

CONTENTS

INTRODUCTION.....	1
CHAPTER 1: INSTITUTIONS AND ECONOMIC PERFORMANCE.....	6
1.1 Institutions, institutional change and property rights.....	6
1.1.1 Institutions defined.....	6
1.1.2 Institutional change.....	8
1.1.3 Property rights defined.....	10
1.2 The exchange of property rights in economic theory.....	11
1.2.1 The neoclassical approach.....	12
1.2.2 Shortcomings of the neoclassical approach.....	13
1.2.2.1 Transaction costs.....	13
1.2.3 The institutional approach.....	15
CHAPTER 2: TRADABLE WATER RIGHTS.....	17
2.1 Shortcomings of public water allocation.....	17
2.2 Incentives for water market allocation.....	20
2.3 Requirements for a market in tradable water rights.....	25
2.3.1 Water rights.....	25
2.3.2 Institutional requirements.....	26
2.3.3 Infrastructure requirements.....	26
2.4 Establishing tradable water rights.....	27
2.4.1 Transaction costs.....	27
2.4.2 Fairness in initial allocation of water rights.....	29
2.4.3 Prior vs. proportional water rights.....	30
2.4.4 External impacts of water transactions.....	32
2.4.5 Water user associations (WUA's).....	36
CHAPTER 3: EXPERIENCE WITH TRADABLE WATER RIGHTS.....	37
3.1 Pakistan and Northern India.....	37
3.2 Spain.....	37
3.3 The California Water Bank.....	38
3.4 The Western United States (US).....	39
3.5 Chile.....	45
3.6 Mexico.....	49
3.7 Thailand.....	52
3.8 South Africa.....	52
CHAPTER 4: RESEARCH METHODOLOGY.....	54
4.1 Collection of data.....	54
4.1.1 The study areas.....	54
4.1.1.1 The Lower Orange River Catchment.....	54
4.1.1.2 The Nkwaleni Valley.....	57
4.2 Sampling technique.....	58
4.3 Data analysis.....	59
4.3.1 Discriminant analysis.....	60
4.4 The discriminant models.....	61

4.4.1 Variables considered in the discriminant model distinguishing between Buyers and Sellers of water rights along the Lower Orange River.....	61
4.4.2 Variables considered in the discriminant model distinguishing between Buyers and Non-Buyers of water rights along the Lower Orange River.....	63
4.4.3 Variables considered in the discriminant model distinguishing between potential Buyers and Non-Buyers of water rights in the Nkwaleni Valley.....	64
4.5 The Pongola River.....	65
CHAPTER 5: AN ANALYSIS OF WATER MARKET ALLOCATION WITHIN THE STUDY AREAS.....	70
5.1 Water rights trading along the Lower Orange River.....	70
5.1.1 An overview of water rights trading along the Lower Orange River....	70
5.1.2 Water rights allocations along the Lower Orange River.....	74
5.1.3 Transfers of "outer land" water rights along the Lower Orange River.....	76
5.2 Water allocation in the Nkwaleni Valley.....	79
5.2.1 The institutional arrangements governing water allocation in the Nkwaleni Valley.....	79
5.2.2 Water rights allocations along the uMhlatuze River.....	81
CHAPTER 6: RESEARCH RESULTS: THE LOWER ORANGE RIVER.....	83
6.1 Characteristics of respondents.....	83
6.2 Prices and values for "outer land" water rights on the Lower Orange River.....	85
6.3 Farmer responses to water trading activity along the Lower Orange River.....	90
6.4 Discriminant function results.....	93
6.4.1 Discrimination between Buyers and Sellers of water rights along the Lower Orange River.....	93
6.4.2 Discrimination between Buyers and Non-Buyers of water rights along the Lower Orange River.....	95
6.5 Gross margin analysis of representative farms along the Lower Orange River.....	97
CHAPTER 7: RESEARCH RESULTS: THE UMHLATUZE RIVER.....	102
7.1 Characteristics of respondents.....	102
7.2 Farmer responses to potential water rights trading along the uMhlatuze River.....	102
7.3 Discriminant function results.....	106
7.3.1 Discrimination between potential Buyers and Non-Buyers of water rights along the uMhlatuze River.....	106
CHAPTER 8: TRADABLE IRRIGATION WATER RIGHTS UNDER THE NEW SOUTH AFRICAN WATER LAW.....	109
8.1 An evaluation of the new National Water Policy.....	109
8.2 An overview of principles governing the allocation and transfer of irrigation water use rights under South Africa's new Water Law.....	114
8.2.1 Irrigation water allocation under the new Water Law.....	114

8.2.2 Transfers of irrigation water use licenses under the new Water Law.....	118
8.3 Survey farmer responses to the proposed new Water Law.....	122
8.4 The quantification of irrigation water use rights under the new Water Law.....	125
8.5 Catchment management agencies under the new Water Law.....	128
CHAPTER 9: DISCUSSION AND POLICY IMPLICATIONS.....	133
CONCLUSION.....	147
REFERENCES.....	152