



**UNIVERSITI PUTRA MALAYSIA**

**PRICE EXPECTATIONS AND THE DEMAND FOR  
AGRICULTURAL LOANS**

**Muzafar Shah bin Habibullah**

**FEP 1985 4**

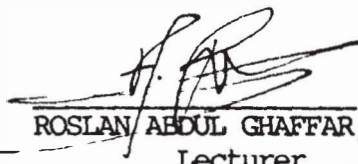
This is to certify that we have read this thesis entitled "Expectation Formation and Demand for Agricultural Loans" by Muzafar Shah Habibulla, and in our opinion it is satisfactory in terms of scope, quality and presentation as partial fulfilment of the requirements for the degree of Master of Science.



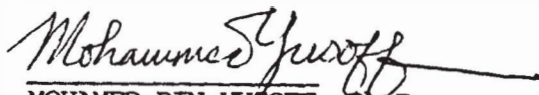
ALANG P. ZAINUDDIN, Ph.D.  
Assoc. Professor/Dean of Graduate Studies  
Universiti Pertanian Malaysia  
(Chairman Board of Examiners)



TAN BOCK THIAM, Ph.D.  
Associate Professor  
Faculty of Economics and Administration  
University of Malaya  
(External Examiner)




ROSLAN ABDUL GHAFFAR, Ph.D.  
Lecturer  
Faculty of Resource Economics and Agribusiness  
Universiti Pertanian Malaysia  
(Internal Examiner)



MOHAMED BIN YUSOFF, Ph.D.  
Associate Professor  
Faculty of Resource Economics and Agribusiness  
Universiti Pertanian Malaysia  
(Supervisor)

Tesis ini telah diserahkan kepada Senat Universiti Pertanian Malaysia dan telah diterima sebagai memenuhi sebahagian daripada syarat-syarat untuk ijazah Master Sains.

Tarikh: 14 NOV 1985

  
ALANG PERANG ZAINUDDIN, Ph.D.  
Profesor Madya/  
Dekan Pengajian Siswazah.

PRICE EXPECTATIONS AND THE DEMAND FOR  
AGRICULTURAL LOANS

by

Muzafar Shah bin Habibullah

A thesis submitted in partial fulfilment of the  
requirements for the degree of Master of Science  
in the Faculty of Resource Economics and  
Agribusiness, Universiti Pertanian Malaysia.

April 1985



## ACKNOWLEDGEMENT

I wish to express my thanks and gratitude, in particular, to Dr. Mohammed Yusoff, for initiating the intellectual impetus and subsequently supervising this study. His patience, guidance and constructive criticisms throughout the preparation of this study is deeply appreciated. I also benefited greatly from the suggestion of Dr. Roslan Abd. Ghaffar on the data used in this study. And last but not least, my deepest appreciation goes to Cik Suhana binti Jamaludin, who patiently typed this manuscript.



## TABLE OF CONTENTS

	Page
ACKNOWLEDGEMENT	ii
TABLE OF CONTENTS	iii
LIST OF TABLES	vi
LIST OF FIGURES	ix
LIST OF ABBREVIATIONS	x
ABSTRACT	xi
ABSTRAK	xiii
CHAPTER I INTRODUCTION	1
GENERAL DISCUSSION	1
THE PROBLEM	2
OBJECTIVES	9
ORGANISATION OF THE THESIS	11
CHAPTER II AGRICULTURAL FINANCE IN MALAYSIA	13
THE IMPORTANCE OF AGRICULTURE	13
FINANCING THE AGRICULTURAL SECTOR	22
Sources of Financing	22
Type of Loans Extended	28
MONETARY MEASURES - SOME IMPLICATIONS	31
Why Banks Refuse Lending ?	35
THE DEMAND FOR AGRICULTURAL LOANS	40



