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Economic Development and Consumption Patterns in Asian Countries

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*To my parents for instilling the value of
education in me,
Mr. Dharmasena Rathnayaka, Mrs. Prema
Rathnayaka
and*

*To my husband for making immense
sacrifices to support my academic career,
Mr. Dhanushka Wijesooriya*

Shashika D. Rathnayaka

*To our parents who have made enormous
sacrifices to give us the precious gift of
education,
the late Mr. Murugesapillai Pathmanathan
Mrs. Parameswary Pathmanathan
the late Mr. Velupillai Eliyathamby
the late Mrs. Pooranam Eliyathamby*

*Saroja Selvanathan and Eliyathamby A.
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Technical Notes

This book contains seven chapters. To aid the reader, each chapter has been written in such a way that it is more or less self-contained.

Each chapter contains several sections and subsections. The sections in each chapter are numbered at two levels; the first level refers to the chapter number and second level to the section in each chapter. For example, Sect. 2.3 refers to the third section in Chap. 2.

Equations are indicated by two numbers; the first refers to the section and second to order of the occurrence of the equations within the section. For example, equation (4.2) of Chap. 3 denotes the second equation in Section 4 of that chapter. This equation is referred to, in Chapter 3, as ‘equation (4.2)’. If this equation is referred to in another chapter, then we use the terminology ‘equation (4.2) of Chap. 3’. Equations in the Appendices are numbered independently.

Tables and figures are indicated by two numbers; the first refers to the chapter and second to the order of the occurrence of tables or figures within that chapter. For example, ‘Table 3.2’ refers to the second table in Chap. 3, and ‘Fig. 3.1’ refers to the first figure in Chap. 3.

Abstract

This book analyzes consumption patterns in Asian countries that are at different stages of economic development and highlights the similarities and disparities of consumption patterns across countries using a system-wide framework.

In a departure from previous studies in the literature which mainly present only single-country analysis, this book aims to provide a comprehensive analysis of cross-country consumption patterns considering several Asian countries, using the most recent consumption expenditure data for aggregate commodity groups.

In comparing consumption patterns across countries, the book use unit-free measurements such as budget shares and changes in logarithms of price and quantities, thus avoiding problems associated with exchange rate conversions.

The book also analyses the dynamic behaviour in the consumption patterns of the Asian consumers. The findings of this book will be invaluable to researchers in development economics as well as policymakers in the formulation of fiscal policy or other types of economic control.

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Abbreviations

ADF	Augmented Dickey and Fuller
AIDS	Almost Ideal Demand System
CBS	Netherlands Central Bureau of Statistics
CBS/PI	Central Bureau of Statistics/Preference Independence
CBS/SI	Central Bureau of Statistics/Substitution Independence
CEDS	Constant Elasticity Demand System
CGE	Computable General Equilibrium
DAP	Demand Analysis Package
DLDS	Double-Log Demand System
ECM	Error Correction Model
FAO	Food and Agriculture Organization
FBS	Food Balance Sheets
GDP	Gross Domestic Product
GNP	Gross National Product
GST	Goods and Services Tax
ICP	International Comparisons Programme
ISUR	Iterative Seemingly Unrelated Regression
LA	Linear Approximated
LES	Linear Expenditure System
LS	Least Square
OECD	Organisation for Economic Co-operation and Development
PI	Preference Independence
PIGLOG	Price Independent Generalised-log System
PP	Phillips Perron
QES	Quadratic Expenditure System
QUAIDS	Quadratic Almost Ideal Demand System
SUR	Seemingly Unrelated Regression
UK	United Kingdom
USA	United States of America

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Chapter 1

Introduction



1.1 Introduction

Over the past three decades, Asia has experienced an economic revolution of unprecedented scale. Once considered the world's economic underdog, Asia is now at the forefront of global economic development. Asia continues to be both the fastest-growing region in the world and the main engine of the global economy, contributing to more than 70% of global economic growth (ADB, 2023; IMF, 2023). This remarkable shift is primarily attributed to a combination of factors such as globalization, technological advancements, political stability, and pro-market policies. Consequently, Asia has experienced a profound overhaul in its economic landscape, with a notable surge in its Gross Domestic Product (GDP). This surge has resulted in the upliftment of millions from poverty and the emergence of a thriving middle class.

