International Consumption Comparisons

OECD Versus LDC

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OECD Versus LDC

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DEDICATION

To our parents

*who have made enormous sacrifices to give us
the most precious gift of education*

the late Mr Veluppillai Eliyathamby

the late Mrs Pooranam Eliyathamby

Mr Murugesapillai Pathmanathan

Mrs Parameswary Pathmanathan

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PREFACE

Understanding consumer reaction to price and income changes is of crucial importance for a host of microeconomic policy issues such as public-utility pricing, the measurement of distortions, optimal taxation and the treatment of externalities. The modern system-wide approach to applied demand analysis provides a unique approach to determine the factors that influence consumer decisions. This book presents a detailed analysis of the consumption patterns of consumers from 46 countries. The countries considered in the analysis are classified into two groups, namely, the Organisation for Economic Co-operation and Development (OECD) group — made up of a number of highly industrialized, rich countries, and the Less Developed (LD) group — made up of a number of relatively poor countries (totaling to about 9000 data points). Such a large and diverse body of data should provide convincing evidence, one way or the other, about a number of empirical regularities as well as the validity of the theory of the consumer. While the book reviews the theory of the consumer, it contributes more to the analysis of the consumption patterns of consumers around the Globe.

A Preview of the Book

One of the primary objectives of applied demand analysis is to estimate demand systems to obtain income and price elasticities in order to use them to design microeconomic policies. With this objective, in Chapter 1 we present an

overview of international consumption patterns and in Chapter 2 we present a review of the basics of demand theory. In Chapter 1, we present an overview of the OECD and LD countries and their consumer characteristics as well as a review of some of the previous international consumption studies. In Chapter 2, we present the basics of the economic theory of the consumer, discuss various consumer utility preference structures, review the differential approach to deriving demand systems and present a number of popular demand systems such as CBS, AIDS, translog and Rotterdam demand systems.

In Chapter 3, we provide a preliminary data analysis of the consumption patterns in the OECD countries. We start this chapter by giving information about the data sources and the characteristics of the data set. We present a summary of the data in the form of Divisia indices. We investigate a number of empirical regularities of the consumers such as the *Engel's Law*, *Law of demand* and the famous *Frisch's conjecture* in these 23 OECD countries. The analysis of this chapter reveals that consumption tends to be more variable than prices and the consumers move away from those goods which have above average price increases — supports the law of demand. Furthermore, we find that the allocation of consumers' income on food decreases with their increasing income — supports Engel's law. Also the income elasticity of the marginal utility of income is not related to consumers' income - does not support Frisch's conjecture. We also derive initial estimates for income and price elasticities for the nine commodity groups in this chapter using the double-log demand systems. These initial estimates suggest that the OECD consumers consider food, housing, medical care and education as necessities; and clothing, durables, transport and recreation as luxuries. We also find that the demand for all goods in the OECD countries is price inelastic.

We start Chapter 4 by giving details about the data source and the characteristics of the data for 23 LD countries. We use the same data analysis

techniques introduced in Chapter 3 to present a preliminary analysis of the LDC data. The results show that the LD countries data supports the law of demand, Engel's law and does not support Frisch's famous conjecture. The elasticity estimates reveal that consumers in the LD countries consider food, housing and medical care as necessities; and clothing, durables, transport, education and recreation as luxuries. In general, demand for all goods in the LDC appear to be price inelastic.

In Chapter 5, we compare the consumption patterns of the OECD and LD consumers based on the results of Chapters 3 and 4. We then combine the data sets for the two groups of countries to investigate the empirical regularities for the "World Consumers" as a whole. A comparison of the income allocation shows that OECD consumers allocate less proportion of their income on food compared to the LD consumers. OECD consumers allocate a higher proportion of their income on housing, medical care, transport and recreation than the LD consumers. Based on the pooled data, an average world consumer allocates about 33 percent of his/her income on food, 8 percent on clothing, 15 percent on housing, 8 percent on durables, 5 percent on medical care, 12 percent on transport, 7 percent on recreation, 1 percent on education and the remaining 12 percent on all other things. The results also show that both OECD and LDC data support Engel's law.