	Page
CHAPTER III EXPECTATION AND ECONOMIC THEORY	45
ROLE OF EXPECTATION	45
THEORIES OF EXPECTATION	46
The Cobweb Theory	46
Extrapolative Expectations	47
Adaptive Expectations	48
Rational Expectations	51
Expectation Formation: Some Empirical Evidence	55
CHAPTER IV MODEL SPECIFICATION	62
DEMAND FOR A FACTOR OF PRODUCTION	62
THE MODEL	70
THE ESTIMATING MODEL	73
Model I. Cobweb Expectation Model	74
Model II. Extrapolative Expectation Model	75
Model III. Adaptive Expectation Model	77
Lagged Dependent Variable - An Interpretation	83
Model IV. Rational Expectation Model	85
METHOD OF ESTIMATION	86
SOURCES OF DATA	90



	Page
CHAPTER V THE EMPIRICAL RESULTS	91
AGRICULTURAL SECTOR	92
RUBBER SECTOR	94
OIL PALM SECTOR	97
PADDY SECTOR	97
CHAPTER VI SUMMARY AND CONCLUSION	102
POLICY IMPLICATIONS	105
SUGGESTION FOR FURTHER RESEARCH	107
BIBLIOGRAPHY	108
APPENDIX A	117
APPENDIX B	132





## LIST OF TABLES

	Page
Table.	
1.1 : Malaysia - Inflation and cost of Agricultural Input per tonne of Output : 1970 - 1980.....	3
1.2 : Malaysia - Inflation and Commodity Prices: 1970-1980.....	4
2.1 : Malaysia : Gross Domestic Product by Sector of Origin, 1970-1980.....	14
2.2 : Malaysia : Hectareage Production and Prices of Rubber, Palm Oil and Paddy, 1970-1980.....	16
2.3 : Malaysia : Export Performance, 1970-1980.....	18
2.4 : Malaysia : Employment Estimates by Sector, 1970-1980.....	19



	Page
2.5 : Peninsular Malaysia : Incidence of Poverty by Sector, 1970, 1975 and 1980.....	21
2.6 : Malaysia : Public Development Expenditure, 1971-1980.....	23
2.7 : Malaysia : Loans to Agricultural Sector, 1970=1980.....	25
2.8 : Commercial Banks : Classification of Loans and Advances by Sector, 1970-1980.....	27
2.9 : Malaysia : Loans and Advances of Commercial Banks by Type, 1970-1980.....	29
2.10 : Malaysia : Monetary Measures for Commercial Banks for 1973, 1974 and 1975.....	32
2.11 : Malaysia : Rate of Interest on Commercial Bank Loans and Advances for Agricultural and Non-Agricultural Sector for 1965-1976.....	38
2.12 : Malaysia : Rate of Interest on Commercial Bank Loans and Advances to Agricultural Sector for 1965 and 1970.....	39
3.1 : Turnovsky and Wachter's Study.....	56
3.2 : Lahiri's Study.....	58



	Page
3.3 : Goodwin and Sheffrin' Study.....	59
3.4 : Goodwin and Sheffrin's Study : Prediction Results.....	61
4.1 : Model I. Estimating Cobweb Expectation Model.....	76
4.2 : Model II. Estimating Extrapolative Expectation Model.....	78
4.3 : Model III. Estimating Adaptive Expectation Model.....	84
4.4 : Model IV. Estimating Rational Expectation Model.....	87
5.1 : Regression Coefficients and Related Statistics of Agriculture Sector - Model I to Model IV.....	93
5.2 : Regression Coefficients and Related Statistics of Rubber Sector - Model I to model IV.....	95
5.3 : Regression Coefficients and related Statistics of Oil Palm Sector - Model I to Model IV.....	98
5.4 : Regression Coefficients and Related Statistics of Paddy Sector - Model I to model IV.....	99



## LIST OF FIGURES

	Page
1.1 : Relationship between Rate of Inflation and cost of agricultural input for Rubber, Oil Palm and Paddy Sector.....	5
1.2 : Relationship between Rate of Inflation and Prices of Rubber, Palm Oil and Paddy.....	6

## LIST OF ABBREVIATIONS

ARSA - Annual Report and Statement of Accounts

BPM - Bank Pertanian Malaysia

CGC - Credit Guarantee Corporation

FMP - Fourth Malaysia Plan

QEB - Quarterly Economic Bulletin

TED - The Economic Department

An abstract of the thesis presented to the Senate of Universiti Pertanian Malaysia in partial fulfilment of the requirements for the degree of Master of Science.

