## **Contents**

Foreword		$x_1$
Preface		xiii
Acknowledgments		χυii
_	d Abbreviations	xix
Chapter 1	Introduction	1
Chapter 2	Taxation of the Mineral Sector	7
~~ <u>`</u>	Mineral Taxation in General	7
	Evolution of Mineral Taxation	35
Chapter 3	Mineral Royalty Instruments	41
	Purpose of Mineral Royalties	41
	Types of Royalties and Assessment Methods	43
	Comparison of Royalties in Selected Nations	80
	Private Party Royalties	124
Chapter 4	Impact of Royalties on a Mine—	
_ <u>.</u>	Quantitative Analysis	137
*	Impact of Selected Royalty Types on Three Mines	137

	Model Results and Discussion	149
	Royalty and Tax Effects on Mine Cutoff Grade	164
	Discussion of Quantitative Results	180
Chapter 5	Implications of Royalties for Investors,	
-	Civil Society, the Market, and Governments	183
	The Investment Climate	183
	Impact on Civil Society	219
	Impact on the Market	226
	Impact on the Government and the Host Country	229
Chapter 6	Transparency, Governance, and	
	Management of Revenue Streams	239
	The Case for Transparency	239
	General Principles of Disclosure and Reporting	241
	Key Challenges in Disclosure	247
	Model Reporting Template for	
	Mining Sector Revenues	255
	The Extractive Industries Transparency Initiative	255
	Emerging Lessons	261
	Summary and Conclusions	265
	Summary of Findings	265
	Recommendations and Best Practices	276
Dedication		<b>27</b> 9
About the Au	uthors	281
Index		285
		-00
Appendix A1	Sample Royalty Provisions Extracted from	
National 1		n CD
	•	n CD
Appendix A3	Examples of Royalty Administrative	
and Collec	ction Regimes C	n CD
Appendix A4	Modality of Collection and Appropriation	
of Royalty Revenue		n CD

Figu	ires	
2.1	Government Tax Revenues as a Function of the Tax Rate	8
2.2	Ricardian Rent Varies with Land Fertility	22
2.3	Sources of Rent for Mine B	25
2.4	User Costs in the Mining Industry	28
3.1	Effective Tax Rate vs. per Capita GDP for	
	24 International Mining Jurisdictions	119
3.2	Effective Tax Rate vs. Contribution of Mining to	
	GDP for 24 International Mining Jurisdictions	119
4.1	Cumulative NPV Using \$1.05 per Pound Copper	175
4.2	Cumulative NPV Using Cyclical Copper Pricing	177
5.1	Correlation between Mineral Royalties and	
	Effective Tax Rates in South Africa	222
5.2	Employee Numbers, Tonnes Milled, and Average	
	Grade Milled in South African Gold Mines	225
Tabl	es	
2.1	Unique Attributes of the Mineral Industry	
	and the Tax Policy Response	17
2.2	Taxes Sometimes Levied on the	
	Mining Industry, and Their Basis	32
2.3	Policy Objectives of Tax Types and Their Prevalence	33
2.4	Comparative Economic Measures for a Model	
	Copper Mine in Selected Jurisdictions	36
3.1	Examples of Royalty Methods and Basis of Calculation	56
3.2	Rate Applied to Nine Royalty Bases That Yields	
	\$20 Million in Royalty	63
3.3	Evaluation of Royalty Types Using Selected	
	Government and Investor Criteria	64
3.4	Summary of Royalty Practices in Selected	
	African Countries	83
3.5	Summary of Royalty Practices in Selected	
	Asian and Pacific Countries	86
3.6	Summary of Royalty Practices in Selected	
	Australian Jurisdictions	89

3.7	Summary of Royalty Practices in Selected	
	Latin American Countries	91
3.8	Summary of Royalty Practices in Selected	
	North American Jurisdictions	95
3.9	Ownership and Output of Chilean Copper Mines, 2003	123
3.10	Exposure to Risk with Periodic Mineral Royalties	125
3.11	Private Party Mineral Royalties in South Africa, 1990-2004	130
3.12	Differences between State and Private Mineral	
	Royalties in South Africa	132
4.1	Gold Model (leveraged) Summary of Royalty and	
	Tax Calculations	151
4.2	Gold Model (100% equity) Summary of Royalty	
	and Tax Calculations	153
4.3	Comparison of the Gold Model Average	
	Cumulative Royalties and Average Cumulative	
	Overall Taxes for the Cash and Leveraged Models	155
4.4	Copper Model Summary of Royalty and	
	Tax Calculations	157
4.5	Bauxite Model Summary of Royalty and	
	Tax Calculations	159
4.6	Gold Model Breakeven Royalty Rates That	
	Achieve the Minimum IRR	162
4.7	Breakeven Royalty Rates Necessary to Achieve	
	the Minimum IRR in the Copper and Bauxite Models	163
4.8	Measuring Project Value with Net Income	170
4.9	Measuring Project Value with After-Tax Cash Flow	171
4.10	Economic Cutoff with Net Income	171
4.11	-Economic Cutoff with After-Tax Cash Flow	172
4.12	Cutoff Impact on NPV	172
4.13	NPV <sub>3</sub> vs. Cumulative Royalties on Copper	
	and Government Take	174
4.14	Economic Data for Different NSR Percentages	
	and Estimated Economic Reserve Data	174
4.15	NPV vs. Cumulative Royalties and Government Take,	
	Assuming Production Is Continued over the	
	Entire 22-Year Life	176

4.16	NPV vs. Cumulative Royalties on Copper	
	and Government Take	178
4.17	Economic Data for Different NSR Percentages	
	and Estimated Economic Reserve Data, Based on	
	a Cyclical Variation in Copper Prices	178
5.1	Annual Gold Exploration Expenditures in Australia	
	and Western Australia, 1996–2004	190
5.2	Foreign Investor Internal Rate of Return and	
	Total Effective Tax Rate for a Model Copper Mine	
	in Selected Countries and States	195
5.3	Relationship between Social Commitment and	
	Mineral Royalties	206
5.4	Mining Company Ranking of Investment Decision Criteria	216
5.5	Fraser Institute Survey of Companies' Perceptions	
	of Tax Systems in Selected Nations	217
5.6	Top 10 Selected Jurisdictions, Ranked by Tax	
	System Attractiveness	219
6.1	Model Reporting Template	256