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**The Cost and Trade Impacts of Environmental
Regulations: Effluent Control and the
New Zealand Dairy Sector**

A thesis presented in partial fulfilment of the requirements
for the degree
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Abstract

This thesis investigates the impacts of current water quality regulations on the New Zealand dairy sector. The dairy industry is expanding, with dairy exports constituting 20% of total merchandise trade receipts. In recent years however, concern has grown in New Zealand and worldwide, regarding the negative environmental impact of intensive dairying, in particular the nitrate levels in ground and surface waters. In New Zealand both the protection of the environment, and trade are important for the economy. This research looks at the possible effects of increased on-farm costs on the competitiveness of the New Zealand dairy sector in the international market.

In response to the Resource Management Act 1991, Regional Councils throughout New Zealand have required dairy farmers to operate a land-based disposal system for dairy shed effluent. An estimate is made of the additional cost this imposes on dairy farmers. An applied general equilibrium approach (GTAP) is used to analyse the possible impacts of these additional production costs on New Zealand's dairy export trade. This analysis is conducted under two scenarios, the first being that New Zealand acts unilaterally in imposing water quality regulations. The second scenario assumes that New Zealand's three main dairy export competitors, the EU, Australia and the US also enforce their own water quality regulations and internalise the costs of such regulations.

The cost to the dairy farmer of implementing a land-based effluent disposal system in order to meet water quality regulations is estimated at 2 to 3.2% of total farm costs. In the first scenario, given this increase in costs, the model predicts a loss in international competitiveness for the New Zealand dairy exporting sector. Under the second scenario, the global dairy export price index is predicted to rise by considerably more than the increase in the supply price of New Zealand's processed dairy products. This will mean a realignment of international trading patterns and an expansion of the New Zealand dairy exporting sector, thereby increasing its global market share.

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Table of Contents

| | <i>Page</i> |
|-------------------------|-------------|
| Abstract | ii |
| Acknowledgements | iii |
| Table of Contents | iv |
| List of Tables..... | viii |
| List of Figures | ix |

Chapter One

Introduction

| | | |
|-------|--|---|
| 1.1 | Background..... | 1 |
| 1.2 | The Importance of Agriculture in the New Zealand Economy | 2 |
| 1.3 | The New Zealand Dairy Sector and Environmental Concerns..... | 5 |
| 1.3.1 | The environmental issue associated with dairy farming | 5 |
| 1.3.2 | Water quality regulations | 6 |
| 1.4 | Objectives of the Research | 7 |
| 1.5 | Limitations of the Research..... | 7 |
| 1.6 | Thesis Outline..... | 8 |

Chapter Two

Review of the Literature

| | | |
|-----|---|----|
| 2.1 | Introduction | 9 |
| 2.2 | Environmental Regulations and Loss of Competitiveness..... | 11 |
| 2.3 | Evidence of Environmental Regulations and Loss of Competitiveness.... | 13 |
| 2.4 | Relocation of Industry to 'Pollution Havens' | 16 |
| 2.5 | Studies from the Agricultural Sector..... | 18 |
| 2.6 | Alternative Views on the Issue of Competitiveness..... | 24 |
| 2.7 | Environmental Standards as a form of Protectionism | 26 |
| 2.8 | Conclusions | 29 |

Chapter Three

New Zealand Dairy Sector Compliance Costs for Water Quality Regulations

| | | |
|-------|---|----|
| 3.1 | Introduction | 32 |
| 3.2 | Water Quality Regulations and Variations in their Administration across Regional Councils..... | 32 |
| 3.2.1 | Water quality regulations | 32 |
| 3.2.2 | Variations across Regional Councils on consent requirements..... | 33 |
| 3.2.3 | Variations in compliance costs..... | 35 |
| 3.2.4 | Application rates of farm dairy effluent | 37 |
| 3.3 | Cost of Land-based Application of Dairy Shed Effluent | 37 |
| 3.4 | Benefits from Application of Farm Dairy Effluent to Land..... | 39 |
| 3.5 | Sensitivity Analysis | 40 |
| 3.6 | Results | 41 |

Chapter Four

Australia, the EU, and the US – Regulations, Costs, and Subsidies

| | | |
|-------|--|----|
| 4.1 | Introduction | 44 |
| 4.2 | Australia | 44 |
| 4.2.1 | Background and water quality regulations | 44 |
| 4.2.2 | Compliance costs..... | 45 |
| 4.2.3 | Government assistance | 46 |
| 4.3 | The European Union..... | 46 |
| 4.3.1 | Background and water quality regulations | 46 |
| 4.3.2 | Compliance costs..... | 49 |
| 4.3.3 | Government assistance | 51 |
| 4.4 | The United States | 51 |
| 4.4.1 | Background and water quality regulations | 51 |
| 4.4.2 | Compliance costs..... | 55 |
| 4.4.3 | Federal assistance | 56 |
| 4.5 | Conclusions | 56 |