PRICE EXPECTATIONS AND THE DEMAND FOR  
AGRICULTURAL LOANS

by

Muzafar Shah bin Habibullah

April , 1985

Supervisor : Mohammed bin Yusoff, Ph.D.  
Associate Professor.

Faculty : Resource Economics and Agribusiness

Separate studies on the formation of price expectations of future prices of agricultural commodities and the demand for loans have been extensive. However, studies on how farmers form their expectations on future prices of the agricultural commodities as their decision variable when borrowing decision is made has been neglected. Therefore, the objective of this study is to determine how farmers or farm-firms forms their expectations about price at the time when borrowing decision is made. The study is also aimed at determining other factors that influence the demand for agricultural loans.



In this study, four expectation formation processes are identified: the cobweb, extrapolative, adaptive and rational expectation hypotheses. These expectation models are tested in four agricultural sectors, that is, rubber, oil palm, paddy and agricultural sector as a whole.

This study covers a period of twenty one years (1962 - 1982). Ordinary least squares is employed as the statistical tool in the analysis. All regressions were corrected for autocorrelation.

The results suggest that Malaysian farmers or farm-firms form their price expectations according to the cobweb process. For the rubber and paddy sector, the findings suggest that the farmer are naive in forming their expectation about price, and follow the adaptive process respectively. However, for oil palm sector, the result is rather inconclusive. Other factors that influence the demand for loans are the level of internal funds and area planted. But the demand for agricultural loans is insensitive to variations of interest rate.



Abstrak tesis yang dikemukakan kepada Senat Universiti Pertanian Malaysia sebagai memenuhi sebahagian daripada syarat-syarat untuk mendapatkan ijazah Master Sains.

JANGKAAN HARGA DAN PERMINTAAN TERHADAP  
PINJAMAN PERTANIAN

oleh

Muzafar Shah bin Habibullah

April , 1985

Penyelia : Mohammed bin Yusoff, Ph.D.  
Professor Madya

Fakulti : Ekonomi Sumber dan Perniagaantani

Memang banyak kajian telah dibuat mengenai pembentukan jangkaan harga barang-barang pertanian dan juga mengenai permintaan terhadap pinjaman. Walau bagaimanapun kajian dan perbincangan mengenai bagaimana petani-petani atau firma-perladangan membentuk jangkaan terhadap harga barang-barang pertanian sebagai pembolehubah dalam membuat keputusan untuk meminjam, tidaklah begitu meluas. Jadi tujuan kajian ini adalah untuk mengenalpasti bagaimanakah petani-petani membentuk jangkaan harga barang-barang pertanian ketika membuat keputusan untuk meminjam. Kajian ini juga akan mengenalpasti apakah faktor-faktor





lain yang mempengaruhi permintaan terhadap pinjaman pertanian.

Dalam kajian ini, empat bentuk proses jangkaan digunakan, iaitu hipotisis cobweb, ekstrapolatif, adaptif dan rasional. Model-model jangkaan ini di uji terhadap empat sektor pertanian iaitu: sektor getah, sektor kelapa sawit, sektor padi, dan sektor pertanian keseluruhannya.

Kajian ini merangkumi jangkamasa dua puluh satu tahun (1962 - 1982). Regresi kuasa dua terkecil digunakan sebagai alat statistik dalam analisa tersebut. Kesemua analisis regresi dibetulkan untuk autokorelasi.

