

United States  
Department of  
Agriculture



Economic  
Research  
Service

Technical  
Bulletin  
Number 1925

March 2010

# Cross-Price Elasticities of Demand Across 114 Countries

Anita Regmi  
James L. Seale, Jr.



www.ers.usda.gov

## Visit Our Website To Learn More!

Find additional information about global food markets and related topics at:

<http://www.ers.usda.gov/Briefing/globalfoodmarkets/>

## National Agricultural Library Cataloging Record:

Regmi, Anita.

Cross-price elasticities of demand across 114 countries.  
(Technical bulletin (United States. Dept. of Agriculture); no. 1925)

1. Cost and standard of living.
2. Prices.
3. Elasticity (Economics)
  - I. Seale, James L.
  - II. United States. Dept. of Agriculture. Economic Research Service.
  - III. Title.

HD6978

### Photo credit: Thinkstock.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and, where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or a part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD).

To file a complaint of discrimination write to USDA, Director, Office of Civil Rights, 1400 Independence Avenue, S.W., Washington, D.C. 20250-9410 or call (800) 795-3272 (voice) or (202) 720-6382 (TDD). USDA is an equal opportunity provider and employer.



United States  
Department  
of Agriculture

Technical  
Bulletin  
Number 1925

March 2010



A Report from the Economic Research Service

[www.ers.usda.gov](http://www.ers.usda.gov)

# Cross-Price Elasticities of Demand Across 114 Countries

**Anita Regmi,** [aregmi@ers.usda.gov](mailto:aregmi@ers.usda.gov)  
**James L. Seale, Jr.**

## Abstract

This report presents a simple methodology for calculating cross-price elasticities across countries, using the Frisch own-price elasticity. Cross-price elasticities are calculated for 9 major consumption categories from the 1996 International Comparison Program data across 114 countries. The consumption categories are: food, beverage, and tobacco; clothing and footwear; education; gross rent, fuel, and power; house furnishings and operations; medical care; recreation; transport and communications; and “other” items. Additionally, cross-price elasticities are calculated and reported for a two-good demand system of food and nonfood. The elasticity estimates from this report are the only available consistent cross-country cross-price elasticity estimates across such a large number of countries and consumption categories.

**Keywords:** Cross-country demand analysis, cross-price elasticities, 1996 ICP data, Florida Model, Frisch elasticity, complete demand analysis, food demand

## About the Authors

Anita Regmi is an agricultural economist with the Economic Research Service, USDA, in the Market and Trade Economics Division. James L. Seale, Jr., is a professor in the Food and Resource Economics Department, University of Florida, Gainesville.

## Acknowledgments

The authors thank Mathew Shane, Suchada Langley, Barry Krissoff, Margaret Andrews, and Carlos Arnade of the Economic Research Service, USDA; Terry Roe of the University of Minnesota; and Jeffrey Reimer of Oregon State University for their review comments. Special thanks are extended to the researchers whose incessant queries provided an inspiration to the authors to complete this report, and to the International Comparison Program Division of the World Bank for providing the data. Partial support for this project was provided by the U.S. Department of Agriculture under Agreement No. 58-3000-7-0104 and the International Agriculture Trade Center, IFAS, University of Florida. The authors thank Courtney Knauth for editorial advice and Wynnice Pointer-Napper for final document layout and charts.

# Contents

Summary . . . . . iii

Introduction . . . . . 1

Background . . . . . 2

Data . . . . . 4

Methodology . . . . . 6

Three Types of Price Elasticities . . . . . 9

Empirical Results . . . . . 11

    Marginal Shares . . . . . 11

    Cross-Price Elasticities in a Two-Good Demand System . . . . . 12

    Cross-Price Elasticities in a Nine-Good Demand System . . . . . 16

Conclusions . . . . . 19

References . . . . . 21

Appendix tables . . . . . 25

Recommended citation format for this publication:

Regmi, Anita, and James L. Seale, Jr. *Cross-Price Elasticities of Demand Across 114 Countries*. TB-1925. U.S. Department of Agriculture, Economic Research Service, March 2010.

## Summary

The extent to which price fluctuations in one good may affect the demand for other goods (that is, the cross-price elasticities) varies across goods and countries. This report estimates cross-price elasticities across 114 countries for 9 major consumption categories: food, beverage, and tobacco; clothing and footwear; education; gross rent, fuel, and power; house furnishings and operations; medical care; recreation; transport and communications; and “other” items. In addition, the analysis provides cross-price elasticities for a two-good demand system involving food and nonfood items. The estimates are based on 1996 price data from the International Comparison Program, a multinational statistical project that collects price data that can be compared internationally for a basket of goods and services. The elasticities presented here are the only consistent, cross-country, cross-price estimates available for such a large number of countries and consumption categories.

### What Is the Issue?

Price increases in goods and services may induce consumers to substitute cheaper products for more expensive—but perhaps higher quality—products that they feel they can no longer afford. Price increases also reduce the real income of consumers, leaving less disposable income for other goods and services. At the global level, price increases may reverse gains made by poor nations toward improved nutrition and welfare for their populations. This study’s estimates of consumer response to rising and falling prices across 114 countries can help policymakers assess future needs for goods and services, as well as for related transport and infrastructure. Awareness of demand and consumption trends across countries, essential for predicting shifts in demand for different products, can be a valuable tool for those in the agricultural, manufacturing, education, health, and energy sectors.

### What Did the Study Find?

For each category of goods, the study estimated 2 sets of cross-price elasticities for 114 countries: (1) the compensated **Slutsky elasticity**, calculated assuming that the real level of income stays constant, compensated by an amount equivalent to the price rise of the good; and (2) the uncompensated **Cournot elasticity**, calculated assuming that the existing level of income stays constant, with no money added to cover the good’s increased price.

#### *Two-Good (Food-Nonfood) Elasticity Comparisons*

In the two-good (food-nonfood) model, an increase in the price of the non-food good, when accompanied with a compensating increase in income (the **Slutsky elasticity**), prompts increased food demand in all countries, but the middle-income countries experience the greatest increase in food demand.

By comparison, an increase in the price of a nonfood good, when not accompanied by a compensating increase in income (the **Cournot elasticity**), leads to increased food demand in the poorest countries and declining food demand in wealthier countries.

## *Nine-Good Elasticity Comparisons*

In the nine-good model, when price increases are offset by equivalent income increases (**Slutsky elasticities**), the model finds:

- A price increase for one good triggers increased demand for the other eight goods; that is, the Slutsky cross-price elasticities are positive. But the demand increases for the other goods are not equal. Demand for the more luxurious of the remaining eight goods, such as recreation, increases more than demand for a necessity, such as food or clothing.
- When the price of a necessity (food or clothing) rises, the increases in demand for the other eight goods are greatest in the low-income countries and smallest in the high-income countries. That is, the Slutsky elasticities decrease as the income level trends upward across the 114 countries.
- When the price of a non-necessity rises, increases in demand for the other eight goods (except for food) are smaller in the low-income countries than in the high-income countries; that is, the Slutsky cross-price elasticities are lower in the low-income countries and higher in the high-income countries.

In the nine-good model, when there is no increase in income to offset the price increases (the **Cournot elasticities**), the model finds:

- When a price increases for a necessity, the demand for all the other goods declines; that is, the Cournot cross-price elasticities for food and clothing are negative. That is true for all countries: low-income, middle-income, and high-income.
- When a price increases for a non-necessity, the demand response varies, based on the country's income level and the good in question. For example:
  - In all countries, when the price of recreation increases, the demand for other goods rises; that is, the Cournot cross-price elasticities are positive for recreation.
  - On the other hand, when the price of transport and communications rises, the demand for other goods goes up in low-income countries, but declines in middle- and high-income countries. That is, the Cournot cross-price elasticity for transport and communications is positive in low-income countries and negative in high-income countries.

## **How Was the Study Conducted?**

This study builds on the models and findings from an earlier ERS report, *International Evidence on Food Consumption Patterns* (TB-1904, 2003), to derive a methodology that can be used to estimate cross-price relationships. That study estimated income and own-price elasticities for a 9-good system (that is, for 9 broad consumer consumption categories) across 114 countries. Using the parameters and estimated income and own-price elasticities from the earlier ERS report, the present study describes a framework for estimating cross-price elasticities. The authors then calculate the

compensated and uncompensated cross-price elasticities for the same 9 consumer consumption categories as the earlier report, as well as for a 2-good, food-nonfood pairing, across the same 114 countries. Estimates from the earlier study have been widely used as input to economic models such as USDA's Baseline model. The cross-country elasticity estimates from the present study should also provide valuable input for other economic models designed to forecast consumer demand when prices change. The methodology for obtaining the elasticities will aid future ERS efforts at estimating cross-price elasticities.





## Introduction

In an earlier ERS report, *International Evidence on Food Consumption Patterns*, Seale, Regmi, and Bernstein (2003) fit a 2-stage demand system to 1996 International Comparison Program (ICP) data of 114 countries for 9 aggregate consumer goods and 8 disaggregated food categories. In that report, the model's parameters were estimated with maximum likelihood (ML), correcting for group heteroskedasticity. From the model's parameters, Seale and his colleagues calculated income and three types of own-price elasticities of demand for all nine goods in the first stage (Seale et al., tables 7-10). They reported income and Frisch own-price elasticities of demand for the eight food categories in the second stage (Seale et al., tables 11-12). However, the earlier study did not report or calculate cross-price elasticities of demand.

Other cross-country demand studies have calculated and reported income or own-price elasticities of demand, often on a country-by-country basis, but few have calculated and reported cross-price, cross-country elasticities of demand.<sup>1</sup> Among studies based on 1996 International Comparison Program data, Theil, Chung, and Seale (1989) and Seale and Theil (1991) calculate and report cross-price elasticities of demand using the ICP data for a two-good demand system, food and nonfood, on a country-by-country basis.<sup>2</sup> To date, however, no one has reported and calculated cross-price elasticities of demand for more than these same two goods across countries using the ICP data.

In this study, a simple method for calculating cross-country, cross-price elasticities of demand, based on the parameter estimates of the Florida model and real per capita income across a large and diverse set of countries, is used to calculate cross-price elasticities for a 2-good demand system (food and nonfood) in the 114 countries of the 1996 ICP. For the 41 countries that participated in both an earlier ICP survey (ICP data Phase IV, 1980) and the 1996 ICP, the cross-price elasticity estimates calculated in this study are compared with those calculated by Theil, Chung, and Seale (1989, pp. 116-17). Next, cross-price elasticities are calculated and reported for 9 broad consumption categories: food, beverage, and tobacco; clothing and footwear; education; gross rent, fuel, and power; house furnishings and operations; medical care; recreation; transport and communications; and a category of other items across the same 114 countries.

The cross-price elasticities of demand presented in this report complement the income and own-price elasticities calculated by Seale, Regmi, and Bernstein in 2003 and represent the only consistent set of cross-country, cross-price elasticities available for this large a number of countries and consumption categories. The estimates by Seale et al. of income and own-price elasticities have been widely used as input in economic models, such as USDA's Baseline model, the Global Trade Analysis Project (GTAP) model, the International Food Policy Research Institute's IMPACT model, and others (see, for example, studies by Winters (2005); von Braun (2007); Hertel and Winters (2006); and Valenzuela, Anderson, and Hertel (2007)). The newly estimated cross-price elasticities presented in this report should prove equally valuable for future research.

<sup>1</sup>Goldberger and Gamaletsos (1970) report and compare cross-price elasticities of demand for 5 goods in 11 OECD countries, but they estimate these for each country separately and not as a cross-country demand system.

<sup>2</sup>Theil and Finke, 1985, (also in Theil, 1987, table 2-10, p. 67) calculate cross-price elasticities of demand for food and nonfood for 13 real (1975) per capita income levels, expressed as a percentage of per capita income of the United States, basing their calculations on parameter estimates of Finke, Rosalsky, and Theil (1983), while Seale and Theil (1991) base theirs on parameter estimates of Fiebig, Seale, and Theil (1988).

## Background

Cross-country demand analysis for goods and services has come a long way since the pioneering work of Hendrik Houthakker in 1957. Much of the advancement in this important area of study has been made possible by the International Comparison Program (ICP) and the data that it has provided since the early 1970s.<sup>3</sup> The first authors to apply a cross-country demand system to ICP data were Clements and Theil (1979) and Suhm (1979), who fit Working's (1943) model to 1975 Phase II data of 15 countries for 4 and 8 groups of consumer goods (hereafter "goods"), respectively.<sup>4</sup>

Working (1943) originally fit his model to U.S. household data by assuming that all households face the same prices. Accordingly, Working's model has an income term but no price term. The same is true for a cross-country Working's model if one assumes that all consumers in all countries face the same set of prices. Clearly, this is a disadvantage, because consumers in different countries generally do face different sets of prices, and the question of how sensitive the quantities demanded of goods are to a price change of another good is an important one.

Partly to answer this question, Theil, Suhm, and Meisner (1980) applied the differential approach to consumption theory to the cross-country Working's model and incorporated a price (substitution) term into it. Theil and colleagues then fit the resulting model, with the added constraint of preference independence (additive utility) among goods, to the data of Suhm's cross-country demand system and estimated its parameters with maximum likelihood.

Others have successfully applied the Theil, Suhm, and Meisner (henceforth Theil et al.) model to ICP data. Finke, Rosalsky, and Theil (1983) fit the Theil et al. model to Phase III (1975) ICP data of 30 countries for 10 goods.<sup>5</sup> Fiebig, Seale, and Theil (1987) disaggregated these data further into an 11-good system that additionally included energy. These same authors later (1988) applied the Theil et al. model individually to the data of 15 countries in Phase II (1970), 30 countries in Phase III (1975), and 24 (of 30) countries that participate in both Phases III and IV (1980). Fiebig and his colleagues also pooled the data of these 30 countries by linking country data from 1975 and 1970 and 1980 and 1975. Then, recognizing that these data are stochastically dependent across phases, Fiebig fit the pooled data with an extension of the Theil et al. model, correcting for serial correlation across phases with an autoregressive process (AR(1)).<sup>6</sup>

Seale and Theil (1987) extended the analysis of Fiebig et al. in three ways: (1) they increased Fiebig et al.'s sample size from 30 countries to 58 by adding the Phase IV (1980) data of 28 additional countries that did not participate in the ICP prior to Phase IV; (2) they noted that the size of the error covariance matrices, when the Theil et al. model was applied to the data of the newly included 28 countries, was about twice the size of the error covariance matrices of the Fiebig et al. groupings; and (3), in estimating the pooled-data parameters, they multiplied by two the error covariance matrix of the newly included 28 countries in the computations of the ML estimator as a means to correct for group heteroskedasticity.

<sup>3</sup>ICP Phases I, II and III were conducted by Kravis et al. (1975, 1978a,b, 1982), Phases IV and V by the United Nations Statistical Office, and the 1996 ICP data by a consortium coordinated by the World Bank. See Seale and Regmi (2006) for a more thorough discussion of the data and issues involved in using information from the various phases to estimate and model cross-country demand systems.

<sup>4</sup>Working's model is an Engel curve model that describes the budget shares of goods as (declining or increasing) linear functions of the log of total consumption expenditure (income).

<sup>5</sup>Kravis, Heston, and Summers (1982) fit the linear expenditure system (LES) to four broad categories of goods, but a careful reading of their footnote 47, p. 386, makes it clear that their LES analysis is independent of the ICP multilateral data. They do, however, fit a double-log model to ICP Phase III data for 25 summary categories of goods and for 103 detailed categories of goods in 30 countries.

<sup>6</sup>If the error term of, say, the food budget share is positive and large for country  $c$  in 1970 (Phase II), it is likely that this country will also have a positive error term for food in 1975 (Phase III). The AR(1) process is a simple method to account for stable but different preference structures across countries.

Theil, Chung, and Seale (1989) modified the Theil et al. model by using a different parameterization of the model. The resulting model, the Florida model, describes the budget share of a good as a function of a pure price term, in addition to its being a function of an income term and a substitution term.<sup>7</sup> Theil, Chung, and Seale, using a 10-good classification, fit the Florida model to the ICP data of Phases II, III, and IV individually, and, after a series of tests, to the data pooled across time. They estimated all parameters of the model with ML, including autoregressive and heteroskedasticity parameters, by an iterative grid search. In a subsequent paper, Seale, Walker, and Kim (1991) fit the Florida model to Theil, Chung, and Seale's data disaggregated into an 11-good system, including energy, and estimated all parameters (including the autoregressive and heteroskedastic coefficients) with the ML scoring method (Kmenta, 1990, p. 320). More recently, Seale, Regmi, and Bernstein (2003) and Seale and Regmi (2006 and 2009) fit the Florida model to the 1996 ICP data of 114 countries for 9 goods in the first stage of a 2-stage demand system and estimated the parameters with a heteroskedastic-corrected ML estimator.<sup>8</sup>

The next section briefly discusses the ICP and the 1996 ICP data. The Florida model is then described, followed by a section presenting three types of price elasticity measures and their formulation based on parameter estimates of the Florida model. Subsequent sections present cross-price elasticities of demand for a two-good system, food and nonfood, and of a nine-good system, focusing on income groupings. The appendix tables show the cross-price elasticities of demand for the 9-good system for each of the 114 countries for which these results were estimated.