Chapter Five

Trade Impacts of Water Quality Regulations: Methodology

| | | |
|-------|--|----|
| 5.1 | Introduction | 58 |
| 5.2 | The Global Trade Analysis Project (GTAP) | 61 |
| 5.2.1 | Introduction to GTAP | 61 |
| 5.2.2 | Overall structure of the GTAP model..... | 61 |
| 5.2.3 | GTAP's production structure | 63 |
| 5.2.4 | Exogenous variables | 69 |
| 5.2.5 | Aggregations..... | 69 |
| 5.3 | Experiments | 69 |
| 5.3.1 | Experiment One..... | 69 |
| 5.3.2 | Experiment Two | 72 |

Chapter Six

Trade Impacts of Water Quality Regulations: Results and Discussion

| | | |
|-----|--|----|
| 6.1 | Experiment One..... | 76 |
| 6.2 | Experiment Two | 80 |
| 6.3 | Sensitivity Analysis - Experiment Two (Sensitivity)..... | 86 |
| 6.4 | Discussion..... | 88 |

Chapter Seven

Conclusion

| | | |
|-----|---|----|
| 7.1 | Introduction | 91 |
| 7.2 | Compliance Costs | 91 |
| 7.3 | Trade Impacts of these Compliance Costs | 91 |
| 7.4 | Shortcomings of the Research | 93 |
| 7.5 | Recommendations for further Research | 94 |

| | |
|---------------------------|----|
| Bibliography | 96 |
|---------------------------|----|

Appendix 1

| | |
|--|-----|
| Sections of the Resource Management Act, 1991..... | 110 |
|--|-----|

Appendix 2

Permitted Activity Conditions for Land-based Discharge of Effluent..... 115

Appendix 3

Data and Calculations of Compliance Costs for Water Quality Regulations..... 116

Appendix 4

Notation, Equations, and Aggregations for GTAP..... 126

List of Tables

| | | |
|------------|---|----|
| Table 3.1 | Consents, Monitoring, Costs, and Compliance for the Dairy Regions of New Zealand..... | 36 |
| Table 3.2 | Costs of Regulatory Compliance using a Travelling Irrigator | 41 |
| Table 3.3 | Costs of Regulatory Compliance using Tanker Spread Effluent from a Pond Storage System..... | 41 |
| Table 3.4 | Percentage of Costs attributable to Water Quality Compliance..... | 42 |
| Table 4.1 | Reductions in EU Livestock Numbers required to achieve the MAR..... | 51 |
| Table 6.1 | Effect on the Volume of Output and the Supply Price of commodities in New Zealand (% change) – <i>Experiment One</i> | 76 |
| Table 6.2 | Effect on Factor of Demand in New Zealand’s Milk and Dairy Product Sectors (% change) – <i>qfe. Experiment One</i> | 77 |
| Table 6.3 | Effect on the Quantity of Export Sales of Dairy Products from the Principal Dairy Exporters (% change) – <i>qxs. Experiment One</i> | 79 |
| Table 6.4 | Effect on the Commodity Trade Balances of the Principal Dairy Exporters (\$US million) – <i>DTBAL. Experiment One</i> | 79 |
| Table 6.5 | Effect on the Quantity of Export Sales of Dairy Products from the Principal Dairy Exporters (% change)- <i>qxs. Experiment Two</i> | 82 |
| Table 6.6 | Effect on the Volume of Output and the Supply Price of Commodities in New Zealand (% change) – <i>Experiment Two</i> | 82 |
| Table 6.7 | Effect on Factor Demand in some of New Zealand’s Production Sectors (% change) - <i>qfe. Experiment Two</i> | 84 |
| Table 6.8 | Effect on New Zealand’s Export Sales of the other Commodities - <i>qxs. Experiment Two</i> | 84 |
| Table 6.9 | Effect on the Commodity Trade Balances of the Principal Dairy Exporters (\$US million) – <i>DTBAL. Experiment Two</i> | 85 |
| Table 6.10 | Effect on the Quantity of Export Sales of Dairy Products from the Principal Dairy Exporters (% change) – <i>qxs. Experiment Two (Sensitivity)</i> | 87 |
| Table 6.11 | Changes in the Milk and Dairy Processing Sectors in New Zealand (% change) <i>Experiment Two (Sensitivity)</i> | 88 |

| | | |
|------------|---|----|
| Table 6.12 | Comparison of the Percentage Change of a number of Variables across the two Experiments..... | 89 |
|------------|---|----|

List of Figures

| | | |
|------------|-----------------------------------|----|
| Figure 5.1 | Structure of GTAP | 62 |
| Figure 5.2 | GTAP's Production Structure | 64 |