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RISK IN NEW ZEALAND DAIRY FARMING: PERCEPTION AND MANAGEMENT

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

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Rene Eduardo Pinochet Chateau

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ABSTRACT

Many changes have taken place in New Zealand during the last 20 years. These changes have affected the dairy sector in its broadest sense, at both industry and farm level. After economic deregulation (1984), a survey was conducted in 1992 amongst a sample of pastoral New Zealand farmers to assess the perception of risk and the strategies most commonly used by them to manage risk. Dairy farmers were part of the total sample analysed. Since the 1980s agriculture, not only in New Zealand but world wide, has changed at a rapid rate with farmers facing a challenging environment. The identification of both sources of variation and management strategies for them has made risk management a high priority issue. Therefore there is a need to understand the critical aspects of the environment faced by New Zealand dairy farmers, to update our knowledge of how they are recognizing and managing risk. The main objective of this research was to assess farmers' risk perception and identify the main variables affecting risk in New Zealand dairy systems. To accomplish the objectives, the 1992 survey was replicated with another sample of dairy farmers. Additionally a logistic regression was used to analyse the ProfitWatch Database (Dexcel). The four most important sources of risk perceived by farmers in 2004 were from the market side of their operations (2), Human (1) and Financial (1). To control risk, farmers were mainly focused in the use of Production and Financial strategies. The risks perceived and the use of risk management strategies have changed significantly during the last twelve years. Now farmers perceive more risk in almost all the sources identified in the surveys and they also make more intensive use of almost all the strategies to cope with those sources of risk. Significant differences were also found in the perception of some of the risk sources of the different groups of farmers analysed (Sharemilkers vs. Owner-operators and; North Island vs. South Island dairy farmers). Finally the database analysis showed that of the seven variables included in the logistic regression to assess risk, measured as Return on Equity (ROE), only four of them were found to be significant for the model. In order of importance, these were: the Debt Servicing Capacity (DSC), the Debt to Asset Ratio (DTAR), the Asset Turnover Ratio (ATR) and the Operating Profit Margin (OPM). The findings of this research have confirmed that currently farmers are mainly concerned about the changes of prices, changes in world situation, accidents or health problems and changes in interest rates;

however to control risk they are both production- and financial-orientated. With this clear profile, it can be stated that indeed risk perception and the way farmers manage risk has changed during the last twelve years. Additionally, farmers perceive sources of risks and manage them differently, according to their specific situation (e.g. Ownership structure, Geographic location). The analysis of the database showed that increases in farm size were not associated with a decrease in risk (ROE). Also, the use of Farm Working Expense Ratio and Economic Farm Surplus as the main variables to evaluate cost control and profitability of dairy farms overlook more useful ratios of ATR and OPM. Finally, high levels of debt can lead to reduction in the risk faced by a dairy business if non-equity capital (money borrowed) is efficiently used and high levels of efficiencies, both capital and operational, are achieved.

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ABBREVIATIONS

ATR	Asset Turnover Ratio
CoM	Cost of Milk
DSC	Debt Servicing Capacity
DTAR	Debt to Asset Ratio
E,V	Mean-Variance
EFS	Economic Farm Surplus
FSD	First Stochastic Dominance
FWER	Farm Working Expense Ratio
GFI	Gross Farm Income
HA	Effective Area
HGR	High Risk Group
IFCN	International Farm Comparison Network
Kg MS/Cow	Kilograms of Milk Solids produced per Cow
Kg MS/Ha	Kilograms of Milk Solids produced per Hectare
LIC	Livestock Improvement Corporation
LRG	Low Risk Group
MRG	Medium Risk Group
OE	Owner's Equity
OPM	Operating Profit Margin
ROA	Return on Assets
ROE	Return on Equity
SEU	Subjective Expected Utility
SRA	Stepwise Regression Analysis
SSD	Second Stochastic Dominance