Urbanization and industrialization have also played crucial roles in propelling this growth, leading to increased participation in the labour force and the expansion of the manufacturing and service sectors. The rapid economic expansion in Asia has not only altered its economic structure but has also brought about a significant shift in consumption patterns. Rising disposable incomes have prompted individuals and households to redefine their priorities and preferences. Furthermore, globalization has played a dual role in initiating and accelerating this transformation, creating interdependence, interconnectedness, and networking across different parts of the world through satellite and information superhighways. With a substantial increase in both exports and imports, a myriad of global consumer products is now accessible in any domestic market, fostering similarity in consumption patterns across countries.

1.2 Changing Consumption Patterns in the Asian Region: An Overview

The massive influx of people into urban areas has fostered greater demand for convenience and services, influencing consumption patterns towards more processed and prepared foods, as well as online shopping and modern retail. As incomes have risen, so too has the demand for diverse diets, including a preference for more protein-rich and varied food options. This has affected agriculture, food production, and supply chains. The housing sector in many Asian countries has witnessed substantial changes in consumption expenditures. Urbanization and rising incomes have led to increased demand for housing, including modern apartments, condominiums, and smart homes.

There is also a growing interest in sustainable and energy-efficient housing solutions, reflecting a broader awareness of environmental concerns. The middle-class expansion in Asian countries has resulted in higher demand for consumer electronics, including smartphones, laptops, and home appliances. The communication sector has been revolutionized with the rapid adoption of digital technologies. Increased spending on mobile phones, internet services, and data plans is common. The transport sector has witnessed significant changes as well. The automobile sector has seen remarkable growth as more households can afford cars, leading to increased expenditures in this category. Also, greater urbanization has led to increased use of public transportation systems, while higher incomes have boosted car ownership and air travel. Electric and hybrid vehicles are gaining traction, reflecting a growing emphasis on sustainability.

As healthcare awareness and accessibility have improved, there has been a notable increase in consumption expenditure on medical services and pharmaceuticals. Rising healthcare costs, coupled with an ageing population in many Asian countries, have led to greater spending on healthcare and insurance. Education expenditures in Asia have risen substantially, reflecting a growing emphasis on education as a pathway to economic and social advancement. Private tutoring, test preparation, and international education e-learning and online courses have seen increased spending. Economic growth has also fuelled an interest in travel, leading to greater spending on tourism and leisure activities both within and outside the region.

These shifts in consumption patterns are not uniform across all countries in the region and may be influenced by local cultural and economic factors. Understanding these trends is crucial for policymakers, businesses, and industries to adapt and cater to the evolving needs and desires of consumers in this diverse and dynamic region. Increasing consumer demand and changing consumption patterns in the Asian region have led international operators to invest resources, grow their operations in Asia, and capture new opportunities in these growing markets. Asia is becoming home to many large companies and a lucrative proposition for global brands. Communication is one of the fastest-growing categories for consumer spending in Asia. Therefore, the region offers abundant and diverse opportunities in online marketing, online advertising, e-commerce and m-commerce.

Research on consumer demand is an important field of applied economics; economists have been studying the relationship between prices, income and consumption for over a century (see for example Chen, 2001; Clements & Chen, 1996; Clements & Theil, 1996; Clements et al., 2006; Houthakker, 1957; Lluich & Powell, 1975; Rathnayaka et al., 2022; Selvanathan & Selvanathan, 1993, 2003a, 2003b; Selvanathan et al., 2023, 2024). However, empirical studies that investigate cross-country consumption patterns in the Asian region are lacking. Other consumption studies concentrating on Asian countries focus on individual countries, or on food demand to estimate single commodity nutrition-specific demand equations. There are no recently published comprehensive econometric studies available that analyse recent trends in consumption patterns in Asian countries in a system-wide manner that uses recent data. Moreover, the economic prosperity in Asia, the blending of global consumer markets, and the impact of globalization have heightened the importance of scrutinizing consumption patterns in Asian countries from both scientific and economic perspectives. Therefore, there is a pressing academic and policy need for such a study, and this book will make a significant contribution towards filling this gap. This book aims to analyse the consumption patterns of consumers in several Asian countries that are at different stages of economic development and to look at the similarities and disparities of consumption patterns across countries using a system-wide framework.

