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AN APPLICATION OF A MULTI-INPUT MULTI-OUTPUT MODEL WITH TECHNOLOGICAL CHANGE TO FOREIGN TRADE: THE CASE OF SRI LANKA

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ABSTRACT

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The purpose of this study is to build a model of the Sri Lankan economy with which to estimate import, export, investment and consumption functions simultaneously and to estimate inverse demand functions of inputs, capital and labor. The model developed takes into account technological changes, both exogenous and endogenous. The study aims to discover new interrelationships so that policy formulations can be improved.

The significance of the study lies in the fact that it provides new information on Sri Lanka. It provides a variety of estimates of on the interrelationships among sectors. It gives insights into the effects of endogenous technology which has been given little consideration in other studies. It also fills a gap which existed in capital input data. Such data is achieved by using a Perpetual Inventory Method applied to the period 1958-1978. The study develops its own price and cross elasticities of demand and supply functions which are useful in evaluating economic policy.

Price and cross elasticities as well as the elasticity of substitution have been considered important factors in the analysis of

an economy. Yet historically, most studies are weak due to the use of inflexible functional forms and their estimation techniques. In recent years the duality approach has been adopted where a profit function serves to estimate the import-export functions with consumption, investment, capital and labor variables simultaneously and allowing for exogenous technological changes. A more flexible functional form - translog - is also used.

This study utilizes the translog approach but exceeds previous applications by including endogenous technological changes as well as exogenous technological changes in the model. Application of the model yields several interesting results. Exports appear to be nonsensitive to own price. Imports appear quite sensitive to own price. Consumption is neither sensitive to own price nor to investment. The elasticity of substitution stayed stable over time. The cross elasticities reveal varying degrees of complementarity and substitutability between outputs and between inputs and outputs. Finally, the study discloses technological bias of various types in the economy.

The results allow an examination of the impact of world events and also existing and proposed governmental policies on the Sri Lankan economy. Specific policies evaluated are: devaluation, exchange controls, tariff protection program, price controls and de-controls, economic growth, investment promotions and commodity agreements.

TABLE OF CONTENTS

ACKNOWLEDGEMENTS iii

LIST OF TABLES viii

LIST OF SYMBOLS x

ABSTRACT xiii

CHAPTER PAGE

I. INTRODUCTION 1

II. PROBLEM IDENTIFICATION AND THE OBJECTIVES OF THE STUDY 4

The Central Focus of the Study 4

Economy of Sri Lanka 6

Production 8

Investment 11

Consumption 12

Main Economic Problems 13

Population Growth 13

Low Per Capita Income (PCI) 14

Government Finance 17

Balance of Payment (BOP) and the Foreign Exchange Situation 17

Previous Empirical Studies on Trade and Production 21

Reliability of Information 24

Summary of Problem and Objectives 25

III. EARLIER MODELS SHOWING THE DEMAND FOR IMPORTS AND THE SUPPLY OF EXPORTS 28

Traditional Approach 28

Modern Approach 42

The Concept of Duality Theory 43

IV. MODEL SPECIFICATIONS AND LIMITATIONS 45

Assumptions 45

Hypotheses and Relationships 46

Conceptual Foundation 47

Model Specifications 47

Exogenous Technology 48

Endogenous Technology 48

Theoretical Justification of Accumulated Gross Investment as an Index of Experience 49

Inward Movement in Input Space and Outward Movement in Output Space 52

Technological Bias 52

Functional Form 53

Model 1 54

Empirical Implementation of Model 1 55

Model 2 57

Empirical Implementation of Model 2 58

Model 3 59

Empirical Implementation of Model 3 61

Purpose of New Variables 62

Study Limitations 73

Conceptual Limitations 73

Methodological Limitations 73

V. EMPIRICAL RESULTS AND FUTURE RESEARCH 75

Data Description 75

Empirical Results 75

Price Elasticities 76
Cross Elasticities 76
Cross Elasticities of Investment and Consumption 76
Effects on Balance of Payment 77
Technological Changes 78
Future Research 84
VI. POLICY IMPLICATIONS AND CONCLUSIONS 87
Problems 88
Effects of World and Internal Events 89
World Events and Effects 89
Internal Events and Effects 92
Policies Which Have Been and Continued to be Followed 94
Implications of the Results 99
Concluding Remarks 101
APPENDICES 103
Statistical Appendix 104
Appendix Section I 105
Appendix Section II 129
Appendix Section III 137
Footnote #2 150
Footnote #52 151
Footnote #A-1 152
BIBLIOGRAPHY 154