<sup>7</sup>Theil, Chung, and Seale originally referred to the model as the Working-PI (Preference Independence) model (1989, p. 41). Seale, Walker and Kim (1991) were first to refer to it as the Florida model, in the tradition of naming a demand-system model for its place of origin (e.g., Rotterdam model (Theil, 1966), the CBS model (Keller and van Driel, 1985), and the NBR model (Neves, 1987). In later writings, Theil also refers to it as the Florida model (Theil, 1996, pp. 3, 60; 1997).

<sup>8</sup>To differentiate the preference structure in the two stages, these authors refer to the first-stage (second-stage) model as the Florida-PI (Slutsky) model. In this paper, we forego this differentiation and simply refer to the preference-independent form as the Florida model.

## Data

The 1996 ICP data, fully described in Seale, Regmi, and Bernstein (2003) and Seale and Regmi (2006), are used in this study. The analysis is confined to the consumption component of the gross domestic product and, in particular, to nine consumption categories: food; clothing and footwear; gross rent, fuel, and power; house furnishings and operations; medical care; transport and communications; recreation; education; and other items. The food expenditure group includes food prepared and consumed at home plus beverages and tobacco. It does not include food consumed away from home. The nine consumption categories used in this analysis are the same categories analyzed in Seale, Regmi, and Bernstein's first stage of the two-stage complete demand model.

The 114 countries in the 1996 ICP data are divided into low-, middle-, and high-income categories based on their real per capita income relative to that of the United States.<sup>9</sup> Low-income countries represent those with real per capita income less than 15 percent of the U.S. level, middle-income countries represent those with real per capita income equal to or greater than 15 percent but less than 45 percent of the U.S. level, and high-income countries represent those with real per capita income equal to or greater than 45 percent of the U.S. level (table 1). This criterion for grouping indicates that the majority of Sub-Saharan African countries, poor transition economies such as Mongolia and Turkmenistan, and some low-income Middle Eastern and Asian countries such as Yemen and Nepal, fall within the low-income group. High-income countries include most Western European countries, Australia, New Zealand, Canada, and the United States. Middle-income countries include many Latin American countries, North African countries, and better-off transition economies such as Estonia, Hungary, and Slovenia.

<sup>9</sup>Note that this classification is done merely to facilitate analysis and is not based on any generally accepted criteria for classification. Since the classification is based on the ICP data used in this analysis, some countries may be in a group with which they normally would not be associated.

Table 1

**Normalized per capita real income and food budget shares (from 1996 ICP)**

Country	Per capita real income US=100	Food share of total expenditure	Country	Per capita real income US=100	Food share of total expenditure	Country	Per capita real income US=100	Food share of total expenditure
<i>Percent</i>			<i>Percent</i>			<i>Percent</i>		
<b>Low-income countries</b>			<b>Middle-income countries</b>			<b>High-income countries</b>		
Tanzania	2.04	73.24	Ukraine	15.28	45.03	Czech Republic	45.08	25.00
Nigeria	2.88	72.97	Philippines	16.32	48.35	Greece	48.48	21.17
Tajikistan	3.37	68.94	Peru	16.76	30.31	Korea	49.45	31.64
Zambia	3.46	60.81	Botswana	16.81	32.80	Portugal	50.54	23.23
Yemen	3.47	61.13	Thailand	17.03	28.56	Spain	50.84	17.52
Malawi	3.81	53.35	Morocco	17.56	45.61	Ireland	52.19	16.59
Madagascar	3.81	65.88	Venezuela	17.71	29.47	Singapore	53.64	13.04
Mali	3.91	53.27	Macedonia	18.51	34.73	Mauritius	55.77	28.12
Mongolia	3.94	58.74	Belize	18.55	31.17	Israel	57.73	17.70
Benin	4.88	55.40	Egypt	18.58	48.08	New Zealand	58.54	15.19
Kenya	5.35	45.82	St. Vincent & Grenadines	18.70	35.87	Finland	58.72	14.67
Sierra Leone	5.80	62.09	Swaziland	19.67	27.48	Bahamas	59.35	35.73
Nepal	5.81	57.88	Lebanon	20.07	39.33	Sweden	63.82	13.26
Turkmenistan	6.04	50.82	Belarus	20.25	50.45	Netherlands	64.58	13.29
Congo	6.51	46.92	Kazakhstan	20.33	51.82	France	68.20	15.34
Senegal	6.94	53.35	Dominica	20.33	38.27	United Kingdom	68.55	16.37
Vietnam	7.10	64.75	Latvia	21.43	41.76	Belgium	69.32	14.36
Bangladesh	7.16	56.05	St. Lucia	21.55	46.62	Norway	69.51	15.98
Pakistan	8.23	46.99	Brazil	21.68	22.71	Italy	70.07	16.59
Azerbaijan	8.76	73.51	Bulgaria	21.80	30.70	Austria	71.51	13.53
Côte d'Ivoire	8.99	44.32	Russia	22.47	34.35	Germany	71.79	13.09
Paraguay	9.14	27.27	Fiji	23.25	36.28	Australia	73.17	15.07
Uzbekistan	9.54	48.33	Grenada	23.26	40.99	Japan	74.12	14.88
Kyrgyzstan	9.57	47.15	Turkey	23.65	32.60	Canada	75.41	11.68
Cameroon	9.64	43.80	Lithuania	24.31	40.42	Bermuda	78.21	14.23
Moldova	9.65	43.45	Romania	24.80	45.26	Switzerland	79.36	14.57
Bolivia	10.10	42.52	Iran	25.80	32.55	Barbados	79.55	11.10
Ecuador	10.27	29.09	Mexico	26.31	26.63	Hong Kong	79.86	10.28
Armenia	10.74	69.66	Bahrain	26.91	28.55	Iceland	80.11	18.90
Sri Lanka	10.79	63.55	Chile	27.25	22.96	Denmark	80.85	14.02
Jordan	11.37	37.67	Antigua & Barbuda	27.34	36.12	Luxembourg	97.17	17.08
Albania	12.25	69.26	Poland	28.27	30.65	United States	100.00	9.73
Indonesia	12.56	50.62	Trinidad & Tobago	29.06	22.06			
Jamaica	12.63	34.78	Estonia	29.87	33.45			
Zimbabwe	12.71	25.58	Gabon	30.07	47.94			
Guinea	13.03	43.69	Tunisia	30.72	35.95			
Syria	13.79	47.92	St. Kitts & Nevis	31.11	36.33			
Georgia	13.92	47.39	Uruguay	31.38	25.25			
			Slovakia	31.87	32.06			
			Hungary	34.57	22.54			
			Argentina	38.49	32.79			
			Oman	40.26	24.14			
			Qatar	42.57	26.22			
			Slovenia	43.67	21.34			
Low-income average	0.080	52.58	Middle-income average	0.249	34.69	High-income average	0.674	16.97

Source: Seale and Regmi, 2009, table 12.2, pp. 158-59.

## Methodology

The Florida model, developed by Theil, Chung, and Seale (1989), was derived from Working's (1943) model by incorporating prices. Theil et al.'s starting point was to rewrite Working's model as a cross-country demand system,

$$w_{ic} = \alpha_i + \beta_i \ln Q_c + \varepsilon_{ic} \quad (1)$$

where  $w_{ic} = E_{ic}/E_c$  is the budget share of good  $i$  ( $= 1, \dots, n$ ) in country  $c$  ( $= 1, \dots, N$ ),  $E_{ic}$  is expenditure on good  $i$  in  $c$ ,  $E_c = \sum_{i=1}^n E_{ic}$  is total nominal consumption expenditure,  $Q_c$  is real per capita income (volume) in country  $c$ ,  $\varepsilon_{ic}$  is a random error term, and  $\alpha_i$  and  $\beta_i$  are parameters to be estimated. The budget shares, summed across all  $n$  goods, equal 1, and the  $\alpha$ s and  $\beta$ s are thus subject to the adding-up conditions,

$$\sum_{i=1}^n \alpha_i = 1 \text{ and } \sum_{i=1}^n \beta_i = 0 \quad (2)$$

for a given country  $c$ , since  $w_i = E_i/E$ ,  $E_i = w_i E$ . Substituting equation 1 for  $w_i$ , we obtain  $E_i = \alpha_i E + \beta_i E \log E$ , which, when differentiated with respect to  $E$  and using equation 1, gives the marginal budget share,  $\theta_i$ ,

$$\theta_i = \frac{dE_i}{dE} = \alpha_i + \beta_i (1 + \log E) = w_i + \beta_i . \quad (3)$$

Both the budget and marginal shares are functions of income such that, when income changes,  $w_i$  and  $\theta_i$  change.<sup>10</sup>

Let  $p_{ic}$  and  $p_{id}$  be the domestic currency price of good  $i$  in country  $c$  and in country  $d$ , respectively, where  $c \neq d$ . As domestic currency prices have different dimensions in different countries, the absolute prices  $p_{ic}$  and  $p_{id}$  from countries  $c$  and  $d$  will have different dimensions. However, for cross-country analyses, one needs to have prices for all countries in the same dimension. The solution is to use relative instead of absolute prices. Also note that the price ratio  $p_{ic}/p_{jc}$  depends on country  $c$  and implies that different countries have different sets of prices. To extend equation 1 to include prices and still have fixed parameters (i.e.,  $\alpha_i$  and  $\beta_i$ ), one must select a particular set of relative prices. Theil, Chung, and Seale chose to deflate the absolute price of  $i$  in  $c$  by the geometric mean price<sup>11</sup> of  $i$  across *all*  $N$  countries, that is,

$$\log \bar{p}_i = \frac{1}{N} \sum_{c=1}^N \log p_{ic} . \quad (4)$$

The model that emerges has the budget share on the left and is polynomial in the parameters:

$$w_{ic} = \text{LINEAR} + \text{QUADRATIC} + \text{CUBIC} + \varepsilon_{ic}, \text{ where} \quad (5)$$

$$\begin{aligned} \text{LINEAR} &= \text{Real-income term,} \\ &= \alpha_i + \beta_i q_c, \end{aligned} \quad (5a)$$

$$\begin{aligned} \text{QUADRATIC} &= \text{Pure-price term,} \\ &= (\alpha_i + \beta_i q_c) \left[ \log \frac{p_{ic}}{\bar{p}_i} - \sum_{j=1}^n (\alpha_j + \beta_j q_c) \log \frac{p_{jc}}{\bar{p}_j} \right], \end{aligned} \quad (5b)$$

<sup>10</sup>The exception to this is when a good has unitary elasticity; as incomes increase, expenditure on the good increases in the same proportion, so that  $w_{ic}$  is unchanged.

<sup>11</sup>Theil and Seale (1987) justify the above choice of converting the absolute prices into relative prices through dividing each absolute price by the geometric mean price by proving that the geometric mean price point across countries has a minimum mean-squared distance property.



CUBIC = Substitution term,

$$= \phi(\alpha_i + \beta_i q_c^*) \left[ \log \frac{p_{ic}}{\bar{p}_i} - \sum_{j=1}^n (\alpha_j + \beta_j q_c^*) \log \frac{p_{jc}}{\bar{p}_j} \right], \quad (5c)$$

and  $q_c$  is the natural logarithm of  $Q_c$  (real per capita income),  $q_c^* = 1 + q_c$ ,  $p_{ic}$  is the price of good  $i$  in  $c$ ,  $\bar{p}_i$  is the geometric mean price of good  $i$  across all countries such that  $\log \bar{p}_i = \frac{1}{N} \sum_{c=1}^N \log p_{ic}$ ,  $\alpha_i$ ,  $\beta_i$  and  $\phi$  (representing income flexibility (the inverse of the income elasticity of the marginal utility of income))<sup>12</sup> are parameters to be estimated, and  $\varepsilon_i$  is a random error term. As before, the budget shares, summed across all  $n$  goods, equal 1, and the  $\alpha$ s and  $\beta$ s are subject to the adding-up conditions  $\sum_{i=1}^n \alpha_i = 1$  and  $\sum_{i=1}^n \beta_i = 0$ .

Homogeneity may be imposed by subtracting the  $n^{\text{th}}$  relative price from all other  $n-1$  relative prices, that is,  $x_{ic} = \log \frac{p_{ic}}{\bar{p}_i} - \log \frac{p_{nc}}{\bar{p}_n}$ , and replacing the relative price terms in equation 5 with  $x_{ic}$ .

The Florida model, under the condition of preference independence, has Slutsky price terms as follows,

$$\pi_{ijc} = \phi \theta_{ic} (1 - \theta_{ic}) \quad i = j \quad (6a)$$

$$= -\phi \theta_{ic} \theta_{jc} \quad i \neq j \quad (6b)$$

with  $\theta_{ic}$  and  $\phi$  defined as above. Symmetry of the Slutsky coefficients is readily seen as

$$\pi_{ijc} = \pi_{jic} = \phi \theta_{ic} \theta_{jc} \quad i \neq j. \quad (7)$$

The linear term in the model, equation 5a, represents the effect of a change in real (per capita) income (i.e., the per capita volume of total consumption expenditure) on the budget share. In the case where all countries face the same set of prices, the quadratic and cubic terms vanish, leaving the linear term.<sup>13</sup> It is also the budget share of the Florida model evaluated at geometric mean prices,

$$\bar{w}_{ic} = \alpha_i + \beta_i q_c. \quad (8)$$

The quadratic term, equation 5b (quadratic because it contains products of the  $\alpha$ s and the  $\beta$ s), is the pure-price term and shows how an increase in price  $p_{ic}$  results in a higher budget share on good  $i$ , even if the volume of total expenditure stays the same. The cubic term, equation 5c (cubic because it involves  $\phi$  as well as the  $\alpha$ s and  $\beta$ s), is the substitution term and recognizes that consumers will not consume the same quantities, but will react to the higher price by substitution away from good  $i$  toward other (now) relatively cheaper goods. The expressions in brackets in both 5b and 5c are deflated logarithmic price ratios, with the deflators being weighted means of those logarithmic ratios. The weights, however, differ in 5b and 5c. In 5b, the weights are budget shares ( $\bar{w}_{ic} = \alpha_i + \beta_i q_c$ ) of equation 8, while the weights in 5c are marginal shares ( $\alpha_i + \beta_i q_c^*$ ),

<sup>12</sup>Frisch (1932, p.15) refers to the reciprocal of  $\phi$ , that is,  $\phi^{-1} = \frac{d\mu}{dE} \frac{E}{\mu}$ , where  $\mu$  represents the marginal utility of money, as the flexibility of the marginal utility of money, or, shortened, as money flexibility.

<sup>13</sup>Deaton and Muellbauer's (1980) model has the same income term as the Florida model, and its price terms vanish if all countries (households) face the same price vector.

$$\bar{\theta}_{ic} = (\alpha_i + \beta_i a_c^*), \quad (9)$$

both evaluated at geometric mean price  $\bar{p}$ .

These deflators may be related to the Divisia price index,

$$DP = \sum_j w_j d \log p_j, \quad (10)$$

and the Frisch price index,

$$DP^* = \sum_j \theta_j d \log p_j, \quad (11)$$

by substituting  $\log p_j - \log \bar{p}$  for  $d \log p_j$  into equations 10 and 11. The Divisia price index weights the logarithmic price changes by the budget shares, while the Frisch price index weights the logarithmic price changes by the marginal shares. Since  $\theta_j > w_j$  for luxury goods and  $\theta_j < w_j$  for necessities, the Frisch price index gives a larger (smaller) weight to luxuries (necessities) than does the Divisia price index.



## Three Types of Price Elasticities

A price elasticity is the measure of the percent change in the quantity demanded of good  $i$  from a 1-percent change in the price of good  $j$ . When  $i$  is equal (not equal) to  $j$ , the price elasticity is referred to as an own-price (cross-price) elasticity of demand. Three prominent types of price elasticities are the Frisch, Slutsky, and Cournot price elasticities, and these three measures differ depending upon assumptions concerning income after a price change. The Frisch price elasticity is the result of compensating the consumer's income after a price change in such a way that the consumer's marginal utility of income is constant; the Slutsky price elasticity results from compensating the consumer's income after a price change so that the consumer's real income is constant, and the Cournot price elasticity is based on constraining the consumer's nominal income to remain unchanged after a change in price.<sup>14</sup> To calculate any of these elasticities based on the Florida model, one starts with the model's estimated parameters ( $\alpha_s$ ,  $\beta_s$ , and  $\phi$ ) and real per capita income in all countries relative to that of the United States normalized to equal 1.<sup>15</sup> When evaluated at geometric mean prices,  $\bar{p}$ , the budget share of good  $i$  in country  $c$ , written in terms of the parameters of the Florida model, is

$$\bar{w}_{ic} = \alpha_i + \beta_i q_c, \quad (12)$$

while the marginal share for good  $i$  in country  $c$  is

$$\bar{\theta}_{ic} = \frac{\partial(p_{ic}q_{ic})}{\partial Q_c} = \bar{w}_{ic} + \beta_i = \alpha_i + \beta_i q_c^*, \quad (13)$$

and the income elasticity of demand for good  $i$  in country  $c$  is

$$\bar{\eta}_{ic} = \frac{\partial q_{ic}}{\partial Q_c} \frac{Q_c}{q_{ic}} = \frac{\partial(\log q_{ic})}{\partial(\log Q_c)} = \frac{\bar{\theta}_{ic}}{\bar{w}_{ic}} = \frac{\alpha_i + \beta_i q_c^*}{\alpha_i + \beta_i q_c}. \quad (14)$$

Equations 12, 13, and 14 demonstrate that budget shares, marginal shares, and income elasticities are functions of income; when income changes, these values change.<sup>16</sup>

The Frisch price elasticity, written in terms of the Florida model's parameters, is

$$F_{ijc} = \phi \frac{\bar{\theta}_{ic}}{\bar{w}_{ic}} = \phi \frac{\bar{w}_{ic} + \beta_i}{\bar{w}_{ic}} = \phi \left( \frac{\alpha_i + \beta_i q_c^*}{\alpha_i + \beta_i q_c} \right) \quad i = j \quad (15a)$$

$$= 0 \quad i \neq j. \quad (15b)$$

The Frisch own-price elasticity,  $F_{iic}$ , exists, but Frisch cross-price elasticities vanish because of the assumption of preference independence (Theil, Chung, and Seale, p. 117). However, as we will see in equations 17a and 17b, the Slutsky and Cournot own- and cross-price elasticities of demand may be written in terms of the Frisch own-price elasticity.