This book will consider ten Asian countries: Hong Kong,¹ India, Japan, South Korea,² Malaysia, the Philippines, Singapore, Sri Lanka, Taiwan,³ and Thailand. This selection was driven by a deliberate consideration of diverse factors. Within the United Nations classification, Asia comprises 48 countries. However, to ensure precision and relevance in our consumption analysis, we excluded 23 countries, namely Middle Eastern countries (Western Asia, 18 countries) and Central Asian countries (formerly part of the Soviet Union, 5 countries), which are not commonly considered as part of the Asian region. Our focus then turned to a sample of 10 representative countries carefully chosen from the pool of 25 Asian (Eastern, South-Eastern and Southern Asia) countries. The primary objective was to construct a representative sample that spans a wide spectrum of variables, including income levels, religious diversity, cultural distinctions, and geographical representation. This strategic selection allows for a comprehensive understanding of consumption behaviours across Asia, capturing the inherent heterogeneity present in the region. The decision to focus on these 10 countries was further influenced by the availability of reliable and consistent data series, ensuring the robustness and reliability of our empirical analyses. While acknowledging the existence of 48 countries in Asia, our deliberate subset enables us to derive meaningful insights indicative of broader trends in consumption patterns, all while addressing practical considerations related to data availability and comparability.

¹ Special administrative region of the People's Republic of China.

² Republic of Korea.

³ Republic of China.

Although Japan and South Korea are Asian countries, they are also members of the Organisation for Economic Co-operation and Development (OECD), suggesting a level of development that rivals those of Western countries. Japan is a highly developed nation in Northeast Asia and the world's third-largest economy; it is renowned as a worldwide exporter in a wide range of industries and serves as a model for numerous other Asian nations (Hubacek et al., 2007). In addition to its economic prowess, Japan plays a pivotal role in influencing and shaping international trade.

South Korea, while still classified as an emerging economy, is a highly developed global player, securing the position of the world's 15th largest economy by GDP. This distinction underscores South Korea's substantial economic contributions and its influence on the global stage. The nation's progress exemplifies the trajectory of many emerging economies aspiring to attain developed status. Singapore, a key hub for Asian business, contributes to what can be described as an essential 'holy trinity' of influential economies in East Asia. Singapore's economic significance extends beyond its modest size, setting the pace for regional economic development. As a vital financial and trade centre, Singapore plays a crucial role in facilitating international commerce and investment. Hong Kong, akin to Singapore, operates as a city-state with unique economic characteristics. It stands out as one of the world's most densely populated cities, with a population of seven million packed into the city's 426 square miles. Hong Kong's strategic location and economic vibrancy make it a crucial player in global trade and finance, contributing to the dynamic landscape of East Asian economies (Emerging Asian Economies, 2017).

While Singapore, Hong Kong, Japan, and South Korea are highly developed economic powerhouses in Asia, India, positioned in South Asia, is a rapidly growing economy and the world's fifth-largest by nominal GDP. As one of the most populous countries globally, India's economic landscape is diverse, featuring a robust services sector, a thriving industrial base, and a significant agricultural presence. The nation's economic trajectory has garnered attention on the global stage, making it a key player in shaping regional and international dynamics. Sri Lanka, an island nation in South Asia, has shown economic resilience and potential, with a focus on sectors like tourism and agriculture. Thailand thrives on a strong tourism industry and robust agriculture, the Philippines stands out with its business process outsourcing and remittance-driven economy, and Taiwan distinguishes itself as a global technological leader with a unique geopolitical status. These nations represent a spectrum of economic development stages, contributing to the rich diversity of the Asian economic landscape.

