.7.2</td>
<td>Card Use</td>
<td>57</td>
</tr>
<tr>
<td>3.7.3</td>
<td>Monopoly Network</td>
<td>57</td>
</tr>
<tr>
<td>3.7.4</td>
<td>Competing Networks</td>
<td>58</td>
</tr>
<tr>
<td>3.7.5</td>
<td>Welfare Analysis</td>
<td>59</td>
</tr>
<tr>
<td>3.7.6</td>
<td>Bigtechs</td>
<td>59</td>
</tr>
<tr>
<td>3.8</td>
<td>Further Reading</td>
<td>60</td>
</tr>
<tr>
<td>3.9</td>
<td>Problems</td>
<td>62</td>
</tr>
<tr>
<td>3.9.1</td>
<td>Double Bertrand Competition</td>
<td>62</td>
</tr>
<tr>
<td>3.9.2</td>
<td>Deposit Rate Regulation</td>
<td>63</td>
</tr>
<tr>
<td>3.10</td>
<td>Solutions</td>
<td>63</td>
</tr>
<tr>
<td>3.10.1</td>
<td>Double Bertrand Competition</td>
<td>63</td>
</tr>
<tr>
<td>3.10.2</td>
<td>Deposit Rate Regulation</td>
<td>64</td>
</tr>
<tr>
<td>Notes</td>
<td></td>
<td>65</td>
</tr>
<tr>
<td>References</td>
<td></td>
<td>65</td>
</tr>
<tr>
<td>4</td>
<td>The Lender-Borrower Relationship</td>
<td>69</td>
</tr>
<tr>
<td>4.1</td>
<td>The Complete Information Benchmark</td>
<td>70</td>
</tr>
<tr>
<td>4.2</td>
<td>Costly State Verification</td>
<td>72</td>
</tr>
<tr>
<td>4.2.1</td>
<td>Incentive-Compatible Contracts</td>
<td>72</td>
</tr>
<tr>
<td>4.2.2</td>
<td>Efficient Incentive-Compatible Contracts</td>
<td>73</td>
</tr>
<tr>
<td>4.3</td>
<td>Debt as the Least Information-Sensitive Security</td>
<td>74</td>
</tr>
<tr>
<td>4.4</td>
<td>Incentives to Repay</td>
<td>75</td>
</tr>
<tr>
<td>4.4.1</td>
<td>Promise to Lend Again</td>
<td>75</td>
</tr>
<tr>
<td>4.4.2</td>
<td>The Impact of Judicial Enforcement</td>
<td>76</td>
</tr>
</tbody>
</table>
7 Liquidity

7.1 Introduction
7.2 Different Forms of Liquidity
  7.2.1 Defining Liquidity
  7.2.2 Public and Private Liquidity
  7.2.3 Funding Liquidity and Market Liquidity
7.3 The Supply of Private Money
  7.3.1 Do Banks Issue Too Much Money?
  7.3.2 Shadow Banking
7.4 Private and Public Supply of Liquidity
  7.4.1 The Model
  7.4.2 Symmetric Information
  7.4.3 Moral Hazard
  7.4.4 Aggregate Shocks
7.5 Bubbles: When Asset Prices Diverge from Fundamentals
  7.5.1 Bubbles as Sources of Liquidity
  7.5.2 Cash in the Market Pricing
  7.5.3 Liquidity Spirals
7.6 Liquidity Dry-Ups
7.7 Liquidity and Collateral Prices
  7.7.1 Informational Sensitivity of Securities
  7.7.2 Implications
7.8 Further Reading
7.9 Problem
7.10 Solution
Notes
References
8.3 Capital Regulation 1: The Theory
  8.3.1 The Value at Risk Approach 173
  8.3.2 Risk-Weighted Capital Regulation 174
  8.3.3 Portfolio Distortions 175
  8.3.4 What Level for Banks’ Capital? 176

8.4 Capital Requirements 2: The Practice 176
  8.4.1 The Costs of Capital Regulation 176
  8.4.2 Empirical Evidence 177
  8.4.3 Regulatory Competition 178
  8.4.4 Accounting Rules and the Supplementary Leverage Ratio 178
  8.4.5 Supervisors’ Information and Managers’ Incentives 179
  8.4.6 Market Discipline 180

8.5 Further Reading 182
  8.5.1 Banks’ Portfolio and Bankruptcy Risk 182
  8.5.2 Liquidity Regulation 183
  8.5.3 Disclosure and Market Discipline 183

8.6 Problems 184
  8.6.1 Capital Regulation and Speculative Activities 184
  8.6.2 Capital Requirements and Business Cycles 185

8.7 Solutions 185
  8.7.1 Capital Regulation and Speculative Activities 185
  8.7.2 Capital Requirements and Business Cycles 186

Notes 186
References 186

9 Systemic Risk and Macroprudential Regulation 191
  9.1 Introduction 191
  9.2 Systemic Risk 191
    9.2.1 The Determinants of Systemic Risk 192
    9.2.2 Shadow Banks and Systemic Risk 193
    9.2.3 Measuring Systemic Risk 194
  9.3 Ex Post Policies: Bank Restructuring and Resolution 195
    9.3.1 A Bargaining Game between Bankers and Regulators 195
    9.3.2 Bank Resolution and Managers’ Incentives 196
    9.3.3 Optimal Bailout Mechanisms 196
    9.3.4 Debt Overhang after a Banking Crisis 199
    9.3.5 How to Restart a Frozen Market? 199
    9.3.6 Bail-Ins and CoCo Bonds 200
<table>
<thead>
<tr>
<th>Sections</th>
<th>Pages</th>
</tr>
</thead>
<tbody>
<tr>
<td>9.4 Externalities and Macroprudential Policy</td>
<td>200</td>
</tr>
<tr>
<td>9.4.1 Nonpecuniary Externalities</td>
<td>201</td>
</tr>
<tr>
<td>9.4.2 Fire-Sale Externalities</td>
<td>202</td>
</tr>
<tr>
<td>9.4.3 Procyclical Leverage and Credit Cycles</td>
<td>203</td>
</tr>
<tr>
<td>9.5 Further Reading</td>
<td>207</td>
</tr>
<tr>
<td>Notes</td>
<td>207</td>
</tr>
<tr>
<td>References</td>
<td>208</td>
</tr>
<tr>
<td>Index</td>
<td>211</td>
</tr>
</tbody>
</table>