Kesimpulannya, keputusan regresi mengutarakan bahawa petani-petani atau firma-perladangan di Malaysia ini membentuk jangkaan terhadap harga barang-barang pertanian secara cobweb. Penanam-penanam getah juga membentuk jangkaan secara cobweb, dan petani-petani padi pula secara adaptif. Manakala, bagaimana penanam-penanam kelapa sawit membentuk jangkaan harga barang-barang pertanian tidak dapat dikenalpasti. Pembolehubah lain yang mempengaruhi permintaan terhadap pinjaman selain daripada harga barang-barang pertanian adalah modal sendiri dan luas tanaman. Kadar bunga didapati tidak penting dalam mempengaruhi permintaan terhadap pinjaman pertanian.

## CHAPTER I

### INTRODUCTION

#### GENERAL DISCUSSION

Uncertainty about future economic conditions has been regarded as one of the crucial factors that influences the thinking and behaviour of economists, politicians and the general public. Mayes (1981: 53) pointed out that;

'In a fairly normal economic conditions, it may not be of great importance to know as to how expectations are formed...if price inflation is fairly constant...However, in recent years no such uniformity has been observed for the rate of inflation and it has become much more important to consider with some care what people's expectations actually are and how they are formed.'

A farmer, for example, has to decide this year the optimal output to produce next year. Some of the variables involved in the decision process may be unknown. Therefore, the farmer has to form his view about the future, such as the likely sales of the commodity, cost of production, commodity prices, other related commodity prices, government policies and other farmers' reactions. Likewise, in deciding on the amount of loans to

borrow, the farmer will have to form estimates of future income to be derived from the investment, the estimates of future revenue or future price of that particular agricultural commodity, and also the costs of production and borrowing. The view about the value of the above crucial economic variables are frequently referred to as 'expectation', that is, what the farmer expects to happen.

The variability of the cost of agricultural production, price of agricultural commodities and the rate of inflation in Malaysia for the period 1970 to 1980 are presented in Table 1.1 and Table 1.2, and their rates of growth are reflected in Figure 1.1 and Figure 1.2 respectively. Figure 1.1 and Figure 1.2 clearly show that, there is a close association among the cost of production, agricultural price, and rate of inflation for the period 1970 to 1980. For example, in 1973 and 1974, there was an increase in the cost of production and agricultural prices; therefore we experienced double digit inflation in these two years.

## THE PROBLEM

In the last decade, there has been increasing interest in the hypothesis of how expectations are formed by economic agents. The importance of the role of expectation in economic theory has been recognised since expectation can lead to a ferment of new

TABLE 1.1  
MALAYSIA - INFLATION AND COST OF AGRICULTURAL INPUT  
PER TONNE OUTPUT<sup>1</sup> - 1970 - 1980

Year	Rubber <sup>a</sup>		Oil Palm <sup>b</sup>		Paddy <sup>c</sup>		Inflation <sup>d</sup> %
	\$/tonne	%change	\$/tonne	%change	\$/tonne	%change	
1970	209.5	-	98.8	-	85.8	-	-
1971	194.4	- 7.2	81.3	-17.7	72.4	-15.6	1.6
1972	192.1	- 1.2	62.6	-23.0	73.5	1.5	3.2
1973	304.6	58.6	96.4	54.0	83.2	13.2	10.6
1974	195.8	-35.7	66.8	-30.7	156.4	88.0	17.3
1975	212.2	8.4	75.9	13.6	146.6	- 6.3	4.9
1976	210.4	- 0.8	90.9	19.8	159.0	8.5	2.6
1977	211.5	0.5	85.3	- 6.2	189.7	19.3	4.7
1978	252.5	19.4	103.5	197.1	250.7	32.2	4.9
1979	240.6	- 4.7	101.0	- 2.4	281.0	12.1	3.6
1980	280.6	16.6	175.8	74.1	375.7	33.7	6.7