1.3 A Review of Cross-Country Consumption Studies

Static Demand Analysis

There is a large body of consumption economics literature on modelling consumer demand. The literature on cross-country consumption goes back to the pioneering

work of Houthakker (1957), which represents the first study to compare the expenditure elasticities for different countries—developed and developing. The study estimated expenditure elasticities for food, clothing, housing, and miscellaneous items based on double-log Engel curves using cross-sectional data from 30 countries. The results revealed that elasticities are similar across commodities but not equal. Since the study utilized cross-sectional data that does not capture price variation, the study eschews the estimation of price elasticities. Houthakker (1965) performed a similar study to Houthakker (1957) using time series data for the period 1948–1959 for 13 OECD countries. The results suggested that while price elasticities show no uniformity across the commodities (food, clothing, rent, durables, and miscellaneous), the expenditure elasticities are consistent.

Goldberger and Gamaletsos (1970) analysed the consumer expenditure patterns of 13 OECD countries for food, clothing, rent, and durables over the period 1950–1961, employing the Linear Expenditure System (LES) introduced by Stone (1954) and the Constant Elasticity Demand System (CEDS) used by Houthakker (1965). Parks and Barten (1973) hypothesized that some of the differences in demand behaviour between countries could be explained by differences in the age composition of the population. The study estimated LES using time series data of five commodities (food, clothing, housing, durables, others) for the years 1950–1967 for 14 OECD countries. The results revealed that population composition has a significant effect on the parameters of the demand model after correcting for the difference associated with the level of real income across the countries. The results also found that income elasticities are positive and own-price elasticities are negative in all countries.

Lluch and Powell (1975) estimated the LES for eight commodity groups using data from 19 countries. The cross-country analysis revealed some discernible patterns in the variation of price and expenditure elasticities as a function of GNP per head. Moreover, the study noted that the own-price and expenditure elasticity of food appeared to decline in absolute value as real income increases. Overall, the own-price elasticities and cross-price elasticities of food appear to account for most of the total price responsiveness (about 80%). Lluch et al. (1977) employed an extended LES where total consumption expenditure was assumed to be endogenous across 17 developing countries between 1955 and 1969. The study considered eight commodities (food, clothing, housing, durables, personal care, transport, recreation, and miscellaneous) and found food and housing to be necessities, clothing to be borderline, and durables, personal care, transport, recreation, and miscellaneous goods to be luxuries.

Many advances in the area of demand model applications have been achieved due to the cross-country database made available through the International Comparison Program (ICP) sponsored by the United Nations and the World Bank since the early 1970s. Pioneering studies that applied a cross-country demand system to ICP data include Clements et al. (1979), Theil et al. (1980), Finke et al. (1983), Seale et al. (2003), and Seale and Regmi (2009). Another leading work on cross-country application was conducted by Theil (1987) using the ICP data compiled by Kravis et al. (1982). These data covered 34 countries and provided comparable price and volume indices for more than 100 detailed categories of consumption.

Selvanathan and Selvanathan (1993) analysed the consumption of ten commodities across 18 OECD countries from 1960 to 1981. The study revealed that OECD consumers spend about half of their income on food, housing, and transport. The results also found that food, housing, and medical care are necessities and clothing, durables, transport, and recreation are luxuries in most OECD countries. The demand for all goods considered was found to be price inelastic.

Clements and Theil (1996) used cross-sectional data from Kravis et al. (1978) from 16 countries to estimate a common system of demand equations for all countries. Compared to the usual time series application for a given country, countries here played the role of time periods. This idea was introduced by Theil et al. (1981), which suggested that tastes are to be the same across countries. Although a rather bold assumption, it is the one advocated by Stigler and Becker (1977), who hypothesized that tastes neither change capriciously nor differ importantly between people. In the international context, this hypothesis implies that consumers in different countries have similar tastes irrespective of differences in language, religion, culture, and geography. Pollak and Wales (1987) tested this using the quadratic expenditure system with time series/cross-country data for Belgium, the UK, and the USA. Based on likelihood ratios and nonparametric (revealed preference) tests, the study concluded that the data from these countries could not be pooled to estimate a common demand system. Hence, the study rejected the hypothesis of identical tastes. Selvanathan and Selvanathan (1993) also found that OECD consumption data do not support Stigler and Becker's (1977) hypothesis using consumption data for 18 OECD countries.

