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

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DISSERTATION

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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.