Individual prices of consumer goods play a major role in consumer decisions as well as determine the rate of inflation, which impacts the economy as a whole. Thus studying the price movements is also important in understanding consumer behaviour. In Chapter 6, we study the prices and consumption of individual goods using the stochastic index numbers. According to this approach, the proportionate change in each individual price is taken to be equal to the underlying rate of inflation plus other components, which are random and nonrandom. The overall price index is then obtained by taking some

form of average of the individual price changes. An alternative to the stochastic approach is the functional approach whereby the form of the index is related to the underlying utility function. The attraction of the stochastic approach is that it provides standard errors for the price index. These standard errors increase with the degree of relative price variability. This agrees with the intuitive notion that when the individual prices move disproportionately, the overall rate of inflation is less well defined. We start this chapter by outlining the stochastic approach to index numbers and derive a number of theoretical results. We then apply these results to measure the price and quantity movements of the OECD and LD countries using the data presented in the previous chapters.

Chapter 7 presents the final form of the estimating demand equations and tests demand theory hypotheses, demand homogeneity and Slutsky symmetry. The results show that homogeneity is universally acceptable by the OECD and LDC data and symmetry is acceptable to a lesser extent. In Chapter 2 of the book, we introduce a number of competing demand systems such as the Rotterdam, CBS, AIDS, etc. In Chapter 8, we estimate four of these demand systems using the OECD and LDC data and test the demand theory hypotheses, homogeneity and symmetry. For each country, a comparison of the performance of these four demand systems is presented using the information inaccuracies and a preferred demand system is then selected.

In Chapter 9, we investigate a special form of utility structure — preference independence. The results show that preference independent utility structure is acceptable for most of the LD countries and by the majority of the OECD countries. In Chapter 9, we also give the final estimates of income and price elasticities of the nine commodity groups.

The Appendix to this book, written by Wana Yang, Ken Clements and Dongling Chen, presents a shorter version of the User's Guide to the Demand Analysis Package, DAP2000. DAP2000 is an enhanced version of the Demand

Analysis Package (DAP) written by S. Selvanathan, E.A. Selvanathan and Ken Clements in 1989. Features of DAP2000 include Preliminary data analysis, Hypotheses testing using both conventional asymptotic procedures and the Monte Carlo simulation approach, Estimation of demand systems and the Matrix approach to simulation (MAS), which is a recently-developed technique to evaluate demand systems. DAP2000 is extensively used in producing the results for Chapters 3, 4, 7 and 9 of this book.

*E.A. Selvanathan
Saroja Selvanathan*

January 2003

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TECHNICAL NOTES

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Each chapter contains a number of sections, subsections and a list of references. The sections in each chapter are numbered at two levels. The first level refers to the chapter and the second to the order of occurrence of the section within the chapter. For example, Section 2.4 is the fourth section in Chapter 2. Subsections are unnumbered. Equations are indicated by two numbers, the first refers to the section and the second to the order of occurrence within that section. For example, 'equation (2.8)' of Chapter 3 denotes the eighth equation in Section 2 of that chapter (Section 3.2). This equation is referred to in Chapter 3 as 'equation (2.8)'. If this equation is referred to in another chapter, then we use the terminology 'equation (2.8) of Chapter 3'. Tables and figures are indicated by two numbers, the first refers to the chapter and the second to the order of occurrence. For example, 'Table 4.5' refers to the fifth table of Chapter 4 and 'Figure 3.2' refers to the second figure of Chapter 3.

Sections of the Appendix are numbered at two levels. For example, the second section of the Appendix is referred to as Section A2. Equations in the Appendix are numbered at three levels. For example, 'equation (A2.5)' refers to equation 5 of Section A2. Tables of the Appendix are numbered at two levels. For example, Table A.2 refers to the second table of the Appendix.

Matrices are indicated by a boldface uppercase symbol (e.g., $\mathbf{X}$). Vectors are indicated by a boldface lowercase symbol (e.g., $\mathbf{x}$). The notation $[x_{ij}]$ refers to a matrix whose $(i,j)^{\text{th}}$ element is x_{ij} , while $\mathbf{x} = [x_i]$ refers to a column vector whose i^{th} element is x_i .

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