Although the Slutsky price parameters are not directly estimated by the Florida model when preferences are independent, they may be calculated from the estimated Florida parameters for each country using equations 16a and 16b, that is,

<sup>14</sup>Two methods of estimating price elasticities, the Slutsky and the Hicksian, are referred to as compensated price elasticities. Although each method compensates the consumer and keeps real income constant after a price change, the manner in which the compensation is assumed varies between the two (Friedman, 1976, pp. 50-54). The Slutsky method assumes that the amount necessary to allow the consumer to continue consuming the same bundle of goods is used for compensation, while the Hicksian method allows the consumer to consume a different bundle of goods as long as the bundle remains on the same indifference curve that existed prior to the price change. For this study, we use only Slutsky compensated elasticities. Conversely, the Cournot price elasticity is sometimes referred to as the uncompensated or ordinary price elasticity that is derived from the ordinary or Marshallian demand curve.

<sup>15</sup>See Theil, Chung, and Seale (1989, pp. 110-11) for the derivation of the three types of own-price elasticities.

<sup>16</sup>The exception to this is when a good has unitary elasticity, meaning that the proportional change in the quantity demanded of the good is equal to the proportional change in income so that  $\bar{w}_{ic}$  and  $\bar{\theta}_{ic}$  are unchanged.

$$\pi_{ijc} = \phi(\alpha_i + \beta_i q_c^*) (1 - (\alpha_i + \beta_i q_c^*)) \quad i = j \quad (16a)$$

$$= -\phi(\alpha_i + \beta_i q_c^*) (\alpha_j + \beta_j q_c^*) \quad i \neq j. \quad (16b)$$

The Slutsky price elasticity for a given good  $i$  with respect to a price change in good  $j$  in country  $c$  can be stated as the ratio of the coefficient of the Slutsky matrix and the corresponding budget share (Frisch, 1959; Theil, Chung, and Seale, 1989, p. 155). Written in terms of parameters of the Florida model and the Frisch own-price elasticity, the Slutsky price elasticity is:

$$S_{ijc} = F_{iic} (1 - \bar{\theta}_{ic}) = F_{iic} (1 - (\alpha_i + \beta_i q_c^*)) \quad i = j \quad (17a)$$

$$= -F_{iic} \bar{\theta}_{jc} = F_{iic} (\alpha_j + \beta_j q_c^*) \quad i \neq j. \quad (17b)$$

The Cournot price elasticity may be written in terms of the Florida model's parameters and the Frisch own-price elasticity or in terms of its own parameters:

$$C_{ijc} = F_{iic} (1 - \bar{\theta}_{ic}) - \bar{\theta}_{ic} = F_{iic} (1 - (\alpha_i + \beta_i q_c^*)) - (\alpha_i + \beta_i q_c^*) \quad i = j \quad (18a)$$

$$= -F_{iic} \bar{\theta}_{jc} - \frac{\bar{\theta}_{ic} \bar{w}_{jc}}{\bar{w}_{ic}} = F_{iic} (\alpha_j + \beta_j q_c^*) - \frac{(\alpha_i + \beta_i q_c^*) (\alpha_j + \beta_j q_c^*)}{(\alpha_i + \beta_i q_c^*)} \quad i \neq j, \quad (18b)$$

or in terms of the Slutsky price elasticity,

$$= S_{iic} - (\alpha_i + \beta_i q_c^*) \quad i = j \quad (19a)$$

$$= S_{ijc} - \frac{(\alpha_i + \beta_i q_c^*) (\alpha_j + \beta_j q_c^*)}{(\alpha_i + \beta_i q_c^*)} \quad i \neq j. \quad (19b)$$

As seen in equations 17a and b and 18a and b, the Cournot price elasticity is equal to the substitution effect of the Slutsky price elasticity and, additionally, an income term. Accordingly, the Cournot own-price elasticity is larger absolutely than the Slutsky own-price elasticity. Under preference independence, all Slutsky cross-price elasticities are positive. If the income effect is greater (less) than the substitution effect, the Cournot cross-price elasticities will be negative (positive); if the effects are equal, the elasticities will equal zero.

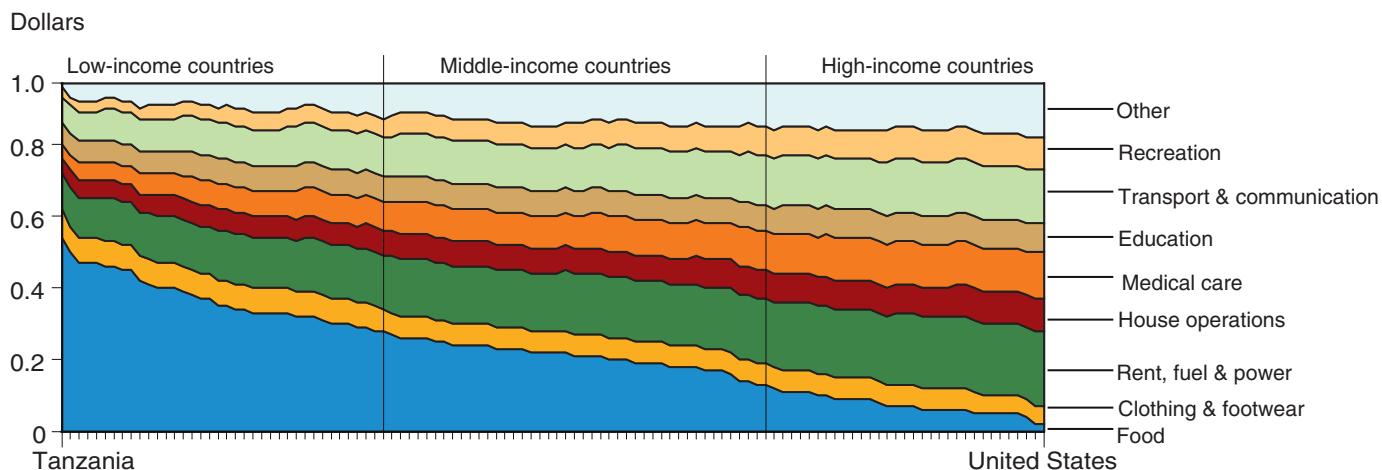
## Empirical Results

Seale et al. (2003) calculated income and three types of own-price elasticities of demand for 9 goods in 114 countries participating in the 1996 International Comparison Program. They did not report marginal shares for the 114 countries or their cross-price elasticities of demand. In this section, we extend their analyses by calculating and reporting marginal shares in the 114 countries for the 9 goods. Next, we examine a two-good demand system, food and nonfood, calculate the cross-price elasticities for the system using the Seale parameter estimates, and compare our results with those of Theil et al. (1989). Finally, we calculate and report Slutsky and Cournot cross-price elasticities of demand for the 9-good system across 114 countries using equations 18a through 19b. The minimal requirements for these calculations are parameter estimates from the Florida model and the natural log of real per capita incomes of the 114 countries relative to that of the United States (normalized to equal 1). The parameters are those estimated by Seale et al. (2003, table 5, p. 24). All marginal shares and elasticities are calculated at geometric mean prices.

### Marginal Shares

A marginal share,  $\theta_{ic}$ , measures how consumers would allocate, say, an additional dollar of income across consumption goods, in our case, across nine broad categories of goods. Since these values can be used in other research and may be used to calculate income and price elasticities, we calculate and present them for each country in appendix table 1. They are also plotted in figure 1, which illustrates how the calculated marginal shares for the aggregate consumption categories vary across countries based on country income levels. The pattern is quite striking, with low-income countries allocating an additional unit of income for necessities (luxuries) at a higher (lower) relative share than high- and middle-income countries. For example, if incomes go up by \$1 across all countries, the expenditures on food would increase by 54 cents in Tanzania and by 2 cents in the United States.

Figure 1  
Distribution of additional \$1 of income across 114 countries<sup>1</sup>



<sup>1</sup>Countries arranged in ascending order of affluence.

Source: Author's calculation using the 1996 ICP data.

In further contrast, an additional \$1 of income in Tanzania would increase expenditures on other, recreation, and medical care by 5 cents, 3 cents, and 4 cents, respectively, while the same additional dollar in the United States would increase expenditure on these three goods by 18 cents, 9 cents, and 13 cents, respectively (a difference in magnitude of 3 to 4 times). The difference in the magnitude of marginal spending by consumers in the two countries is about double for clothing and footwear, gross rent, fuel and power, housing operations, and transportation, while it is only about 1.3 times for education.

## **Cross-Price Elasticities in a Two-Good Demand System**

In a two-good demand system, the cross-price terms of the two goods are equal to the negative of the corresponding own-price terms. The Slutsky own-price elasticities are also equal to the negative of the corresponding Slutsky cross-price elasticities, but will differ for Cournot price elasticities. Calculations are based on  $\alpha$  and  $\beta$  of food and  $\phi$  from Seale et al. (2003, table 5, p. 24). The alpha and beta for nonfood are just 1 minus the alpha of food and the negative of the beta of food. This result is directly obtained from the adding-up conditions of equation 2.

The calculated cross-price elasticities of the 114 countries in the food and nonfood demand system (table 2) indicate that the Slutsky cross-price elasticity for food demand with respect to change in a nonfood price is higher in the middle-income countries than in the low- and high-income countries. For example, this cross-price elasticity increases from .296 in Tanzania to .393 in Swaziland, before decreasing thereafter to only .082 in the United States. As for the Slutsky cross-price elasticity of demand for nonfood with respect to a change in the price of food, it decreases from .623 for Tanzania to .218 for Brazil before declining to .015 for the United States.

It is interesting that the Slutsky food cross-price elasticities with respect to a price change in nonfood are larger than those for nonfood in countries with a real per capita income level less than that of Pakistan. Starting with Pakistan, and continuing upward in country income levels, the Slutsky food-nonfood cross-price elasticity is greater than the corresponding nonfood-food elasticity. Further, quantities demanded for food and nonfood are significantly more sensitive in low- and middle-income countries to compensated cross-price changes than in high-income ones. The group averages for the low- and middle-income countries are approximately 1.5 times the average for the high-income countries for food with respect to a nonfood price change, while they are 5.7 and 3.0 times larger for nonfood with respect to a food price change. Most striking, consumer behavior, on a per capita basis, is approximately 4 and 42 times more sensitive to food and nonfood cross-price changes in Tanzania than in the United States.

The calculated Cournot cross-price elasticities that take into account the income effect of a price change are markedly different from the corresponding Slutsky ones. For low-income countries with real per capita income levels of about 13 percent or less than that of the United States, these Cournot cross-price elasticities are positive, indicating that the income effect is smaller than the substitution effect. In these countries, when nonfood price rises, expenditures on food are expected to increase. For countries with a relative real per

Table 2

**Cross-price elasticities in a two-good demand system, across 114 countries from 1996 ICP**

Country	Food		Nonfood		Country	Food		Nonfood	
	Slutsky	Cournot	Slutsky	Cournot		Slutsky	Cournot	Slutsky	Cournot
<b>Low-income countries:</b>					<b>Middle-income countries:</b>				
Tanzania	0.296	0.038	0.623	-0.340	Ukraine	0.393	-0.003	0.268	-0.230
Nigeria	0.320	0.030	0.548	-0.315	Philippines	0.394	-0.004	0.258	-0.227
Tajikistan	0.330	0.027	0.517	-0.305	Peru	0.394	-0.004	0.255	-0.226
Zambia	0.332	0.026	0.512	-0.303	Botswana	0.394	-0.004	0.254	-0.226
Yemen	0.332	0.026	0.512	-0.303	Thailand	0.394	-0.004	0.252	-0.225
Malawi	0.338	0.024	0.494	-0.297	Morocco	0.393	-0.005	0.248	-0.224
Madagascar	0.338	0.024	0.494	-0.297	Venezuela	0.393	-0.005	0.247	-0.224
Mali	0.340	0.024	0.489	-0.296	Macedonia	0.393	-0.006	0.240	-0.222
Mongolia	0.340	0.024	0.488	-0.295	Belize	0.393	-0.006	0.240	-0.222
Benin	0.353	0.019	0.449	-0.283	Egypt	0.393	-0.006	0.240	-0.222
Kenya	0.358	0.017	0.433	-0.278	St. Vincent & Grenadines	0.393	-0.006	0.239	-0.221
Sierra Leone	0.362	0.015	0.419	-0.274	Swaziland	0.393	-0.007	0.232	-0.219
Nepal	0.362	0.016	0.419	-0.274	Lebanon	0.392	-0.007	0.229	-0.219
Turkmenistan	0.364	0.015	0.412	-0.272	Belarus	0.392	-0.007	0.228	-0.218
Congo	0.368	0.013	0.400	-0.268	Kazakhstan	0.392	-0.007	0.227	-0.218
Senegal	0.371	0.012	0.389	-0.265	Dominica	0.392	-0.008	0.227	-0.218
Vietnam	0.372	0.011	0.386	-0.264	Latvia	0.391	-0.008	0.220	-0.216
Bangladesh	0.372	0.011	0.384	-0.264	St. Lucia	0.391	-0.008	0.219	-0.216
Pakistan	0.378	0.009	0.362	-0.257	Brazil	0.391	-0.008	0.218	-0.216
Azerbaijan	0.380	0.007	0.352	-0.254	Bulgaria	0.391	-0.008	0.217	-0.215
Côte d'Ivoire	0.381	0.007	0.348	-0.253	Russia	0.390	-0.009	0.213	-0.214
Paraguay	0.382	0.006	0.345	-0.252	Fiji	0.389	-0.010	0.208	-0.213
Uzbekistan	0.383	0.006	0.339	-0.250	Grenada	0.389	-0.009	0.208	-0.213
Kyrgyzstan	0.383	0.006	0.338	-0.250	Turkey	0.389	-0.010	0.206	-0.212
Cameroon	0.384	0.005	0.337	-0.250	Lithuania	0.388	-0.010	0.202	-0.211
Moldova	0.384	0.006	0.337	-0.250	Romania	0.387	-0.010	0.199	-0.210
Bolivia	0.385	0.004	0.330	-0.247	Iran	0.385	-0.011	0.194	-0.209
Ecuador	0.386	0.004	0.327	-0.247	Mexico	0.385	-0.011	0.191	-0.208
Armenia	0.387	0.003	0.320	-0.245	Bahrain	0.384	-0.011	0.188	-0.207
Sri Lanka	0.387	0.003	0.320	-0.245	Chile	0.383	-0.011	0.186	-0.207
Jordan	0.388	0.002	0.312	-0.242	Antigua & Barbuda	0.383	-0.011	0.186	-0.207
Albania	0.390	0.001	0.301	-0.239	Poland	0.381	-0.012	0.181	-0.205
Indonesia	0.391	0.001	0.297	-0.238	Trinidad & Tobago	0.380	-0.012	0.177	-0.204
Jamaica	0.391	0.000	0.296	-0.238	Estonia	0.378	-0.013	0.174	-0.203
Zimbabwe	0.391	0.001	0.295	-0.237	Gabon	0.378	-0.012	0.173	-0.203
Guinea	0.391	0.000	0.291	-0.236	Tunisia	0.376	-0.012	0.170	-0.202
Syria	0.392	-0.001	0.283	-0.234	St. Kitts & Nevis	0.376	-0.013	0.168	-0.202
Georgia	0.392	-0.001	0.282	-0.234	Uruguay	0.375	-0.013	0.167	-0.201
					Slovakia	0.374	-0.013	0.165	-0.201
					Hungary	0.368	-0.014	0.154	-0.198
					Argentina	0.357	-0.015	0.139	-0.194
					Oman	0.353	-0.015	0.133	-0.192
					Qatar	0.346	-0.015	0.126	-0.190
					Slovenia	0.342	-0.016	0.122	-0.189
Average	0.368	0.012	0.389	-0.266	Average	0.384	-0.009	0.204	-0.212

—Continued

Table 2

**Cross-price elasticities in a two-good demand system, across 114 countries from 1996 ICP—Continued**

Country	Food		Nonfood	
	Slutsky	Cournot	Slutsky	Cournot
<b>High-income countries:</b>				
Czech Republic	0.338	-0.015	0.118	-0.188
Greece	0.327	-0.015	0.108	-0.185
Korea	0.324	-0.015	0.106	-0.185
Portugal	0.320	-0.016	0.103	-0.184
Spain	0.319	-0.016	0.102	-0.184
Ireland	0.314	-0.016	0.099	-0.183
Singapore	0.309	-0.016	0.095	-0.182
Mauritius	0.301	-0.015	0.090	-0.181
Israel	0.294	-0.015	0.085	-0.179
New Zealand	0.291	-0.015	0.084	-0.179
Finland	0.290	-0.015	0.083	-0.179
Bahamas	0.288	-0.015	0.082	-0.178
Sweden	0.269	-0.015	0.072	-0.176
Netherlands	0.266	-0.015	0.071	-0.175
France	0.251	-0.014	0.064	-0.173
United Kingdom	0.249	-0.014	0.063	-0.173
Belgium	0.246	-0.014	0.062	-0.173
Norway	0.245	-0.014	0.061	-0.173
Italy	0.242	-0.014	0.060	-0.173
Austria	0.236	-0.014	0.058	-0.172
Germany	0.235	-0.014	0.057	-0.172
Australia	0.228	-0.014	0.055	-0.171
Japan	0.224	-0.013	0.053	-0.171
Canada	0.218	-0.013	0.051	-0.170
Bermuda	0.204	-0.012	0.046	-0.169
Switzerland	0.198	-0.012	0.044	-0.168
Barbados	0.197	-0.012	0.044	-0.168
Hong Kong	0.196	-0.012	0.043	-0.168
Iceland	0.194	-0.012	0.043	-0.168
Denmark	0.191	-0.012	0.042	-0.168
Luxembourg	0.100	-0.007	0.018	-0.161
United States	0.082	-0.005	0.015	-0.160
Average	0.250	-0.014	0.068	-0.175

Source: Authors' calculation using the 1996 ICP data.

capita income greater than 13 percent, income effects are larger than the substitution effects, and the elasticities are negative. However, the estimated Cournot elasticities are very small in magnitude, ranging on average from 0.012 for low-income countries to -0.009 for middle-income countries and -0.014 for high-income countries. Considering that food is a necessity, the relatively inelastic cross-price elasticity estimates are consistent with our expectations.

