

THE SUITABILITY OF CROSS-HEDGING POLYMERS WITH BRENT FUTURES CONTRACTS

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ABSTRACT

This research report investigated the effectiveness of cross-hedging polymers with brent futures contracts for manufacturers of plastic commodity products. The purpose was to find out whether volatile polymer raw material prices could, through this method, be stabilised to create predictable input costs for manufacturers. Global polymers from South East Asia, United States Gulf, North West Europe and South Africa were studied. Each were correlated and the polymer with the best correlation level was selected and cross-hedged through a simulation model to determine how effectively volatilities could be reduced.

The results showed that correlations were inconsistent for all polymers. They varied from period to period and from region to region. Correlations (r) ranged from 0.25 to 0.87. The polymers were found to have a time lag of zero to eight weeks with the brent futures price movements. LDPE, which showed the longest lag period, was found to have unreliable correlation with brent futures. HDPE Injection grade US Gulf, which had the best correlation at 0.87, was cross-hedged. The hedge was found to be ineffective, in that it exposed the manufacturer to more volatile input cost. It was also found to add a second excessively high risk exposure from the margin account that the manufacturer had to maintain in the futures exchange.

It was concluded that manufacturers were more cost-effective using an internally managed standby fund to absorb polymer input price because of lesser exposure to risk. However, it could not be guaranteed that the standby option would always be more cost effective.

DECLARATION

I declare that this is my own, unaided work. It is submitted in partial fulfilment of the requirements for the degree of Master of Business Administration in the University of the Witwatersrand, Johannesburg. It has not been submitted before for any degree or examination in this or any university.

April Masitwe

March, 2001

DEDICATION

*To my wife Mandisa,
without whose love and full support,
this project could never have been completed*

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CONTENTS

ABSTRACT	i
DECLARATION	ii
DEDICATION	iii
ACKNOWLEDGEMENTS	iv
CONTENTS	v
LIST OF FIGURES	ix
LIST OF TABLES	x
LIST OF ABBREVIATIONS	xi
DEFINITIONS	xii
1. INTRODUCTION	1
1.1 Background	1
1.2 Research Problem	4
1.3 Research Objectives	5
1.4 Importance of the Study	5
1.5 Scope of the Research	6
2. Literature Review	7
2.1 Introduction	7
2.2 Critical Success Factors of a Hedging Strategy	7

2.3	Rationale for Hedging a Particular Risk	10
2.4	Comparative Advantage in Hedging	14
2.4	Current Hedging Practices	15
2.6	Prior Research on Hedging	15
2.7	Unintended Speculation in Hedging	16
2.8	Exchange Traded Derivatives Versus Over-the-Counter Contracts	17
2.9	Hedging Long-Dated Obligations with Short-Dated Futures	19
2.10	Personal Interviews	20
3.	RESEARCH PROPOSITIONS	22
4.	RESEARCH METHODOLOGY	24
4.1	Introduction	24
4.2	Data Sources	24
4.2.1	Brent Crude Futures And Spot Prices	24
4.2.2	Polymer Spot Prices	24
4.2.3	The United States Interest Rates	25
4.3	Sampling Method	25
4.3.1	Data Selection	25
4.3.2	Sample Size	26
4.4	Research Tools	28
4.5	Method of Analysis	28

4.5.1 Correlation Analysis	28
4.5.2 Hedging Simulation	30
4.6 Limitations and Key Assumptions	37
4.7 Presentation of Results	46
5. RESEARCH RESULTS	42
5.1 Correlations	42
5.1.1 Hypothesis Testing of the Global Polymers Correlations	42
5.1.2 Correlation of Global Polymer Prices with Brent Futures Prices	43
5.1.3 Shifted Correlations (Lead-Lag)	46
5.1.3 Correlations of South African Polymers with Brent Futures Prices	48
5.1.4 Correlation of South African Polymers with Global Polymer Prices	49
5.2 Hedging Simulation	50
5.2.1 Stabilisation of the Polymer Price Volatility	51
5.2.2 Margin Account Cash Flow	53
5.2.3 Cash Flow Comparison of Standby Fund vs Hedged Options	54
6. INTERPRETATION OF RESULTS	56
7. CONCLUSIONS	60
7.1 Findings of the Study	60
7.2 Recommendations for Future Research	61
REFERENCES	62
APPENDICES	66