Sources : <sup>a</sup> Department of Statistics, Rubber Statistics Handbook, Various issues  
<sup>b</sup> Department of Statistics, Oil Palm, Coconut, Tea and Cocoa Statistics, various issues  
<sup>c</sup> Ministry of Agriculture, Import and Export Trade in Food and Agricultural Products Peninsular Malaysia, various issues  
Ministry of Agriculture, Statistical Digest Peninsular Malaysia, various issues  
<sup>d</sup> Bank Negara Malaysia, Quarterly Economic Bulletin, various issues

Note : <sup>1</sup> The computation of the cost of agricultural input per tonne output for each sectors is per Appendix A. The general formula is dividing total cost of input at time t by total production at time t.

TABLE 1.2  
MALAYSIA - INFLATION AND COMMODITY PRICES:  
1970 - 1980<sup>a</sup>

Year	Rubber		Oil Palm		Paddy		Inflation %
	\$/tonne	%change	\$/tonne	%change	\$/tonne	%change	
1970	1281	-	657.5	-	446.0	-	-
1971	1050	-18.0	663.5	0.9	436.2	- 2.2	1.6
1972	951	- 9.4	520.3	- 21.6	494.6	13.4	3.2
1973	1530	60.9	584.7	12.4	539.8	9.1	10.6
1974	1839	20.2	1204.5	106.0	870.4	61.2	17.3
1975	1388	-24.5	1133.0	- 5.9	888.1	2.0	4.9
1976	1912	37.8	906.8	- 20.0	868.1	- 2.3	2.6
1977	2044	6.9	1256.8	38.6	758.5	- 12.6	4.7
1978	2231	9.1	1232.1	- 2.0	648.8	- 14.5	4.9
1979	2717	21.8	1299.6	5.5	674.9	4.0	3.6
1980	3026	11.4	1152.0	- 11.4	772.1	14.4	6.7

Sources : <sup>a</sup> Bank Negara Malaysia, Quarterly Economic Bulletin, various issues

<sup>b</sup> Ministry of Agriculture, Import and Export Trade in Food and Agricultural Products Peninsular Malaysia, various issues.