The pattern is different for the nonfood consumption category—in the aggregate, luxury goods—in terms of the price effects of a change in food price. Unlike the Slutsky cross-price elasticities, the Cournot elasticities are negative. Starting with the poorest country, Tanzania, and traveling toward the richer ones, the Cournot cross-price elasticities gradually decline, down to the United States, which has the smallest absolute value. These elasticity estimates range from -0.34 for Tanzania to -0.216 for Brazil, and to -0.16 for the United States.

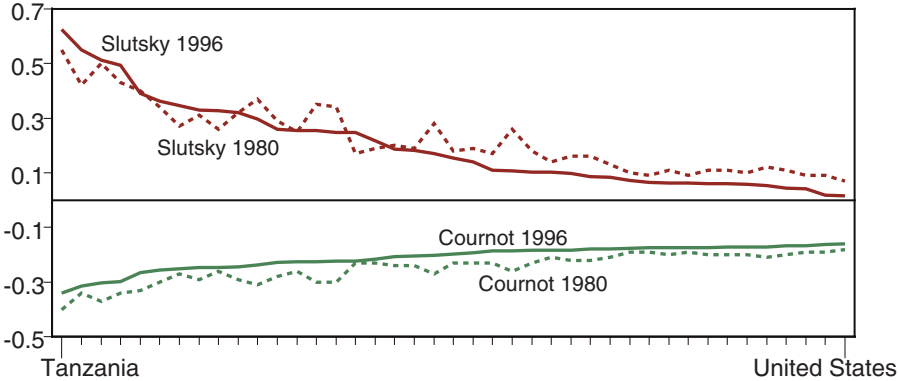


Our results are compared pair-wise with those of Theil et al. (1989) for the 41 countries present in both the 1980 and 1996 ICP. The comparison of the two ICP datasets (table 1 in this report compared with tables 5-8, pp. 116-17, of Theil) indicate that, during this period, real per capita income relative to that of the United States in the same year declined among the poorest countries in the sample. For example, the 1980 real per capita income relative to that of the United States was 3 percent for Tanzania, 6.7 percent for Nigeria and 6.5 percent for Madagascar. The 1996 real per capita income relative to that of the United States was 2 percent for Tanzania, 2.9 percent for Nigeria, and 3.8 percent for Madagascar.

Comparisons between the studies of the Slutsky and Cournot food-nonfood cross-price elasticities indicate similar patterns in the two sets of estimated elasticities (fig. 2), with the lower-income countries in both sets having greater cross-price elasticities (absolutely) than the high-income countries. With the exception of Slutsky elasticity for a few very low-income countries that experienced a decline in 1996 real per capita income relative to the 1980 real level, Slutsky cross-price elasticities for most countries are smaller absolutely in magnitude in 1996 than in 1980. This is a reasonable finding, since income levels for most countries increased between 1980 and 1996, and as income levels increase, we expect price elasticities to become less elastic (Timmer, 1981).

Although the patterns in the estimated Slutsky and Cournot cross-price elasticities for the quantity demanded for food in reaction to nonfood price changes were generally similar in 1980 and 1996, certain differences existed (fig. 3). The values of the 1996 Slutsky cross-price elasticity were larger than the 1980 estimates for most countries in the lower income half of the sample. This again is related to the real per capita income level in these countries relative to that of the United States in the same year. Countries in the lower income grouping experienced little or no increase in income levels during this period. For example, the point at which the 1996 Slutsky elasticity line in figure 3 dips below the 1980 Slutsky elasticity line occurs between Argentina and Greece. In 1980, relative per capita income was 0.361 in Argentina and 0.413 in Greece (Theil et al., 1989); in 1996 it was 0.380 in Argentina, while

Figure 2  
**Nonfood cross-price elasticity with food price change**  
 Percent

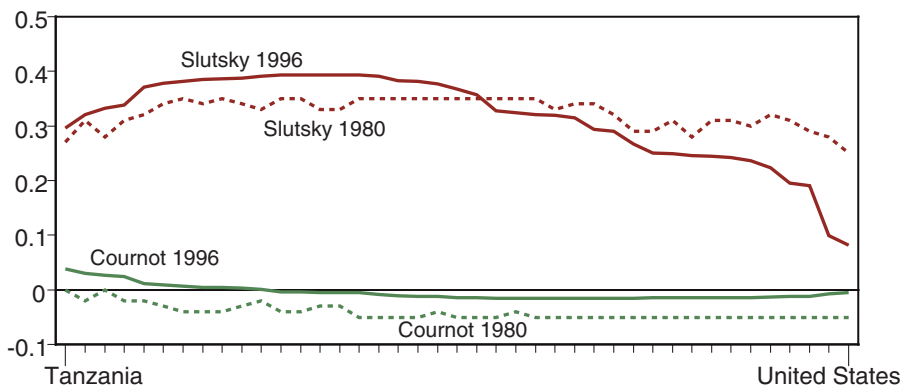


Note: Forty-one countries are listed in order of increasing affluence.  
 Source: 1996 estimation by authors, 1980 from Theil, Chung, and Seale, 1989.

Figure 3

**Food cross-price elasticity with nonfood price change**

Percent



Note: Forty-one countries are listed in order of increasing affluence.

Source: 1996 estimation by authors, 1980 from Theil, Chung, and Seale, 1989.

Greece experienced a greater increase, to a relative real per capita income of 0.485. Countries preceding Argentina in the chart—Hungary, Poland, Chile, and Brazil—all had lower relative real per capita income in 1996 than in 1980. In contrast, countries following Greece (South Korea, Portugal, and others) registered significant increases in relative real per capita income levels between 1980 and 1996.

The corresponding Cournot cross-price elasticities for food demand with respect to nonfood price changes were generally much smaller in absolute value in 1996 than in 1980. As with Slutsky calculations, the exception is for some of the lowest income countries, where the 1996 elasticities are positive and larger absolutely than the smaller negative values in 1980. Despite the differences noted between the 1996 and 1980 elasticities, the cross-price elasticities for a two-good demand system estimated with the 1996 ICP appear reasonable and offer sufficient support for estimating cross-price elasticities for the nine-good demand system.

**Cross-Price Elasticities in a Nine-Good Demand System**

The Slutsky and Cournot cross-price elasticities for each of the 9 aggregate goods with respect to a price change in each of the 8 other goods are presented for the 114 countries in appendix tables 2-19. Simple averages of the estimated elasticities for low-, middle-, and high-income country groupings are presented in tables 3 and 4. Within a country grouping, the Slutsky cross-price elasticities for the nine-good demand system are larger in magnitude for luxury items such as recreation than for the two necessities, food and clothing/footwear (table 3). When relative prices change with respect to these two necessities, the Slutsky cross-price elasticities for the other seven goods are greatest among low-income countries and decrease in magnitude as countries become wealthier. However, when relative prices change with respect to goods other than food and clothing/footwear, the Slutsky cross-price elasticities (except for food) are smaller in the low-income group and greatest for the wealthiest countries. In the case of food (with some exceptions), the Slutsky cross-price elasticities of demand with respect to a change in the price



Table 3

**Slutsky (compensated) cross-price elasticities for a nine-good demand system**

	Food, beverage, & tobacco	Clothing & footwear	Gross rent, fuel, & power	House operations	Medical care	Education	Transport & communica- tion	Recreation	Other
<i>Percent change in demand</i>									
<b>One-percent price change in:</b>									
<i>Low-income countries:</i>									
Food, beverage, & tobacco		0.278	0.381	0.379	0.509	0.327	0.388	0.631	0.493
Clothing & footwear	0.041		0.070	0.070	0.092	0.060	0.071	0.114	0.089
Gross rent, fuel, & power	0.079	0.100		0.136	0.175	0.118	0.139	0.219	0.171
House operations	0.034	0.043	0.059		0.076	0.051	0.060	0.095	0.074
Medical care	0.039	0.050	0.067	0.067		0.058	0.068	0.107	0.084
Education	0.039	0.049	0.067	0.066	0.087		0.068	0.108	0.084
Transport & communication	0.058	0.073	0.100	0.099	0.128	0.125		0.160	0.125
Recreation	0.024	0.031	0.042	0.042	0.053	0.036	0.043		0.052
Other	0.055	0.070	0.094	0.094	0.120	0.082	0.096	0.150	
<i>Middle-income countries:</i>									
Food, beverage, & tobacco		0.154	0.202	0.201	0.227	0.182	0.204	0.245	0.225
Clothing & footwear	0.030		0.060	0.060	0.067	0.054	0.060	0.072	0.066
Gross rent, fuel, & power	0.081	0.124		0.161	0.181	0.145	0.163	0.195	0.179
House operations	0.035	0.053	0.070		0.078	0.063	0.070	0.084	0.077
Medical care	0.046	0.071	0.092	0.092		0.083	0.093	0.111	0.103
Education	0.035	0.053	0.069	0.069	0.078		0.070	0.083	0.077
Transport & communication	0.060	0.092	0.120	0.119	0.134	0.133		0.144	0.133
Recreation	0.032	0.049	0.063	0.063	0.071	0.057	0.064		0.070
Other	0.064	0.098	0.128	0.128	0.143	0.115	0.129	0.154	
<i>High-income countries:</i>									
Food, beverage, & tobacco		0.053	0.068	0.067	0.073	0.062	0.068	0.076	0.072
Clothing & footwear	0.015		0.053	0.052	0.057	0.048	0.053	0.059	0.056
Gross rent, fuel, & power	0.052	0.143		0.183	0.197	0.168	0.184	0.205	0.196
House operations	0.023	0.061	0.079		0.085	0.073	0.079	0.088	0.084
Medical care	0.032	0.088	0.113	0.113		0.104	0.114	0.126	0.121
Education	0.021	0.056	0.072	0.072	0.078		0.073	0.081	0.077
Transport & communication	0.039	0.107	0.137	0.136	0.147	0.146		0.153	0.146
Recreation	0.023	0.063	0.081	0.081	0.087	0.074	0.081		0.086
Other	0.044	0.121	0.155	0.155	0.167	0.143	0.157	0.174	

Source: Authors' calculation using the 1996 ICP data.

(individually) of one of the other eight goods is lowest in the high-income group and highest in the middle-income group.

Cournot cross-price elasticities for the nine goods and three country groupings are presented in table 4 for relative price changes that are not compensated by equivalent income changes. Relative price changes for the two necessities, food and clothing, result in large income effects that overwhelm the substitution effects and lead to negative Cournot cross-price elasticities for all goods across the three income-level groupings. The same is true for a change in the price of education. For changes in gross rent, fuel, and power; housing operations; and transportation and communications, the substitution effects outweigh the income effect for many of the low-income group, but for the other two income groupings the opposite is true. For medical care and other, the substitution effects are larger than the income effect except for a few of the wealthiest countries, so the cross-price elasticities are almost

Table 4

**Cournot (uncompensated) cross-price elasticities for a nine-good demand system**

	Food, beverage, & tobacco	Clothing & footwear	Gross rent, fuel, & power	House operations	Medical care	Education	Transport & communica- tion	Recreation	Other
	<i>Percent change in demand</i>								
<b>One-percent price change in:</b>									
<i>Low-income countries:</i>									
Food, beverage, & tobacco		-0.191	-0.260	-0.259	-0.343	-0.224	-0.265	-0.426	-0.332
Clothing & footwear	-0.014		-0.024	-0.024	-0.031	-0.021	-0.024	-0.039	-0.030
Gross rent, fuel, & power	0.001	0.001		0.002	0.003	0.002	0.002	0.004	0.003
House operations	0.000	0.000	0.001		0.001	0.000	0.001	0.001	0.001
Medical care	0.008	0.010	0.014	0.014		0.012	0.015	0.024	0.019
Education	-0.006	-0.007	-0.010	-0.009	-0.012		-0.010	-0.015	-0.012
Transport & communication	0.002	0.002	0.003	0.003	0.004	0.004		0.005	0.004
Recreation	0.009	0.011	0.015	0.015	0.020	0.013	0.015		0.019
Other	0.011	0.014	0.019	0.018	0.025	0.019	0.031	0.016	
<i>Middle-income countries:</i>									
Food, beverage, & tobacco		-0.160	-0.209	-0.209	-0.235	-0.188	-0.212	-0.253	-0.233
Clothing & footwear	-0.011		-0.021	-0.021	-0.024	-0.019	-0.021	-0.025	-0.023
Gross rent, fuel, & power	-0.003	-0.004		-0.006	-0.007	-0.005	-0.006	-0.007	-0.006
House operations	-0.001	-0.002	-0.003		-0.003	-0.002	-0.003	-0.003	-0.003
Medical care	0.004	0.005	0.007	0.007		0.006	0.007	0.008	0.008
Education	-0.005	-0.008	-0.010	-0.010	-0.012		-0.011	-0.013	-0.012
Transport & communication	-0.002	-0.002	-0.003	-0.003	-0.003	-0.003		-0.004	-0.003
Recreation	0.004	0.007	0.009	0.009	0.010	0.008	0.009		0.010
Other	0.004	0.006	0.009	0.008	0.010	0.009	0.010	0.008	
<i>High-income countries:</i>									
Food, beverage, & tobacco		-0.135	-0.173	-0.173	-0.187	-0.159	-0.175	-0.194	-0.186
Clothing & footwear	-0.006		-0.019	-0.019	-0.021	-0.018	-0.019	-0.021	-0.021
Gross rent, fuel, & power	-0.003	-0.009		-0.012	-0.013	-0.011	-0.012	-0.013	-0.013
House operations	-0.001	-0.004	-0.005		-0.006	-0.005	-0.005	-0.006	-0.006
Medical care	0.000	0.001	0.001	0.001		0.001	0.001	0.001	0.001
Education	-0.003	-0.009	-0.011	-0.011	-0.012		-0.011	-0.013	-0.012
Transport & communication	-0.002	-0.006	-0.008	-0.008	-0.008	-0.008		-0.009	-0.008
Recreation	0.001	0.003	0.004	0.004	0.004	0.004	0.004		0.004
Other	0.000	0.001	0.001	0.001	0.001	0.001	0.001	0.001	

Source: Authors' calculation using the 1996 ICP data.

all positive. For recreation, all cross-price elasticities are positive across all groups. The values of these elasticities for all goods generally tend to be largest for the poorest countries and to decrease in magnitude as countries become wealthier.

Relative price changes with respect to goods other than necessities lead to cross-price elasticities that vary across goods and country groupings. When a relative price change occurs with respect to gross rent/fuel/power, the effects on other consumption categories are more positive for low-income countries than for the other two groups. In contrast, the effect of a relative price change with respect to house furnishings and operations on the demand for all other eight goods is negative across the middle- and high-income country groupings. A relative price change with respect to three luxury items—medical care, recreation, and other—leads to increased demand for all other goods, as indicated by the positive Cournot elasticity.

## Conclusions

This report articulates a simple method for calculating cross-country, cross-price elasticities of demand. Using this method, the authors calculate two sets of cross-price elasticities, Slutsky and Cournot, for 2-good and 9-good demand systems from the 1996 International Comparison Program data across 114 countries. The compensated Slutsky elasticity is calculated assuming that the real income level remains unchanged, while the uncompensated Cournot elasticity is calculated assuming that the nominal income remains unchanged.

Comparisons of the elasticities from the two-good demand system with elasticities estimated with the 1980 ICP data by Theil, Chung, and Seale (1989) provide affirmation that the 1996 elasticity estimates in the present report are reasonable. In general, consumer demand in the higher income countries, where income levels had grown over this period, had become less elastic in 1996 with respect to relative price changes. However, in the poorest countries in the sample, where there was little or no real income growth during the period, relative price changes sometimes led to cross-price elasticities in 1996 greater than those calculated in 1980.

