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THE UNIVERSITY OF ALBERTA

Testing for Bias in the Canola Futures Market

by

Wayne G. Tymchuk

A THESIS

SUBMITTED TO THE FACULTY OF GRADUATE STUDIES AND RESEARCH
IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE

OF Master of Science

IN

Agricultural Economics

Department of Rural Economy

EDMONTON, ALBERTA

Fall, 1990



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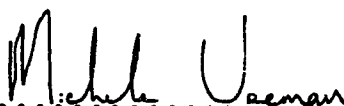
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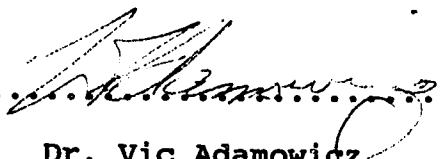
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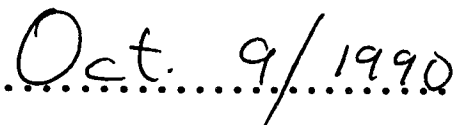
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To My Mother and Father:

Abstract

The central theme of this study will be to confront the theory of unbiasedness of a futures market with real world data. The expectation is that a futures market will predict subsequent cash prices without bias. In this study, data from the canola market on the Winnipeg Commodity Exchange is used to assess this hypothesis.

In this study the hypothesis that the canola futures market is unbiased is confronted with real world data. This statistical study took a two-pronged approach to testing the hypothesis. The first method examined whether or not the futures market price follows a random walk. If the market did not follow a random walk, then bias, evidenced by a general drift, on average, must be present. The second method of assessment used an instrumental variable regression approach to the traditional analysis using futures prices as an independent variable and expiration prices as the dependent variable to check if the futures market is unbiased.

To check the random walk theory, three tests were applied to a matrix of the daily price changes of fifty four futures contracts. From the results of each test, the hypothesis of random walk and unbiasedness had to be accepted. In the second method, using an instrumental variable technique to overcome a problem of using Ordinary Least Squares, the hypothesis of unbiasedness was accepted

at all lags tested. The results indicate that we cannot reject the hypothesis that the canola futures market is unbiased.

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No words here can express my gratitude to my parents for all that they have done for me, but hopefully this, in some small way, communicates that thanks:

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Chapter 1

Introduction

1.1 Objective

The central theme of this study will be to confront the theory of unbiasedness of a futures market with real world data. The expectation is that a futures market will predict subsequent cash prices without bias. In this study, data from the canola market on the Winnipeg Commodity Exchange is used to assess this hypothesis.

1.2 Background

Canola (rapeseed) oil accounts for 12 percent of world production of major vegetable oils and its production continues to increase. Canada and France are major exporters of this oilseed. Canada is estimated to have produced 3,400,000 metric tonnes (Commodity Research Bureau (C.R.B.) Yearbook 1986) of canola in 1985 alone.

In Canada, canola is a cool weather crop planted in May and harvested in August. It is particularly vulnerable to unpredictable weather patterns, being susceptible to frosts in spring and fall and very intolerant to dry conditions. Canola should be grown on fertile soil or in soil enriched with a large amount of fertilizer. Overall, canola is a very management-intensive crop relative to alternative crops.

Canola has been called the "Cinderella Crop" for prairie farmers. As it is an unregulated agricultural commodity, it responds to free market prices on the Winnipeg Commodity Exchange rather than to pooled prices through the Canadian Wheat Board (C.W.B.). However, transportation is regulated. Due to the relationship between barley and the C.W.B., the two crops are ultimately in competition for the same acreage. The importance of canola to prairie province farmers is reflected in its contribution to gross farm revenue. Canadian farmers have a substantial acreage in canola, so much so that the combined area of Southern Manitoba, Saskatchewan and North Central Alberta accounts for eight to ten percent of the world rapeseed production.

Canola is traded on the Winnipeg Commodity Exchange. In the 1973/74 crop year 322,848 contracts of rapeseed were traded and that volume has expanded to 929,599 contracts in the 1984/85 crop year. Each of these contracts represent 20 metric tonnes of canola with delivery dates of January, March, June, September and November. The canola contract normal deliverable grade is number one and is deliverable to Vancouver.

The futures market serves four particular functions. The first is that of risk management. Futures markets have been used as a risk management tool from their outset. An application of the futures market as a risk