FIGURE 1.1

RELATIONSHIP BETWEEN RATE OF INFLATION AND COST OF AGRICULTURAL  
INPUT FOR RUBBER, OIL PALM AND PADDY SECTOR

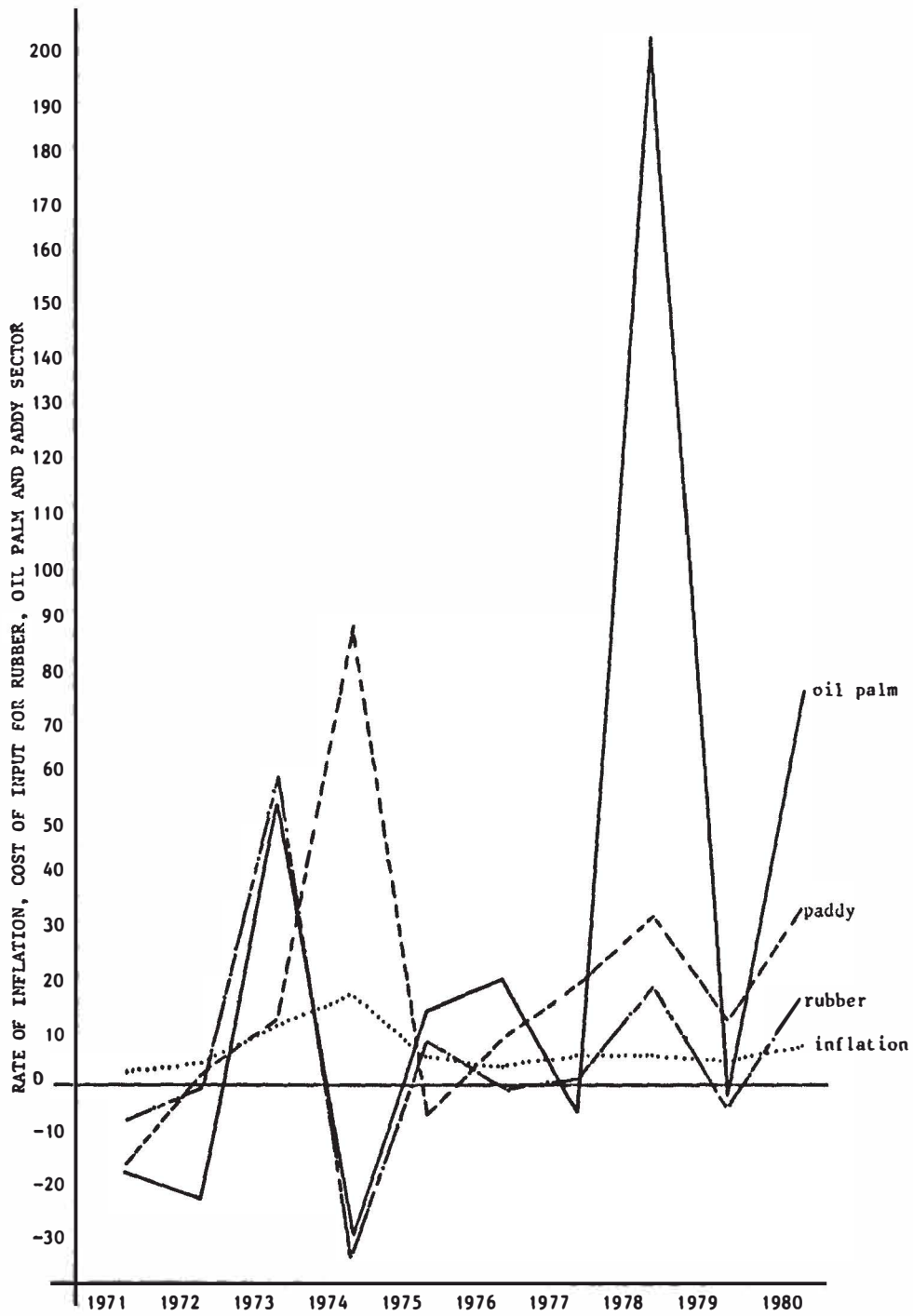
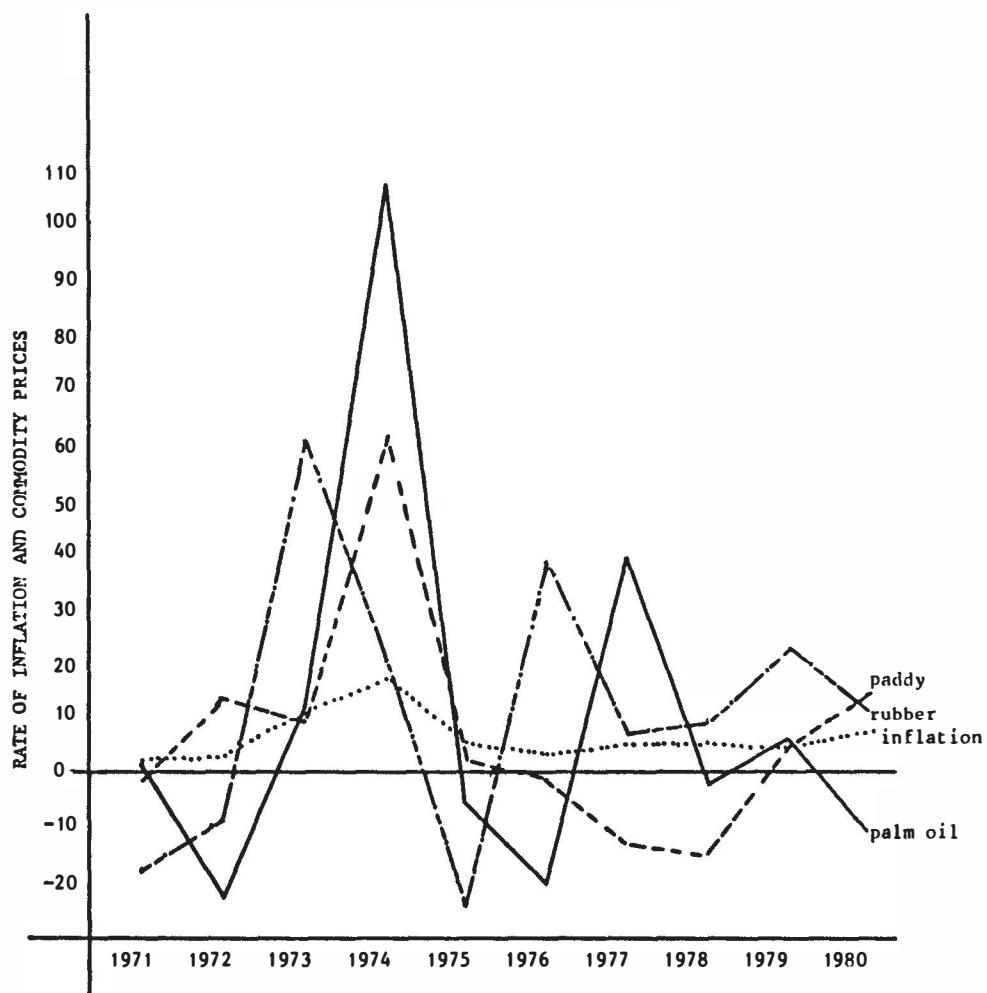