The elasticity estimates from this report represent the only available consistent cross-country cross-price elasticity estimates across this number of countries and consumption categories. Past estimates of income and own-price elasticities, calculated using the 1996 ICP data (Seale, Regmi, and Bernstein, 2003), have been widely used as input in economic models such as USDA's Baseline, the Global Trade Analysis Project (GTAP) model, the International Food Research Policy Institute (IFPRI) IMPACT model, and others. The newly estimated cross-price elasticities presented in this report should prove to be equally valuable. Users need to bear in mind that these elasticities are calculated based on ICP data, which can be considered broadly representative for a country, but which may not be a good measure for different socio-economic groups within that country. Finally, having been based on broad aggregates, the elasticity estimates may be biased somewhat downwards.

The methodology presented in this report may be generalized to other demand systems. For example, several authors (e.g., Reimer and Hertel, 2003, 2004; Cranfield et al., 1998, 2003; Cranfield et al. 2000, 2004) have successfully fit the 1985 and 1996 ICP data with the AIDADS model developed by Rimmer and Powell (1996, 2001). Based upon these authors' estimated parameters, it is possible to calculate marginal shares and cross-price elasticities across the countries in the study, as has been done in this report. One could also fit an Almost-Ideal Demand System (AIDS) model (Deaton and Muellbauer, 1980) to ICP data, estimate the parameters, and use these to calculate marginal shares and cross-price elasticities individually for all countries in the sample. However, as discussed by Seale and Regmi (2006), not all demand systems are suitable for cross-country demand analyses. For example, models with constant marginal shares such as the linear expenditure system are not suitable for estimating cross-price elasticities across individual countries.

The methodology may also be generalized to out-of-sample data sets. For example, Cox and Alm (2007) calculated income and own-price elasticities of demand for a set of countries by using the parameter estimates of Seale

and Regmi (2006) and applying them to a real per capita income series that linked real income in 1996 to that of 2006. The method presented in this report could be applied to calculate those cross-price elasticities. Further, this study's methodology should prove useful in estimating a new set of cross-price elasticities with the 2005 ICP data, which covers 147 countries.

## References

- Clements, K.W., and H. Theil, 1979. *A Cross-Country Analysis of Consumption Patterns*, Report no. 7924. Center for Mathematical Studies in Business and Economics, University of Chicago, Chicago, IL.
- Cox, W.M., and R. Alm, 2007. "Opportunity Knocks: Selling Our Services to the World," in *Federal Reserve Bank of Dallas 2007 Annual Report*. Dallas, TX.
- Cranfield, J.A.L., J.S. Eales, T.W. Hertel, and P.V. Preckel, 1998. "Changes in the Structure of Global Food Demand," *American Journal of Agricultural Economics*, Vol. 80, pp. 1042–50.
- Cranfield, J.A.L., J.S. Eales, T.W. Hertel, and P.V. Preckel, 2003. "Model Selection when Estimating and Predicting Consumer Demands Using International Cross Section Data," *Empirical Economics*, Vol. 28, pp. 353–64.
- Cranfield, J.A.L., P.V. Preckel, J.S. Eales, and T.W. Hertel, 2000. "On the Estimation of an Implicitly Additive Demand System," *Applied Economics*, Vol. 32, pp. 1907-15.
- Cranfield, J.A.L., P.V. Preckel, J.S. Eales, and T.W. Hertel, 2004. "Simultaneous Estimation of an Implicit Directly Additive Demand System and the Distribution of Expenditure: An Application of Maximum Entropy," *Economic Modelling*, Vol. 21, 361–85.
- Deaton, A.S., and J. Muellbauer, 1980. "An Almost Ideal Demand System," *American Economic Review*, Vol. 70, pp. 313-26.
- Fiebig, Denzil G., James Seale, Jr., and Henri Theil, 1987. "The Demand for Energy: Evidence from a Cross-Country Demand System," *Energy Economics* Vol. 9, pp. 149-53.
- Fiebig, Denzil G., James L. Seale, Jr., and Henri Theil, 1988. "Cross-Country Demand Analysis Based on Three Phases of the International Comparison Project." In J. Salazar-Carrillo and D.S. Prosada-Rao (eds.), *World Comparison of Incomes, Prices, and Product*. Amsterdam: Elsevier Science Publishers B.V. (North-Holland), pp. 225–35.
- Finke, R., M.C. Rosalsky, and H. Theil, 1983. "A New Cross-Country Tabulation of Income Elasticities of Demand," *Economics Letters*, Vol. 12, pp. 391-96.
- Frisch, Ragnar, 1932. *New Methods of Measuring Marginal Utility*. Tübingen, Germany: Mohr.
- Frisch, Ragnar, 1959. "A Complete Scheme for Computing All Direct and Cross Demand Elasticities in a Model with Many Sectors," *Econometrica*, Vol. 27(2), pp. 177-96.
- Friedman, Milton, 1976. *Price Theory*, Chicago: Aldine Publishing Co.

- Goldberger, A.S., and T. Gamaletsos, 1970. "A Cross-Country Comparison of Consumer Expenditure Patterns," *European Economic Review*, Vol. 1, pp. 357-400.
- Houthakker, H.S., 1957. "An International Comparison of Household Expenditure Patterns, Commemorating the Centenary of Engel's Law," *Econometrica*, Vol. 25, pp. 532-51.
- Hertel, T.W., and L.A. Winters, 2006. *Poverty and the WTO: Impacts of the Doha Development Agenda*. Washington, DC: World Bank Publications.
- Keller, W.J., and J. van Driel, 1985. "Differential Consumer Demand Systems," *European Economic Review*, Vol. 27, pp. 375-90.
- Kmenta, Jan, 1990. *Elements of Econometrics*, Second Edition. New York: MacMillan Publishing Co.
- Kravis, I.B., A.W. Heston, and R. Summers, 1978a. *International Comparisons of Real Product and Purchasing Power*, Baltimore: Johns Hopkins University Press (for the World Bank).
- Kravis, I.B., A.W. Heston, and R., Summers, 1978b. "Real GDP Per Capita for More Than One Hundred Countries," *Economic Journal*, Vol. 88, pp. 215-42.
- Kravis, I.B., A.W. Heston, and R. Summers, 1982. *World Product and Income: International Comparisons of Real Gross Product*, Baltimore: Johns Hopkins Univ. Press (for the World Bank).
- Kravis, I.B., Z. Kenessey, A.W. Heston, and R. Summers, 1975. *A System of International Comparisons of Gross Product and Purchasing Power*. Baltimore: Johns Hopkins University Press (for the World Bank).
- Neves, P., 1987. "Analysis of Consumer Demand in Portugal, 1958-1981," *Memoire de Maitrise en Sciences Economiques*, Universite Catholique de Louvain, Louvain-la-Nueve.
- Reimer, J.J., and T.W. Hertel, 2003. "International Cross Section Estimates of Demand for Use in the GTAP Model," GTAP Working Paper No. 22, Center for Global Trade Analysis, Department of Agricultural Economics, Purdue University. West Lafayette, IN.
- Reimer, J.J., and T.W. Hertel, 2004. "Estimation of International Demand Behavior for Use with Input-Output Based Data," *Economic Systems Research*, Vol. 16(4), pp. 347-66.
- Rimmer, M.T., and A.A. Powell, 1996. "An Implicitly Directly Additive Demand System," *Applied Economics*, Vol. 28, pp. 1613-22.
- Rimmer, M.T., and A.A. Powell, 2001. "Demand Patterns across the Development Spectrum: Estimates for the AIDADS System," Preliminary Working Paper No. OP-75, Centre of Policy Studies, Monash University, Victoria, Australia.

- Seale, James L., and Anita Regmi, 2006. "Modeling International Consumption Patterns," *Review of Income and Wealth*, Vol. 52(4), pp. 603-24.
- Seale, J., and A. Regmi, 2009. "International Consumption Patterns: Evidence from the 1996 International Comparison Project," in Subrata Ghatak (ed.), *Macroeconomics of Development*. London/New York: Routledge.
- Seale, J.L., A. Regmi, and J. Bernstein, 2003. *International Evidence on Food Consumption Patterns*, Technical Bulletin No. 1904, Economic Research Service, U.S. Department of Agriculture.
- Seale, James, Jr., and Henri Theil, 1987. "Extending the Sample Size in Cross-Country Demand Analysis," *Economics Letters*, Vol. 23, pp. 209-12.
- Seale, J.L., Jr., and H. Theil, 1991. "Income and Price Sensitivity in Demand Systems, Part II: Price Sensitivity," in T.J. Kaul and J.K. Sengupta (eds.), *Economic Models, Estimation, and Socioeconomic System: Essays in Honor of Karl A. Fox*. Amsterdam: Elsevier (North-Holland) Science Publishers, B.U.
- Seale, James L., Jr., Wayne E. Walker, and In-Moo Kim, 1991. "The Demand for Energy: Cross-Country Evidence Using the Florida Model," *Energy Economics*, Vol. 13, pp. 33-40.
- Suhm, F.E., 1979. "A Cross-Country Analysis of Divisia Covariances of Prices and Quantities Consumed," Manuscript, University of Chicago, Chicago, IL.
- Theil, H., 1965. "The Information Approach to Demand Analysis," *Econometrica*, Vol. 33, pp. 67-87.
- Theil, H., 1987. "Evidence on International Consumption Patterns," in Henri Theil and Kenneth W. Clements (eds.), *Applied Demand Analysis*. Cambridge, MA: Ballinger Publishing Co., pp. 37-100.
- Theil, H., 1996. *Studies in Global Econometrics*. Dordrecht, Holland: Kluwer Academic Publishers.
- Theil, H., 1997. "The Florida Model for Demand Analysis with Cross-Country Data," in Antonio Jorge and Jorge Salazar-Carrillo (eds.), *Price Policies and Economic Growth*. Westport, CT: Praeger Publishers, pp. 227-36.
- Theil H., C.F. Chung, and J.L. Seale, Jr. 1989. *International Evidence on Consumption Patterns*. Greenwich, CT: JAI Press, Inc.
- Theil, H., and R. Finke, 1985. "Income and Price Elasticities of Demand at Low Levels of Real Income," *Economics Letters*, Vol. 18, pp. 1-5.
- Theil, Henri, and James L. Seale, Jr., 1987. "Measuring the Distance between Relative Price Vectors of Different Countries," *Economics Letters*, Vol. 24, pp. 371-74.



- Theil, H., F.E. Suhm, and J.F. Meisner, 1980. "Statistical Inference in Cross-Country Demand Systems," *Economics Letters*, Vol. 5, pp. 383-87.
- Timmer, C.P., 1981. "Is There Curvature in the Slutsky Matrix?" *Review of Economics and Statistics*, Vol. 63, pp. 395-402.
- Valenzuela, Ernesto, Kym Anderson, and Thomas Hertel, 2007. "Impacts of Trade Reform: Sensitivity of Model Results to Key Assumptions," *International Economics and Economic Policy*, Vol. 4, pp. 395-420.
- von Braun, J., 2007. *The World Food Situation: New Driving Forces and Required Actions*, Food Policy Report No. 18, IFPRI, Washington, DC.
- Winters, L. Alan, 2005. "The European Agricultural Trade Policies and Poverty," *European Review of Agricultural Economics*, Vol. 32(3), pp. 319-46.
- Working, H., 1943. "Statistical Laws of Family Expenditure," *Journal of the American Statistical Association*, Vol. 38, pp. 43-56.



**Distribution of additional one unit of income across expenditure categories, 114 countries in 1996<sup>1</sup>**

	Food, beverage, & tobacco	Clothing & footwear	Gross rent, fuel, & power	House operations	Medical care	Education	Transport & communica- tion	Recreation	Other
<i>Low-income countries:</i>									
Tanzania	0.54	0.08	0.10	0.04	0.04	0.06	0.07	0.03	0.05
Nigeria	0.50	0.07	0.11	0.05	0.04	0.06	0.08	0.02	0.06
Tajikistan	0.47	0.07	0.11	0.05	0.05	0.06	0.08	0.03	0.07
Zambia	0.47	0.07	0.11	0.05	0.05	0.06	0.08	0.03	0.07
Yemen	0.47	0.07	0.11	0.05	0.05	0.06	0.08	0.03	0.07
Malawi	0.46	0.07	0.12	0.05	0.05	0.06	0.09	0.03	0.07
Madagascar	0.46	0.07	0.12	0.05	0.05	0.06	0.09	0.03	0.07
Mali	0.45	0.07	0.12	0.05	0.05	0.06	0.09	0.03	0.07
Mongolia	0.45	0.07	0.12	0.05	0.05	0.06	0.09	0.03	0.07
Benin	0.42	0.07	0.12	0.05	0.06	0.06	0.09	0.03	0.08
Kenya	0.41	0.07	0.13	0.05	0.06	0.06	0.09	0.04	0.08
Sierra Leone	0.40	0.07	0.13	0.06	0.06	0.06	0.09	0.04	0.09
Nepal	0.40	0.07	0.13	0.06	0.06	0.06	0.09	0.04	0.09
Turkmenistan	0.40	0.07	0.13	0.06	0.06	0.06	0.09	0.04	0.09
Congo	0.39	0.07	0.13	0.06	0.06	0.07	0.10	0.04	0.09
Senegal	0.38	0.07	0.13	0.06	0.07	0.07	0.10	0.04	0.09
Vietnam	0.37	0.07	0.13	0.06	0.07	0.07	0.10	0.04	0.09
Bangladesh	0.37	0.07	0.13	0.06	0.07	0.07	0.10	0.04	0.09
Pakistan	0.35	0.07	0.14	0.06	0.07	0.07	0.10	0.04	0.10
Azerbaijan	0.35	0.07	0.14	0.06	0.07	0.07	0.10	0.05	0.10
Côte d'Ivoire	0.34	0.07	0.14	0.06	0.07	0.07	0.10	0.05	0.10
Paraguay	0.34	0.07	0.14	0.06	0.07	0.07	0.10	0.05	0.10
Uzbekistan	0.33	0.07	0.14	0.06	0.07	0.07	0.10	0.05	0.10
Kyrgyzstan	0.33	0.07	0.14	0.06	0.07	0.07	0.10	0.05	0.10
Cameroon	0.33	0.07	0.14	0.06	0.07	0.07	0.10	0.05	0.10
Moldova	0.33	0.07	0.14	0.06	0.07	0.07	0.10	0.05	0.10
Bolivia	0.33	0.07	0.14	0.06	0.07	0.07	0.11	0.05	0.10
Ecuador	0.32	0.07	0.14	0.06	0.08	0.07	0.11	0.05	0.11
Armenia	0.32	0.07	0.15	0.06	0.08	0.07	0.11	0.05	0.11
Sri Lanka	0.32	0.07	0.15	0.06	0.08	0.07	0.11	0.05	0.11
Jordan	0.31	0.07	0.15	0.06	0.08	0.07	0.11	0.05	0.11
Albania	0.30	0.07	0.15	0.06	0.08	0.07	0.11	0.05	0.11
Indonesia	0.30	0.07	0.15	0.06	0.08	0.07	0.11	0.05	0.11
Jamaica	0.30	0.07	0.15	0.06	0.08	0.07	0.11	0.05	0.11
Zimbabwe	0.29	0.07	0.15	0.06	0.08	0.07	0.11	0.05	0.11
Guinea	0.29	0.07	0.15	0.07	0.08	0.07	0.11	0.05	0.11
Syria	0.28	0.07	0.15	0.07	0.08	0.07	0.11	0.05	0.11
Georgia	0.28	0.06	0.15	0.07	0.08	0.07	0.11	0.05	0.11
<i>Middle-income countries:</i>									
Ukraine	0.27	0.06	0.16	0.07	0.08	0.07	0.11	0.06	0.12
Philippines	0.26	0.06	0.16	0.07	0.09	0.07	0.12	0.06	0.12
Peru	0.26	0.06	0.16	0.07	0.09	0.07	0.12	0.06	0.12
Botswana	0.26	0.06	0.16	0.07	0.09	0.07	0.12	0.06	0.12
Thailand	0.26	0.06	0.16	0.07	0.09	0.07	0.12	0.06	0.12
Morocco	0.25	0.06	0.16	0.07	0.09	0.07	0.12	0.06	0.12
Venezuela	0.25	0.06	0.16	0.07	0.09	0.07	0.12	0.06	0.12
Macedonia	0.24	0.06	0.16	0.07	0.09	0.07	0.12	0.06	0.12
Belize	0.24	0.06	0.16	0.07	0.09	0.07	0.12	0.06	0.12

—Continued

**Distribution of additional one unit of income across expenditure categories, 114 countries  
in 1996<sup>1</sup>—Continued**