APPENDICES LIST

APP 1	Example of World Polymer Price Trends since 1989 to 1999	67
APP 2	Annual Polymer Consumption in South Africa	68
APP 3	Example of Hypothesis Test results for other Polymers	69
APP4	Description of Excel Calculations for: HypothesisTesting; Correlations; Hedge Effectiveness; Margin Account Cash Flows and Stand-by Fund Analysis	70
APP 5	Demonstration of the Correctness of the Model	77
APP 6	South African Plastics Index and Examples of South African Individual Polymer Indices	79
APP 7	List of Excel and Word Files	80

LIST OF FIGURES

<u>Figure 1:</u>	Global HDPE Price Correlations with Brent Futures: 1989 to 1999	45
<u>Figure 2:</u>	Correlations of LDPE NW E to Different Brent Futures Contracts 1989 to 1999	45
<u>Figure3:</u>	Global Polyprop Price Correlations with Brent Futures Contracts: 1989 to 1999	45
<u>Figure 4:</u>	Global HDPE Price Correlations with Brent Futures Contracts: 1995 to 1999	45
<u>Figure 5:</u>	Correlations of LDPE to Different Brent Futures Contracts 1995 to 1999	45
<u>Figure 6:</u>	Global Polyprop Price Correlations with Brent Futures 1995 to 1999	45
<u>Figure 7:</u>	PP_Brent Futures Shifted Correlations: Bloomberg Data	46
<u>Figure 8:</u>	HDPE_Brent Futures Shifted Correlations: Bloomberg Data	46
<u>Figure 9:</u>	LDPE_Brent Futures Shifted Correlations: Bloomberg Data	46
<u>Figure 10:</u>	SA Polymer Correlations with Oil	48
<u>Figure 11:</u>	Correlations of SA Polymers with Global Polymers	49
<u>Figure 12:</u>	Effective HDPE Hedge Price vs HDPE Spot Price Period 1995 1999	51
<u>Figure 13:</u>	Effective Hedge vs Spot Standard Deviations	52
<u>Figure 14:</u>	Margin Account Fluctuation: HDPE US Gulf	53
<u>Figure 15:</u>	Hedged Option vs Standby Option Cash Flows	54

LIST OF FIGURES (Continued)

LIST OF TABLES

<u>Table 1:</u>	Hypothesis Test for Global Polymer Correlations with Brent Futures	42
<u>Table 2:</u>	Summarised Global Polymer Correlations with Brent Futures by Period	44
<u>Table 3:</u>	Summarised Global Polymer Correlations with Brent Futures by Region	45
<u>Table 4:</u>	Correlations of Polymer Prices Shifted in Time (Weeks)	46
<u>Table 5:</u>	Hypothesis Testing Results for Shifted Correlations	47
<u>Table 6:</u>	Hypothesis Testing Calculations for SA Polymers with the Oil Index	47
<u>Table 7:</u>	Hypothesis Testing for Correlations of SA Polymers with Global Polymers	47
<u>Table 8:</u>	Oil/Brent Futures Correlation with Different Polymers	50

LIST OF ABBREVIATIONS

HDPE:	High Density Polyethylene
LDPE:	Low Density Polyethylene
PP:	Polypropylene
NW E:	North West Europe
SE Asia:	South East Asia
US Gulf:	United States Gulf
SA:	South Africa
BLWM (Blwm):	Blow Moulding Grade
INJ (Inj):	Injection Mould Grade
FLM (Flm):	Film Grade
IPE:	International Petroleum Exchange
Coef.:	Coefficient

DEFINITIONS

Effective Hedge Price: The total spot price paid by the manufacturer for the weekly quantity of polymer purchased plus the gain or loss incurred in the futures exchange for the total number of futures contracts purchased.

Cross-hedging: In this study it meant hedging a polymer with brent futures contract, where it is understood that the underlying of the futures contract (that is oil) is not the same as the polymer.

Threshold Correlation Coefficient: The minimum correlation coefficient a polymer should have with the brent futures contract to justify a cross-hedging. The minimum was artificially set for this study as no standard exists.

Alpha: Significance Level

Risk: The uncertainty of whether the price will be high or low

Global Region: NW E, SE Asia and US Gulf

Local Region: South Africa