Chen and Clements (1996) analysed consumption patterns in 13 emerging/developing economies to identify key empirical regularities using a system-wide approach. Chen (2001) extended the work of Selvanathan and Selvanathan (1993) by adding 13 less-developed countries (giving a total of 31) during the same time period. Clements and Ye (2003) estimated a double-log model for 18 wealthy (OECD) countries and 13 developing countries. The study concluded that differences in income and relative prices explained a significant share of the variation in international consumption patterns. Selvanathan and Selvanathan (2003b) investigated the consumption patterns of the five strongest Asian economies (Hong Kong, Japan, Korea, Singapore, and Taiwan). The results based on the Rotterdam model revealed that the consumption data of these five countries supported a number of empirical regularities, including the law of demand and Engel's law. Clements et al. (2006) constructed a new database that built upon that of Selvanathan and Selvanathan (2003a) and estimated the CBS model to analyse the extent to which the consumption basket was diversified, how this changed with income and whether a simple utility maximizing model was capable of explaining the diversity of consumption patterns internationally. In a recent study, Rathnayaka et al. (2022) examined the similarities in consumption patterns in ten Asian countries, using the Rotterdam, CBS and AIDS models. The study noted a less diversified consumption basket for consumers in developing countries than those in relatively wealthy countries in Asia. The demand elasticity estimates suggested that food and housing are necessities, and clothing, durables, and transport are luxuries for Asian consumers. The demand for all goods was found to be price inelastic.

In a recent book, Selvanathan et al. (2023) presented a cross-country analysis of consumption patterns involving 45 countries grouped into 27 developed and 18 developing countries (with similar lifestyles within each group) and provided convincing evidence regarding the consumption patterns of consumer goods. The book presented an extensive three-dimensional analysis on the consumption patterns of 12 consumer goods across 45 countries and over time using the Rotterdam and Almost Ideal Demand Systems.

A list of major cross-country consumption studies and their summary findings is presented in Table 1.1. In summary, the major findings from previous studies are that, in most countries, food, clothing, and housing are necessities. Consumers from developed countries spend about half of their income on food, housing, and transport combined while consumers in developing countries spend more than half of their income on food. Consumers in developing countries have a less diversified consumption basket than those in relatively wealthy countries. Also, the demand for all goods considered was found to be price inelastic.

Dynamic Demand Analysis

The above cross-country consumption studies assume that consumers immediately and fully adjust to a new equilibrium when either income or prices change, and their elasticity estimations are based on static demand systems. However, consumers are unlikely to have adjusted to equilibrium in each time period; hence the assumption of instantaneous adjustments by consumers is potentially incorrect. Therefore, a number of studies, predominantly single-country studies, have recognized the importance of including dynamic adjustments in demand systems and have adopted a number of approaches.

For instance, several consumer demand studies have introduced dynamic nature into the well-known AIDS by including the lagged budget share $w_{i,t-1}$ on the right-hand side of the AIDS equation (see Blanciforti & Green, 1983; Blanciforti et al., 1986, for the USA; Karagiannis & Velentzas, 1993, for Greece; and Molina, 1994, for Spain). Furthermore, a few other studies have estimated a more general dynamic AIDS model by including its own past budget shares and the budget shares of all other goods (e.g. Alessie & Kapteyn, 1991, for the Netherlands; Kesavan et al., 1993, for the USA; Edgerton, 1997, for Sweden; and Klonaris & Hallam, 2003, for Greece).

Relatedly, Anderson and Blundell (1983) for the UK, Balcombe and Davis (1996) for Bulgaria, Edgerton et al. (1996) for Sweden, and Karagiannis and Velentzas (1997) for Greece have incorporated dynamic elements into AIDS by relying on the statistical properties of the data. This has led to the application of the error-corrected linear approximated AIDS (EC-LA-AIDS) in a number of recent studies on demand for nondurable goods, such as food subcategories. For example, using EC-LA-AIDS, Karagiannis et al. (2000) analysed the demand for meat in Greece. Eakins and Gallagher (2003) analysed the dynamics of alcohol expenditure in Ireland, while Fanelli and Mazzocchi (2002) estimated the demand for meat in Italy and Nzuma and Sarker (2010) estimated the demand for major cereals consumed in Kenya. Singh et al. (2011) employed EC-LA-AIDS to estimate demand for major crustaceans at a disaggregated level in the USA. More recently, Rathnayaka et al.