	Food, beverage, & tobacco	Clothing & footwear	Gross rent, fuel, & power	House operations	Medical care	Education	Transport & communica- tion	Recreation	Other
<i>Middle-income countries—Continued</i>									
Egypt	0.24	0.06	0.16	0.07	0.09	0.07	0.12	0.06	0.12
St. Vincent & Grenadines	0.24	0.06	0.16	0.07	0.09	0.07	0.12	0.06	0.12
Swaziland	0.24	0.06	0.16	0.07	0.09	0.07	0.12	0.06	0.13
Lebanon	0.23	0.06	0.16	0.07	0.09	0.07	0.12	0.06	0.13
Belarus	0.23	0.06	0.16	0.07	0.09	0.07	0.12	0.06	0.13
Kazakhstan	0.23	0.06	0.16	0.07	0.09	0.07	0.12	0.06	0.13
Dominica	0.23	0.06	0.16	0.07	0.09	0.07	0.12	0.06	0.13
Latvia	0.22	0.06	0.16	0.07	0.09	0.07	0.12	0.06	0.13
St. Lucia	0.22	0.06	0.16	0.07	0.09	0.07	0.12	0.06	0.13
Brazil	0.22	0.06	0.16	0.07	0.09	0.07	0.12	0.06	0.13
Bulgaria	0.22	0.06	0.16	0.07	0.09	0.07	0.12	0.06	0.13
Russia	0.22	0.06	0.17	0.07	0.09	0.07	0.12	0.06	0.13
Fiji	0.21	0.06	0.17	0.07	0.09	0.07	0.12	0.07	0.13
Grenada	0.21	0.06	0.17	0.07	0.09	0.07	0.12	0.07	0.13
Turkey	0.21	0.06	0.17	0.07	0.10	0.07	0.12	0.07	0.13
Lithuania	0.21	0.06	0.17	0.07	0.10	0.07	0.12	0.07	0.13
Romania	0.20	0.06	0.17	0.07	0.10	0.07	0.12	0.07	0.13
Iran	0.20	0.06	0.17	0.07	0.10	0.07	0.13	0.07	0.13
Mexico	0.20	0.06	0.17	0.07	0.10	0.07	0.13	0.07	0.14
Bahrain	0.19	0.06	0.17	0.07	0.10	0.07	0.13	0.07	0.14
Chile	0.19	0.06	0.17	0.07	0.10	0.07	0.13	0.07	0.14
Antigua & Barbuda	0.19	0.06	0.17	0.07	0.10	0.07	0.13	0.07	0.14
Poland	0.19	0.06	0.17	0.07	0.10	0.07	0.13	0.07	0.14
Trinidad & Tobago	0.18	0.06	0.17	0.07	0.10	0.07	0.13	0.07	0.14
Estonia	0.18	0.06	0.17	0.07	0.10	0.07	0.13	0.07	0.14
Gabon	0.18	0.06	0.17	0.07	0.10	0.07	0.13	0.07	0.14
Tunisia	0.18	0.06	0.17	0.08	0.10	0.07	0.13	0.07	0.14
St. Kitts & Nevis	0.17	0.06	0.17	0.08	0.10	0.07	0.13	0.07	0.14
Uruguay	0.17	0.06	0.17	0.08	0.10	0.07	0.13	0.07	0.14
Slovakia	0.17	0.06	0.17	0.08	0.10	0.07	0.13	0.07	0.14
Hungary	0.16	0.06	0.18	0.08	0.10	0.07	0.13	0.07	0.14
Argentina	0.14	0.06	0.18	0.08	0.11	0.07	0.13	0.08	0.15
Oman	0.14	0.06	0.18	0.08	0.11	0.07	0.14	0.08	0.15
Qatar	0.13	0.06	0.18	0.08	0.11	0.07	0.14	0.08	0.15
Slovenia	0.13	0.06	0.18	0.08	0.11	0.07	0.14	0.08	0.15
<i>High-income countries:</i>									
Czech Republic	0.12	0.06	0.18	0.08	0.11	0.07	0.14	0.08	0.15
Greece	0.11	0.06	0.19	0.08	0.11	0.08	0.14	0.08	0.16
Korea	0.11	0.06	0.19	0.08	0.11	0.08	0.14	0.08	0.16
Portugal	0.11	0.06	0.19	0.08	0.11	0.08	0.14	0.08	0.16
Spain	0.11	0.06	0.19	0.08	0.11	0.08	0.14	0.08	0.16
Ireland	0.10	0.06	0.19	0.08	0.11	0.08	0.14	0.08	0.16
Singapore	0.10	0.06	0.19	0.08	0.12	0.08	0.14	0.08	0.16
Mauritius	0.09	0.06	0.19	0.08	0.12	0.08	0.14	0.08	0.16
Israel	0.09	0.06	0.19	0.08	0.12	0.08	0.14	0.08	0.16
New Zealand	0.09	0.06	0.19	0.08	0.12	0.08	0.14	0.08	0.16

—Continued

**Distribution of additional one unit of income across expenditure categories, 114 countries  
in 1996<sup>1</sup>—Continued**

	Food, beverage, & tobacco	Clothing & footwear	Gross rent, fuel, & power	House operations	Medical care	Education	Transport & communica- tion	Recreation	Other
<i>High-income countries—Continued</i>									
Finland	0.09	0.06	0.19	0.08	0.12	0.08	0.14	0.08	0.16
Bahamas	0.09	0.06	0.19	0.08	0.12	0.08	0.14	0.08	0.16
Sweden	0.08	0.06	0.19	0.08	0.12	0.08	0.14	0.09	0.16
Netherlands	0.07	0.06	0.19	0.08	0.12	0.08	0.15	0.09	0.16
France	0.07	0.06	0.20	0.08	0.12	0.08	0.15	0.09	0.17
United Kingdom	0.07	0.06	0.20	0.08	0.12	0.08	0.15	0.09	0.17
Belgium	0.07	0.06	0.20	0.08	0.12	0.08	0.15	0.09	0.17
Norway	0.06	0.06	0.20	0.08	0.12	0.08	0.15	0.09	0.17
Italy	0.06	0.06	0.20	0.08	0.12	0.08	0.15	0.09	0.17
Austria	0.06	0.06	0.20	0.08	0.12	0.08	0.15	0.09	0.17
Germany	0.06	0.06	0.20	0.08	0.12	0.08	0.15	0.09	0.17
Australia	0.06	0.06	0.20	0.09	0.12	0.08	0.15	0.09	0.17
Japan	0.06	0.06	0.20	0.09	0.12	0.08	0.15	0.09	0.17
Canada	0.05	0.06	0.20	0.09	0.12	0.08	0.15	0.09	0.17
Bermuda	0.05	0.05	0.20	0.09	0.12	0.08	0.15	0.09	0.17
Switzerland	0.05	0.05	0.20	0.09	0.12	0.08	0.15	0.09	0.17
Barbados	0.05	0.05	0.20	0.09	0.12	0.08	0.15	0.09	0.17
Hong Kong	0.05	0.05	0.20	0.09	0.12	0.08	0.15	0.09	0.17
Iceland	0.05	0.05	0.20	0.09	0.12	0.08	0.15	0.09	0.17
Denmark	0.04	0.05	0.20	0.09	0.12	0.08	0.15	0.09	0.17
Luxembourg	0.02	0.05	0.21	0.09	0.13	0.08	0.15	0.09	0.18
United States	0.02	0.05	0.21	0.09	0.13	0.08	0.15	0.09	0.18
<i>Low-income average</i>	0.373	0.069	0.134	0.058	0.067	0.066	0.098	0.042	0.093
<i>Middle-income average</i>	0.209	0.062	0.167	0.072	0.096	0.072	0.124	0.066	0.133
<i>High-income average</i>	0.072	0.056	0.195	0.084	0.120	0.077	0.146	0.086	0.166

Note: These calculations are based on the the marginal shares expressed in equation 3.

<sup>1</sup>Countries are reported based on ascending per capita real income levels.

Source: Authors' calculation using the 1996 ICP data.

**Slutsky cross-price elasticity with change in food prices, 114 countries in 1996<sup>1</sup>**

	Clothing & footwear	Gross rent, fuel, & power	House operations	Medical care	Education	Transport & communica- tion	Recreation <sup>2</sup>	Other
<i>Low-income countries:</i>								
Tanzania	0.408	0.601	0.596	1.294	0.479	0.621		1.149
Nigeria	0.372	0.533	0.529	0.869	0.437	0.547	2.622	0.818
Tajikistan	0.356	0.504	0.501	0.763	0.417	0.516	1.524	0.727
Zambia	0.353	0.499	0.496	0.747	0.414	0.511	1.427	0.713
Yemen	0.353	0.498	0.495	0.746	0.414	0.510	1.421	0.712
Malawi	0.343	0.482	0.479	0.696	0.402	0.493	1.176	0.669
Madagascar	0.343	0.481	0.479	0.695	0.402	0.492	1.172	0.668
Mali	0.340	0.477	0.474	0.683	0.399	0.488	1.121	0.657
Mongolia	0.340	0.476	0.473	0.680	0.398	0.486	1.109	0.654
Benin	0.317	0.439	0.437	0.591	0.372	0.448	0.828	0.574
Kenya	0.308	0.424	0.422	0.559	0.361	0.432	0.750	0.544
Sierra Leone	0.299	0.411	0.409	0.532	0.351	0.418	0.692	0.519
Nepal	0.299	0.410	0.408	0.532	0.351	0.418	0.691	0.519
Turkmenistan	0.295	0.404	0.402	0.520	0.346	0.411	0.667	0.508
Congo	0.288	0.392	0.391	0.498	0.337	0.399	0.624	0.487
Senegal	0.281	0.382	0.381	0.480	0.330	0.389	0.592	0.470
Vietnam	0.279	0.379	0.377	0.474	0.327	0.385	0.581	0.464
Bangladesh	0.278	0.377	0.376	0.472	0.326	0.383	0.577	0.462
Pakistan	0.264	0.356	0.354	0.436	0.309	0.361	0.519	0.428
Azerbaijan	0.257	0.346	0.345	0.421	0.302	0.351	0.495	0.414
Côte d'Ivoire	0.255	0.342	0.341	0.415	0.299	0.347	0.486	0.408
Paraguay	0.253	0.340	0.339	0.411	0.297	0.345	0.480	0.404
Uzbekistan	0.248	0.333	0.332	0.401	0.291	0.338	0.466	0.395
Kyrgyzstan	0.248	0.333	0.332	0.401	0.291	0.338	0.465	0.394
Cameroon	0.247	0.332	0.331	0.399	0.290	0.337	0.462	0.392
Moldova	0.247	0.332	0.330	0.399	0.290	0.336	0.462	0.392
Bolivia	0.243	0.325	0.324	0.388	0.285	0.329	0.447	0.383
Ecuador	0.241	0.322	0.321	0.385	0.283	0.327	0.442	0.379
Armenia	0.236	0.316	0.315	0.375	0.277	0.320	0.428	0.370
Sri Lanka	0.236	0.315	0.314	0.374	0.277	0.319	0.427	0.369
Jordan	0.230	0.307	0.306	0.363	0.270	0.311	0.412	0.358
Albania	0.223	0.296	0.295	0.348	0.261	0.300	0.391	0.343
Indonesia	0.220	0.293	0.292	0.343	0.259	0.296	0.385	0.338
Jamaica	0.220	0.292	0.291	0.341	0.258	0.296	0.383	0.337
Zimbabwe	0.219	0.291	0.290	0.340	0.257	0.295	0.382	0.336
Guinea	0.217	0.287	0.286	0.335	0.254	0.291	0.375	0.331
Syria	0.211	0.279	0.278	0.324	0.247	0.283	0.361	0.320
Georgia	0.210	0.278	0.277	0.322	0.246	0.281	0.359	0.319
<i>Middle-income countries:</i>								
Ukraine	0.200	0.265	0.264	0.305	0.235	0.268	0.336	0.301
Philippines	0.194	0.255	0.254	0.293	0.227	0.258	0.321	0.289
Peru	0.191	0.251	0.251	0.288	0.224	0.254	0.315	0.285
Botswana	0.191	0.251	0.250	0.287	0.224	0.254	0.315	0.284
Thailand	0.189	0.249	0.248	0.285	0.222	0.252	0.312	0.282
Morocco	0.186	0.245	0.244	0.279	0.219	0.248	0.305	0.276
Venezuela	0.185	0.244	0.243	0.278	0.218	0.246	0.303	0.275
Macedonia	0.181	0.237	0.237	0.270	0.212	0.240	0.294	0.267
Belize	0.181	0.237	0.236	0.270	0.212	0.240	0.294	0.267

—Continued

**Slutsky cross-price elasticity with change in food prices, 114 countries in 1996<sup>1</sup>—Continued**

	Clothing & footwear	Gross rent, fuel, & power	House operations	Medical care	Education	Transport & communica- tion	Recreation <sup>2</sup>	Other
<i>Middle-income countries—Continued</i>								
Egypt	0.180	0.237	0.236	0.269	0.212	0.240	0.293	0.267
St. Vincent & Grenadines	0.180	0.236	0.235	0.268	0.211	0.239	0.292	0.265
Swaziland	0.175	0.229	0.228	0.259	0.205	0.231	0.281	0.257
Lebanon	0.173	0.226	0.226	0.256	0.203	0.229	0.277	0.253
Belarus	0.172	0.225	0.224	0.254	0.202	0.227	0.275	0.252
Kazakhstan	0.171	0.224	0.224	0.254	0.201	0.227	0.275	0.251
Dominica	0.171	0.224	0.224	0.254	0.201	0.227	0.275	0.251
Latvia	0.166	0.217	0.217	0.245	0.195	0.219	0.264	0.242
St. Lucia	0.165	0.216	0.216	0.244	0.194	0.219	0.263	0.241
Brazil	0.165	0.215	0.215	0.243	0.193	0.218	0.262	0.240
Bulgaria	0.164	0.215	0.214	0.242	0.193	0.217	0.261	0.239
Russia	0.161	0.211	0.210	0.237	0.189	0.213	0.255	0.234
Fiji	0.158	0.206	0.205	0.231	0.185	0.208	0.248	0.229
Grenada	0.158	0.206	0.205	0.231	0.185	0.208	0.248	0.229
Turkey	0.156	0.204	0.203	0.228	0.183	0.206	0.245	0.226
Lithuania	0.153	0.200	0.199	0.223	0.180	0.202	0.240	0.222
Romania	0.151	0.197	0.197	0.220	0.178	0.199	0.236	0.218
Iran	0.147	0.192	0.191	0.214	0.173	0.193	0.229	0.212
Mexico	0.145	0.189	0.188	0.210	0.171	0.191	0.225	0.209
Bahrain	0.143	0.186	0.185	0.207	0.168	0.188	0.221	0.205
Chile	0.142	0.184	0.184	0.205	0.166	0.186	0.219	0.203
Antigua & Barbuda	0.141	0.184	0.183	0.204	0.166	0.185	0.218	0.203
Poland	0.138	0.179	0.179	0.199	0.162	0.181	0.212	0.197
Trinidad & Tobago	0.135	0.176	0.175	0.195	0.159	0.177	0.207	0.193
Estonia	0.132	0.172	0.171	0.190	0.156	0.173	0.202	0.189
Gabon	0.132	0.171	0.170	0.189	0.155	0.172	0.201	0.188
Tunisia	0.129	0.168	0.168	0.186	0.152	0.170	0.198	0.184
St. Kitts & Nevis	0.128	0.166	0.166	0.184	0.151	0.168	0.195	0.182
Uruguay	0.127	0.165	0.165	0.182	0.150	0.167	0.194	0.181
Slovakia	0.126	0.163	0.163	0.180	0.148	0.165	0.191	0.179
Hungary	0.118	0.152	0.152	0.167	0.138	0.154	0.177	0.166
Argentina	0.107	0.138	0.138	0.151	0.126	0.139	0.159	0.150
Oman	0.102	0.132	0.132	0.144	0.120	0.133	0.152	0.143
Qatar	0.097	0.125	0.124	0.136	0.114	0.126	0.143	0.135
Slovenia	0.094	0.121	0.121	0.132	0.111	0.122	0.139	0.131
<i>High-income countries:</i>								
Czech Republic	0.091	0.117	0.117	0.128	0.107	0.118	0.134	0.127
Greece	0.083	0.108	0.107	0.117	0.098	0.108	0.122	0.116
Korea	0.082	0.105	0.105	0.114	0.096	0.106	0.119	0.113
Portugal	0.079	0.102	0.102	0.111	0.093	0.103	0.116	0.110
Spain	0.079	0.101	0.101	0.110	0.093	0.102	0.115	0.109
Ireland	0.076	0.098	0.098	0.106	0.090	0.099	0.111	0.106
Singapore	0.073	0.094	0.094	0.102	0.086	0.095	0.107	0.102
Mauritius	0.069	0.089	0.089	0.097	0.082	0.090	0.101	0.096
Israel	0.066	0.085	0.085	0.092	0.078	0.085	0.096	0.091
New Zealand	0.065	0.083	0.083	0.090	0.076	0.084	0.094	0.089

—Continued

**Slutsky cross-price elasticity with change in food prices, 114 countries in 1996<sup>1</sup>—Continued**

	Clothing & footwear	Gross rent, fuel, & power	House operations	Medical care	Education	Transport & communica- tion	Recreation <sup>2</sup>	Other
<i>High-income countries—Continued</i>								
Finland	0.064	0.083	0.082	0.089	0.076	0.083	0.093	0.089
Bahamas	0.063	0.081	0.081	0.088	0.075	0.082	0.091	0.087
Sweden	0.056	0.072	0.072	0.077	0.066	0.072	0.081	0.077
Netherlands	0.055	0.070	0.070	0.076	0.065	0.071	0.079	0.075
France	0.049	0.063	0.063	0.068	0.058	0.064	0.071	0.068
United Kingdom	0.049	0.063	0.063	0.067	0.058	0.063	0.070	0.067
Belgium	0.048	0.061	0.061	0.066	0.056	0.062	0.068	0.065
Norway	0.047	0.061	0.061	0.065	0.056	0.061	0.068	0.065
Italy	0.047	0.060	0.060	0.064	0.055	0.060	0.067	0.064
Austria	0.045	0.057	0.057	0.061	0.053	0.058	0.064	0.061
Germany	0.044	0.057	0.057	0.061	0.052	0.057	0.063	0.061
Australia	0.042	0.054	0.054	0.058	0.050	0.055	0.061	0.058
Japan	0.041	0.053	0.053	0.056	0.049	0.053	0.059	0.056
Canada	0.039	0.050	0.050	0.054	0.046	0.051	0.056	0.054
Bermuda	0.036	0.046	0.046	0.049	0.042	0.046	0.051	0.049
Switzerland	0.034	0.044	0.044	0.047	0.041	0.044	0.049	0.047
Barbados	0.034	0.044	0.043	0.047	0.040	0.044	0.048	0.046
Hong Kong	0.034	0.043	0.043	0.046	0.040	0.043	0.048	0.046
Iceland	0.033	0.043	0.043	0.046	0.039	0.043	0.047	0.045
Denmark	0.032	0.042	0.041	0.044	0.038	0.042	0.046	0.044
Luxembourg	0.014	0.018	0.018	0.019	0.017	0.018	0.020	0.019
United States	0.011	0.015	0.014	0.015	0.013	0.015	0.016	0.015
<i>Low-income average</i>	0.278	0.381	0.379	0.509	0.327	0.388	0.708	0.493
<i>Middle-income average</i>	0.154	0.202	0.201	0.227	0.182	0.204	0.245	0.225
<i>High-income average</i>	0.053	0.068	0.067	0.073	0.062	0.068	0.076	0.072

<sup>1</sup>Countries are reported based on ascending per capita real income levels.