FIGURE 1.2  
RELATIONSHIP BETWEEN RATE OF INFLATION AND PRICES OF RUBBER,  
PALM OIL AND PADDY



theories and discredit old theories which have been accepted and acknowledged as a means of policy device. Such an example is the Philips curve. The development of inflationary expectation reduces the trade-off between unemployment and inflation and therefore the credibility of Philips curve has been questioned. However, a more recent issue is that the economic unit forms its expectation rationally which resulted in the impotency of the government in their attempt to stabilise the economy by means of monetary and fiscal policies.

In the agricultural sector, expectation plays a major role in the farmer's decision making since agriculture is subject to uncertainties in the forms of yield (technical) and price uncertainties. The yield uncertainty may be due to unpredictable weather and the incidence of pests and diseases affecting both crops and livestock. On the other hand, the competitive structure of agriculture and government intervention (Blandford and Currie 1975) may also result in considerable price uncertainties. Therefore, farm incomes are also uncertain and vary from year to year (Hill and Gersent 1975: 23-24).

Thus, studies on farmers' expectations about future prices have been extensive. One of the most popularly used expectation formation process is the adaptive expectation model in which farmers revise the price they expect to prevail in the coming year in proportion to the error they made in predicting price this period (Nerlove 1956: 500). That is, expected price is



assumed to be a weighted moving average of past prices with the weights declining geometrically over time. Askari and Cummings (1976) have listed more than 600 studies in which variants of Nerlove's expectation model were employed.

However, Turnovsky (1974: 707) pointed out that this procedure is recognised as being rather restrictive and usually non-optimal since they do not allow the farmers to use all available information in forming their expectations. He further argued that these problems can be partly solved by assuming that expectations are rational. The concept of rational expectation provides a method in which the decision makers use all available information in making their decisions. Muth (1961: 316) states that;

'Expectations, since they are informed predictions of future events, are essentially the same as the predictions of the relevant economic theory.

Thus, rational expectations for a particular variable are mathematical expectations conditional on available information. The information consists of all available observations on the variable in question and on related variables at the time when decision is made. These suggest that the psychological (subjective) expectation equals the mathematical (objective) expectation of the economic agent (Sargent 1973: 440).