<sup>2</sup>As the estimated budget share was negative for Tanzania we do not report the elasticity for this country.

Source: Authors' calculation using the 1996 ICP data.

**Cournot cross-price elasticity with change in food prices, 114 countries in 1996<sup>1</sup>**

	Clothing & footwear	Gross rent, fuel, & power	House operations	Medical care	Education	Transport & communica- tion	Recreation <sup>2</sup>	Other
<i>Low-income countries:</i>								
Tanzania	-0.222	-0.328	-0.325	-0.706	-0.261	-0.339		-0.626
Nigeria	-0.214	-0.306	-0.304	-0.499	-0.251	-0.314	-1.506	-0.469
Tajikistan	-0.210	-0.297	-0.295	-0.449	-0.246	-0.304	-0.898	-0.428
Zambia	-0.209	-0.295	-0.293	-0.442	-0.245	-0.302	-0.845	-0.422
Yemen	-0.209	-0.295	-0.293	-0.442	-0.245	-0.302	-0.841	-0.422
Malawi	-0.207	-0.290	-0.288	-0.419	-0.242	-0.297	-0.708	-0.403
Madagascar	-0.206	-0.290	-0.288	-0.419	-0.242	-0.296	-0.706	-0.402
Mali	-0.206	-0.289	-0.287	-0.413	-0.241	-0.295	-0.678	-0.397
Mongolia	-0.206	-0.288	-0.287	-0.412	-0.241	-0.295	-0.672	-0.396
Benin	-0.200	-0.277	-0.276	-0.373	-0.235	-0.283	-0.522	-0.362
Kenya	-0.198	-0.273	-0.271	-0.359	-0.232	-0.278	-0.482	-0.350
Sierra Leone	-0.196	-0.269	-0.267	-0.348	-0.230	-0.274	-0.453	-0.340
Nepal	-0.196	-0.269	-0.267	-0.348	-0.230	-0.273	-0.452	-0.339
Turkmenistan	-0.195	-0.267	-0.265	-0.343	-0.229	-0.271	-0.440	-0.335
Congo	-0.193	-0.263	-0.262	-0.334	-0.226	-0.268	-0.419	-0.327
Senegal	-0.191	-0.260	-0.259	-0.327	-0.224	-0.265	-0.403	-0.320
Vietnam	-0.191	-0.259	-0.258	-0.324	-0.224	-0.263	-0.398	-0.318
Bangladesh	-0.191	-0.259	-0.258	-0.323	-0.224	-0.263	-0.396	-0.317
Pakistan	-0.187	-0.253	-0.252	-0.309	-0.219	-0.256	-0.368	-0.304
Azerbaijan	-0.186	-0.250	-0.249	-0.304	-0.218	-0.254	-0.357	-0.298
Côte d'Ivoire	-0.185	-0.249	-0.248	-0.301	-0.217	-0.252	-0.353	-0.296
Paraguay	-0.184	-0.248	-0.247	-0.300	-0.216	-0.252	-0.350	-0.295
Uzbekistan	-0.183	-0.246	-0.245	-0.296	-0.215	-0.250	-0.344	-0.291
Kyrgyzstan	-0.183	-0.246	-0.245	-0.296	-0.215	-0.250	-0.343	-0.291
Cameroon	-0.183	-0.246	-0.245	-0.295	-0.215	-0.249	-0.342	-0.291
Moldova	-0.183	-0.246	-0.245	-0.295	-0.215	-0.249	-0.342	-0.291
Bolivia	-0.182	-0.244	-0.243	-0.291	-0.214	-0.247	-0.336	-0.287
Ecuador	-0.182	-0.243	-0.242	-0.290	-0.213	-0.246	-0.333	-0.286
Armenia	-0.180	-0.241	-0.240	-0.286	-0.212	-0.244	-0.327	-0.282
Sri Lanka	-0.180	-0.241	-0.240	-0.286	-0.212	-0.244	-0.327	-0.282
Jordan	-0.179	-0.239	-0.238	-0.282	-0.210	-0.242	-0.320	-0.278
Albania	-0.177	-0.236	-0.235	-0.276	-0.208	-0.239	-0.311	-0.273
Indonesia	-0.176	-0.235	-0.234	-0.275	-0.207	-0.238	-0.308	-0.271
Jamaica	-0.176	-0.234	-0.234	-0.274	-0.207	-0.237	-0.308	-0.271
Zimbabwe	-0.176	-0.234	-0.233	-0.274	-0.207	-0.237	-0.307	-0.270
Guinea	-0.176	-0.233	-0.232	-0.272	-0.206	-0.236	-0.304	-0.268
Syria	-0.174	-0.231	-0.230	-0.268	-0.204	-0.234	-0.298	-0.265
Georgia	-0.174	-0.230	-0.230	-0.267	-0.204	-0.233	-0.297	-0.264
<i>Middle-income countries:</i>								
Ukraine	-0.172	-0.227	-0.226	-0.261	-0.201	-0.229	-0.288	-0.258
Philippines	-0.170	-0.224	-0.223	-0.257	-0.200	-0.227	-0.282	-0.254
Peru	-0.169	-0.223	-0.222	-0.255	-0.199	-0.226	-0.280	-0.252
Botswana	-0.169	-0.223	-0.222	-0.255	-0.199	-0.225	-0.279	-0.252
Thailand	-0.169	-0.222	-0.222	-0.254	-0.198	-0.225	-0.278	-0.251
Morocco	-0.168	-0.221	-0.221	-0.252	-0.197	-0.224	-0.276	-0.250
Venezuela	-0.168	-0.221	-0.220	-0.252	-0.197	-0.223	-0.275	-0.249
Macedonia	-0.167	-0.219	-0.218	-0.249	-0.196	-0.222	-0.271	-0.247
Belize	-0.167	-0.219	-0.218	-0.249	-0.196	-0.221	-0.271	-0.246

—Continued



**Cournot cross-price elasticity with change in food prices, 114 countries in 1996<sup>1</sup>—Continued**

	Clothing & footwear	Gross rent, fuel, & power	House operations	Medical care	Education	Transport & communica- tion	Recreation <sup>2</sup>	Other
<i>Middle-income countries—Continued</i>								
Egypt	-0.167	-0.219	-0.218	-0.249	-0.196	-0.221	-0.271	-0.246
St. Vincent & Grenadines	-0.167	-0.219	-0.218	-0.248	-0.196	-0.221	-0.270	-0.246
Swaziland	-0.165	-0.217	-0.216	-0.245	-0.194	-0.219	-0.266	-0.243
Lebanon	-0.165	-0.216	-0.215	-0.244	-0.194	-0.218	-0.265	-0.242
Belarus	-0.165	-0.216	-0.215	-0.244	-0.193	-0.218	-0.264	-0.241
Kazakhstan	-0.164	-0.216	-0.215	-0.244	-0.193	-0.218	-0.264	-0.241
Dominica	-0.164	-0.216	-0.215	-0.244	-0.193	-0.218	-0.264	-0.241
Latvia	-0.163	-0.214	-0.213	-0.240	-0.192	-0.216	-0.260	-0.238
St. Lucia	-0.163	-0.213	-0.213	-0.240	-0.191	-0.216	-0.259	-0.238
Brazil	-0.163	-0.213	-0.212	-0.240	-0.191	-0.215	-0.259	-0.238
Bulgaria	-0.163	-0.213	-0.212	-0.240	-0.191	-0.215	-0.258	-0.237
Russia	-0.162	-0.212	-0.211	-0.238	-0.190	-0.214	-0.256	-0.236
Fiji	-0.161	-0.210	-0.210	-0.236	-0.189	-0.213	-0.254	-0.234
Grenada	-0.161	-0.210	-0.210	-0.236	-0.189	-0.213	-0.254	-0.234
Turkey	-0.161	-0.210	-0.209	-0.235	-0.189	-0.212	-0.253	-0.233
Lithuania	-0.160	-0.209	-0.208	-0.234	-0.188	-0.211	-0.251	-0.232
Romania	-0.159	-0.208	-0.207	-0.232	-0.187	-0.210	-0.249	-0.230
Iran	-0.158	-0.207	-0.206	-0.230	-0.186	-0.209	-0.247	-0.228
Mexico	-0.158	-0.206	-0.205	-0.229	-0.186	-0.208	-0.245	-0.227
Bahrain	-0.157	-0.205	-0.204	-0.228	-0.185	-0.207	-0.244	-0.226
Chile	-0.157	-0.205	-0.204	-0.227	-0.185	-0.206	-0.243	-0.226
Antigua & Barbuda	-0.157	-0.204	-0.204	-0.227	-0.185	-0.206	-0.243	-0.225
Poland	-0.156	-0.203	-0.203	-0.226	-0.184	-0.205	-0.240	-0.224
Trinidad & Tobago	-0.156	-0.202	-0.202	-0.224	-0.183	-0.204	-0.239	-0.222
Estonia	-0.155	-0.201	-0.201	-0.223	-0.182	-0.203	-0.237	-0.221
Gabon	-0.155	-0.201	-0.200	-0.222	-0.182	-0.203	-0.237	-0.221
Tunisia	-0.154	-0.200	-0.200	-0.221	-0.181	-0.202	-0.235	-0.220
St. Kitts & Nevis	-0.154	-0.200	-0.199	-0.221	-0.181	-0.201	-0.234	-0.219
Uruguay	-0.154	-0.199	-0.199	-0.220	-0.181	-0.201	-0.234	-0.219
Slovakia	-0.153	-0.199	-0.198	-0.219	-0.180	-0.201	-0.233	-0.218
Hungary	-0.151	-0.196	-0.195	-0.216	-0.178	-0.198	-0.228	-0.214
Argentina	-0.149	-0.192	-0.192	-0.210	-0.175	-0.194	-0.222	-0.209
Oman	-0.147	-0.190	-0.190	-0.208	-0.174	-0.192	-0.219	-0.207
Qatar	-0.146	-0.188	-0.188	-0.206	-0.172	-0.190	-0.216	-0.204
Slovenia	-0.145	-0.188	-0.187	-0.205	-0.171	-0.189	-0.215	-0.203
<i>High-income countries:</i>								
Czech Republic	-0.145	-0.186	-0.186	-0.203	-0.170	-0.188	-0.213	-0.202
Greece	-0.143	-0.184	-0.183	-0.200	-0.168	-0.185	-0.209	-0.199
Korea	-0.142	-0.183	-0.183	-0.199	-0.168	-0.185	-0.208	-0.198
Portugal	-0.142	-0.182	-0.182	-0.198	-0.167	-0.184	-0.207	-0.197
Spain	-0.142	-0.182	-0.182	-0.198	-0.167	-0.184	-0.207	-0.197
Ireland	-0.141	-0.181	-0.181	-0.197	-0.166	-0.183	-0.206	-0.195
Singapore	-0.140	-0.180	-0.180	-0.195	-0.165	-0.182	-0.204	-0.194
Mauritius	-0.139	-0.179	-0.179	-0.194	-0.164	-0.180	-0.202	-0.193
Israel	-0.138	-0.178	-0.177	-0.192	-0.163	-0.179	-0.201	-0.191
New Zealand	-0.138	-0.177	-0.177	-0.192	-0.163	-0.179	-0.200	-0.191

—Continued



**Cournot cross-price elasticity with change in food prices, 114 countries in 1996<sup>1</sup>—Continued**

	Clothing & footwear	Gross rent, fuel, & power	House operations	Medical care	Education	Transport & communica- tion	Recreation <sup>2</sup>	Other
<i>High-income countries—Continued</i>								
Finland	-0.138	-0.177	-0.177	-0.191	-0.163	-0.179	-0.200	-0.190
Bahamas	-0.138	-0.177	-0.177	-0.191	-0.162	-0.178	-0.199	-0.190
Sweden	-0.136	-0.174	-0.174	-0.188	-0.160	-0.176	-0.196	-0.187
Netherlands	-0.136	-0.174	-0.174	-0.187	-0.160	-0.175	-0.195	-0.186
France	-0.134	-0.172	-0.172	-0.185	-0.159	-0.173	-0.193	-0.184
United Kingdom	-0.134	-0.172	-0.172	-0.185	-0.158	-0.173	-0.192	-0.184
Belgium	-0.134	-0.172	-0.171	-0.184	-0.158	-0.173	-0.192	-0.184
Norway	-0.134	-0.172	-0.171	-0.184	-0.158	-0.173	-0.192	-0.183
Italy	-0.134	-0.171	-0.171	-0.184	-0.158	-0.172	-0.191	-0.183
Austria	-0.133	-0.171	-0.170	-0.183	-0.157	-0.172	-0.190	-0.182
Germany	-0.133	-0.170	-0.170	-0.183	-0.157	-0.172	-0.190	-0.182
Australia	-0.133	-0.170	-0.169	-0.182	-0.157	-0.171	-0.189	-0.181
Japan	-0.132	-0.169	-0.169	-0.182	-0.156	-0.170	-0.189	-0.181
Canada	-0.132	-0.169	-0.168	-0.181	-0.156	-0.170	-0.188	-0.180
Bermuda	-0.131	-0.168	-0.167	-0.180	-0.155	-0.169	-0.186	-0.179
Switzerland	-0.131	-0.167	-0.167	-0.179	-0.154	-0.168	-0.186	-0.178
Barbados	-0.131	-0.167	-0.167	-0.179	-0.154	-0.168	-0.186	-0.178
Hong Kong	-0.130	-0.167	-0.167	-0.179	-0.154	-0.168	-0.185	-0.178
Iceland	-0.130	-0.167	-0.166	-0.179	-0.154	-0.168	-0.185	-0.178
Denmark	-0.130	-0.166	-0.166	-0.178	-0.154	-0.168	-0.185	-0.177
Luxembourg	-0.126	-0.160	-0.160	-0.171	-0.149	-0.161	-0.177	-0.170
United States	-0.125	-0.159	-0.159	-0.170	-0.148	-0.160	-0.175	-0.169
<i>Low-income average</i>	-0.191	-0.260	-0.259	-0.343	-0.224	-0.265	-0.470	-0.332
<i>Middle-income average</i>	-0.160	-0.209	-0.209	-0.235	-0.188	-0.212	-0.253	-0.233
<i>High-income average</i>	-0.135	-0.173	-0.173	-0.187	-0.159	-0.175	-0.194	-0.186

<sup>1</sup>Countries are reported based on ascending per capita real income levels.

<sup>2</sup>As the estimated budget share was negative for Tanzania we do not report the elasticity for this country.

Source: Authors' calculation using the 1996 ICP data.

**Slutsky cross-price elasticity with changes in price for clothing and footwear, 114 countries in 1996<sup>1</sup>**

	Food, beverage, & tobacco	Gross rent, fuel, & power	House operations	Medical care	Education	Transport & communica- tion	Recreation <sup>2</sup>	Other
<i>Low-income countries:</i>								
Tanzania	0.049	0.084	0.084	0.182	0.067	0.087		0.161
Nigeria	0.047	0.080	0.079	0.130	0.065	0.082	0.392	0.122
Tajikistan	0.046	0.078	0.077	0.118	0.064	0.080	0.235	0.112
Zambia	0.046	0.077	0.077	0.116	0.064	0.079	0.221	0.111
Yemen	0.046	0.077	0.077	0.116	0.064	0.079	0.220	0.110
Malawi	0.045	0.076	0.076	0.110	0.064	0.078	0.186	0.106
Madagascar	0.045	0.076	0.076	0.110	0.064	0.078	0.186	0.106
Mali	0.045	0.076	0.075	0.109	0.064	0.078	0.178	0.105
Mongolia	0.045	0.076	0.075	0.108	0.063	0.078	0.177	0.104
Benin	0.044	0.074	0.073	0.099	0.062	0.075	0.139	0.096
Kenya	0.043	0.073	0.072	0.096	0.062	0.074	0.128	0.093
Sierra Leone	0.042	0.072	0.071	0.093	0.061	0.073	0.121	0.091
Nepal	0.042	0.072	0.071	0.093	0.061	0.073	0.121	0.091
Turkmenistan	0.042	0.071	0.071	0.092	0.061	0.073	0.118	0.090
Congo	0.042	0.071	0.070	0.090	0.061	0.072	0.112	0.088
Senegal	0.041	0.070	0.070	0.088	0.060	0.071	0.108	0.086
Vietnam	0.041	0.070	0.069	0.087	0.060	0.071	0.107	0.086
Bangladesh	0.041	0.070	0.069	0.087	0.060	0.071	0.107	0.085
Pakistan	0.040	0.068	0.068	0.084	0.059	0.069	0.100	0.082
Azerbaijan	0.039	0.068	0.068	0.082	0.059	0.069	0.097	0.081
Côte d'Ivoire	0.039	0.068	0.067	0.082	0.059	0.069	0.096	0.081
Paraguay	0.039	0.067	0.067	0.082	0.059	0.068	0.095	0.080
Uzbekistan	0.039	0.067	0.067	0.081	0.059	0.068	0.094	0.079
Kyrgyzstan	0.039	0.067	0.067	0.081	0.059	0.068	0.094	0.079
Cameroon	0.039	0.067	0.067	0.081	0.059	0.068	0.093	0.079
Moldova	0.039	0.067	0.067	0.080	0.059	0.068	0.093	0.079
Bolivia	0.038	0.067	0.066	0.080	0.058	0.068	0.092	0.078
Ecuador	0.038	0.066	0.066	0.079	0.058	0.067	0.091	0.078
Armenia	0.038	0.066	0.066	0.078	0.058	0.067	0.090	0.077
Sri Lanka	0.038	0.066	0.066	0.078	0.058	0.067	0.089	0.077
Jordan	0.037	0.066	0.065	0.077	0.058	0.066	0.088	0.076
Albania	0.037	0.065	0.065	0.076	0.057	0.066	0.086	0.075
Indonesia	0.036	0.065	0.065	0.076	0.057	0.066	0.085	0.075
Jamaica	0.036	0.065	0.064	0.076	0.057	0.066	0.085	0.075
Zimbabwe	0.036	0.065	0.064	0.076	0.057	0.065	0.085	0.075
Guinea	0.036	0.064	0.064	0.075	0.057	0.065	0.084	0.074
Syria	0.036	0.064	0.064	0.074	0.057	0.065	0.083	0.073
Georgia	0.036	0.064	0.064	0.074	0.057	0.065	0.082	0.073
<i>Middle-income countries:</i>								
Ukraine	0.035	0.063	0.063	0.073	0.056	0.064	0.080	0.072
Philippines	0.034	0.063	0.062	0.072	0.056	0.063	0.079	0.071
Peru	0.034	0.062	0.062	0.071	0.056	0.063	0.078	0.071
Botswana	0.034	0.062	0.062	0.071	0.056	0.063	0.078	0.071
Thailand	0.034	0.062	0.062	0.071	0.056	0.063	0.078	0.070
Morocco	0.033	0.062	0.062	0.071	0.055	0.063	0.077	0.070
Venezuela	0.033	0.062	0.062	0.071	0.055	0.063	0.077	0.070
Macedonia	0.033	0.062	0.061	0.070	0.055	0.062	0.076	0.069
Belize	0.033	0.062	0.061	0.070	0.055	0.062	0.076	0.069

—Continued

**Slutsky cross-price elasticity with changes in price for clothing and footwear, 114 countries  
in 1996<sup>1</sup>—Continued**

	Food, beverage, & tobacco	Gross rent, fuel, & power	House operations	Medical care	Education	Transport & communica- tion	Recreation <sup>2</sup>	Other
<i>Middle-income countries—Continued</i>								
Egypt	0.033	0.062	0.061	0.070	0.055	0.062	0.076	0.069
St. Vincent & Grenadines	0.033	0.062	0.061	0.070	0.055	0.062	0.076	0.069
Swaziland	0.032	0.061	0.061	0.069	0.055	0.062	0.075	0.069
Lebanon	0.032	0.061	0.061	0.069	0.055	0.062	0.075	0.068
Belarus	0.032	0.061	0.061	0.069	0.055	0.062	0.075	0.068
Kazakhstan	0.032	0.061	0.061	0.069	0.055	0.062	0.075	0.068
Dominica	0.032	0.061	0.061	0.069	0.055	0.062	0.075	0.068
Latvia	0.031	0.060	0.060	0.068	0.054	0.061	0.074	0.068
St. Lucia	0.031	0.060	0.060	0.068	0.054	0.061	0.073	0.067
Brazil	0.031	0.060	0.060	0.068	0.054	0.061	0.073	0.067
Bulgaria	0.031	0.060	0.060	0.068	0.054	0.061	0.073	0.067
Russia	0.031	0.060	0.060	0.068	0.054	0.061	0.073	0.067
Fiji	0.031	0.060	0.060	0.067	0.054	0.060	0.072	0.067
Grenada	0.031	0.060	0.060	0.067	0.054	0.060	0.072	0.067
Turkey	0.030	0.060	0.060	0.067	0.054	0.060	0.072	0.066
Lithuania	0.030	0.060	0.059	0.067	0.054	0.060	0.071	0.066
Romania	0.030	0.059	0.059	0.066	0.054	0.060	0.071	0.066
Iran	0.030	0.059	0.059	0.066	0.053	0.060	0.071	0.065
Mexico	0.029	0.059	0.059	0.066	0.053	0.060	0.070	0.065
Bahrain	0.029	0.059	0.059	0.065	0.053	0.059	0.070	0.065
Chile	0.029	0.059	0.059	0.065	0.053	0.059	0.070	0.065
Antigua & Barbuda	0.029	0.059	0.059	0.065	0.053	0.059	0.070	0.065
Poland	0.029	0.058	0.058	0.065	0.053	0.059	0.069	0.064
Trinidad & Tobago	0.028	0.058	0.058	0.065	0.053	0.059	0.069	0.064
Estonia	0.028	0.058	0.058	0.064	0.053	0.059	0.068	0.064
Gabon	0.028	0.058	0.058	0.064	0.053	0.059	0.068	0.064
Tunisia	0.028	0.058	0.058	0.064	0.052	0.058	0.068	0.063
St. Kitts & Nevis	0.027	0.058	0.058	0.064	0.052	0.058	0.068	0.063
Uruguay	0.027	0.058	0.058	0.064	0.052	0.058	0.068	0.063
Slovakia	0.027	0.058	0.057	0.064	0.052	0.058	0.067	0.063
Hungary	0.026	0.057	0.057	0.063	0.052	0.057	0.066	0.062
Argentina	0.025	0.056	0.056	0.062	0.051	0.057	0.065	0.061
Oman	0.024	0.056	0.056	0.061	0.051	0.056	0.064	0.061
Qatar	0.023	0.056	0.055	0.061	0.051	0.056	0.064	0.060
Slovenia	0.023	0.055	0.055	0.060	0.051	0.056	0.063	0.060
<i>High-income countries:</i>								
Czech Republic	0.022	0.055	0.055	0.060	0.050	0.056	0.063	0.060
Greece	0.021	0.055	0.055	0.059	0.050	0.055	0.062	0.059
Korea	0.021	0.054	0.054	0.059	0.050	0.055	0.062	0.059
Portugal	0.021	0.054	0.054	0.059	0.050	0.055	0.062	0.059
Spain	0.021	0.054	0.054	0.059	0.050	0.055	0.062	0.059
Ireland	0.020	0.054	0.054	0.059	0.050	0.055	0.061	0.058
Singapore	0.020	0.054	0.054	0.058	0.049	0.054	0.061	0.058
Mauritius	0.019	0.054	0.054	0.058	0.049	0.054	0.061	0.058
Israel	0.018	0.053	0.053	0.058	0.049	0.054	0.060	0.057
New Zealand	0.018	0.053	0.053	0.058	0.049	0.054	0.060	0.057

—Continued

**Slutsky cross-price elasticity with changes in price for clothing and footwear, 114 countries in 1996<sup>1</sup>—Continued**

	Food, beverage, & tobacco	Gross rent, fuel, & power	House operations	Medical care	Education	Transport & communica- tion	Recreation <sup>2</sup>	Other
<i>High-income countries—Continued</i>								
Finland	0.018	0.053	0.053	0.058	0.049	0.054	0.060	0.057
Bahamas	0.018	0.053	0.053	0.058	0.049	0.054	0.060	0.057
Sweden	0.016	0.053	0.053	0.057	0.049	0.053	0.059	0.057
Netherlands	0.016	0.053	0.053	0.057	0.048	0.053	0.059	0.056
France	0.015	0.052	0.052	0.056	0.048	0.053	0.059	0.056
United Kingdom	0.015	0.052	0.052	0.056	0.048	0.053	0.059	0.056
Belgium	0.015	0.052	0.052	0.056	0.048	0.053	0.058	0.056
Norway	0.015	0.052	0.052	0.056	0.048	0.053	0.058	0.056
Italy	0.014	0.052	0.052	0.056	0.048	0.053	0.058	0.056
Austria	0.014	0.052	0.052	0.056	0.048	0.052	0.058	0.056
Germany	0.014	0.052	0.052	0.056	0.048	0.052	0.058	0.056
Australia	0.013	0.052	0.052	0.056	0.048	0.052	0.058	0.055
Japan	0.013	0.052	0.052	0.056	0.048	0.052	0.058	0.055
Canada	0.013	0.052	0.052	0.055	0.048	0.052	0.058	0.055
Bermuda	0.012	0.051	0.051	0.055	0.047	0.052	0.057	0.055
Switzerland	0.011	0.051	0.051	0.055	0.047	0.052	0.057	0.055
Barbados	0.011	0.051	0.051	0.055	0.047	0.052	0.057	0.055
Hong Kong	0.011	0.051	0.051	0.055	0.047	0.052	0.057	0.055
Iceland	0.011	0.051	0.051	0.055	0.047	0.052	0.057	0.055
Denmark	0.011	0.051	0.051	0.055	0.047	0.052	0.057	0.055
Luxembourg	0.005	0.050	0.050	0.053	0.046	0.050	0.055	0.053
United States	0.004	0.050	0.050	0.053	0.046	0.050	0.055	0.053
<i>Low-income average</i>	0.041	0.070	0.070	0.092	0.060	0.071	0.126	0.089
<i>Middle-income average</i>	0.030	0.060	0.060	0.067	0.054	0.060	0.072	0.066
<i>High-income average</i>	0.015	0.053	0.052	0.057	0.048	0.053	0.059	0.056

<sup>1</sup>Countries are reported based on ascending per capita real income levels.

<sup>2</sup>As the estimated budget share was negative for Tanzania we do not report the elasticity for this country.

Source: Authors' calculation using the 1996 ICP data.

**Cournot cross-price elasticity with changes in price for clothing and footwear, 114 countries in 1996<sup>1</sup>**

	Food, beverage, & tobacco	Gross rent, fuel, & power	House operations	Medical care	Education	Transport & communica- tion	Recreation <sup>2</sup>	Other
<i>Low-income countries:</i>								
Tanzania	-0.016	-0.028	-0.028	-0.060	-0.022	-0.029		-0.053
Nigeria	-0.016	-0.027	-0.026	-0.043	-0.022	-0.027	-0.131	-0.041
Tajikistan	-0.015	-0.026	-0.026	-0.039	-0.022	-0.027	-0.079	-0.037
Zambia	-0.015	-0.026	-0.026	-0.039	-0.021	-0.027	-0.074	-0.037
Yemen	-0.015	-0.026	-0.026	-0.039	-0.021	-0.026	-0.074	-0.037
Malawi	-0.015	-0.026	-0.025	-0.037	-0.021	-0.026	-0.062	-0.035
Madagascar	-0.015	-0.026	-0.025	-0.037	-0.021	-0.026	-0.062	-0.035
Mali	-0.015	-0.025	-0.025	-0.036	-0.021	-0.026	-0.060	-0.035
Mongolia	-0.015	-0.025	-0.025	-0.036	-0.021	-0.026	-0.059	-0.035
Benin	-0.015	-0.025	-0.025	-0.033	-0.021	-0.025	-0.047	-0.032
Kenya	-0.015	-0.025	-0.024	-0.032	-0.021	-0.025	-0.043	-0.031
Sierra Leone	-0.014	-0.024	-0.024	-0.032	-0.021	-0.025	-0.041	-0.031
Nepal	-0.014	-0.024	-0.024	-0.031	-0.021	-0.025	-0.041	-0.031
Turkmenistan	-0.014	-0.024	-0.024	-0.031	-0.021	-0.025	-0.040	-0.030
Congo	-0.014	-0.024	-0.024	-0.030	-0.021	-0.024	-0.038	-0.030
Senegal	-0.014	-0.024	-0.024	-0.030	-0.021	-0.024	-0.037	-0.029
Vietnam	-0.014	-0.024	-0.024	-0.030	-0.021	-0.024	-0.036	-0.029
Bangladesh	-0.014	-0.024	-0.024	-0.030	-0.021	-0.024	-0.036	-0.029
Pakistan	-0.014	-0.023	-0.023	-0.029	-0.020	-0.024	-0.034	-0.028
Azerbaijan	-0.013	-0.023	-0.023	-0.028	-0.020	-0.024	-0.033	-0.028
Côte d'Ivoire	-0.013	-0.023	-0.023	-0.028	-0.020	-0.024	-0.033	-0.028
Paraguay	-0.013	-0.023	-0.023	-0.028	-0.020	-0.023	-0.033	-0.028
Uzbekistan	-0.013	-0.023	-0.023	-0.028	-0.020	-0.023	-0.032	-0.027
Kyrgyzstan	-0.013	-0.023	-0.023	-0.028	-0.020	-0.023	-0.032	-0.027
Cameroon	-0.013	-0.023	-0.023	-0.028	-0.020	-0.023	-0.032	-0.027
Moldova	-0.013	-0.023	-0.023	-0.028	-0.020	-0.023	-0.032	-0.027
Bolivia	-0.013	-0.023	-0.023	-0.027	-0.020	-0.023	-0.032	-0.027
Ecuador	-0.013	-0.023	-0.023	-0.027	-0.020	-0.023	-0.031	-0.027
Armenia	-0.013	-0.023	-0.023	-0.027	-0.020	-0.023	-0.031	-0.027
Sri Lanka	-0.013	-0.023	-0.023	-0.027	-0.020	-0.023	-0.031	-0.027
Jordan	-0.013	-0.023	-0.023	-0.027	-0.020	-0.023	-0.030	-0.026
Albania	-0.013	-0.022	-0.022	-0.026	-0.020	-0.023	-0.030	-0.026
Indonesia	-0.013	-0.022	-0.022	-0.026	-0.020	-0.023	-0.029	-0.026
Jamaica	-0.013	-0.022	-0.022	-0.026	-0.020	-0.023	-0.029	-0.026
Zimbabwe	-0.013	-0.022	-0.022	-0.026	-0.020	-0.023	-0.029	-0.026
Guinea	-0.012	-0.022	-0.022	-0.026	-0.020	-0.023	-0.029	-0.026
Syria	-0.012	-0.022	-0.022	-0.026	-0.020	-0.022	-0.029	-0.025
Georgia	-0.012	-0.022	-0.022	-0.026	-0.020	-0.022	-0.029	-0.025
<i>Middle-income countries:</i>								
Ukraine	-0.012	-0.022	-0.022	-0.025	-0.020	-0.022	-0.028	-0.025
Philippines	-0.012	-0.022	-0.022	-0.025	-0.019	-0.022	-0.027	-0.025
Peru	-0.012	-0.022	-0.022	-0.025	-0.019	-0.022	-0.027	-0.025
Botswana	-0.012	-0.022	-0.022	-0.025	-0.019	-0.022	-0.027	-0.025
Thailand	-0.012	-0.022	-0.022	-0.025	-0.019	-0.022	-0.027	-0.025
Morocco	-0.012	-0.022	-0.022	-0.025	-0.019	-0.022	-0.027	-0.024
Venezuela	-0.012	-0.022	-0.022	-0.025	-0.019	-0.022	-0.027	-0.024
Macedonia	-0.012	-0.022	-0.021	-0.024	-0.019	-0.022	-0.027	-0.024
Belize	-0.012	-0.022	-0.021	-0.024	-0.019	-0.022	-0.027	-0.024

—Continued

**Cournot cross-price elasticity with changes in price for clothing and footwear, 114 countries  
in 1996<sup>1</sup>—Continued**

	Food, beverage, & tobacco	Gross rent, fuel, & power	House operations	Medical care	Education	Transport & communica- tion	Recreation <sup>2</sup>	Other
<i>Middle-income countries—Continued</i>								
Egypt	-0.012	-0.022	-0.021	-0.024	-0.019	-0.022	-0.027	-0.024
St. Vincent & Grenadines	-0.011	-0.022	-0.021	-0.024	-0.019	-0.022	-0.027	-0.024
Swaziland	-0.011	-0.021	-0.021	-0.024	-0.019	-0.022	-0.026	-0.024
Lebanon	-0.011	-0.021	-0.021	-0.024	-0.019	-0.022	-0.026	-0.024
Belarus	-0.011	-0.021	-0.021	-0.024	-0.019	-0.022	-0.026	-0.024
Kazakhstan	-0.011	-0.021	-0.021	-0.024	-0.019	-0.022	-0.026	-0.024
Dominica	-0.011	-0.021	-0.021	-0.024	-0.019	-0.022	-0.026	-0.024
Latvia	-0.011	-0.021	-0.021	-0.024	-0.019	-0.021	-0.026	-0.024
St. Lucia	-0.011	-0.021	-0.021	-0.024	-0.019	-0.021	-0.026	-0.024
Brazil	-0.011	-0.021	-0.021	-0.024	-0.019	-0.021	-0.026	-0.024
Bulgaria	-0.011	-0.021	-0.021	-0.024	-0.019	-0.021	-0.026	-0.024
Russia	-0.011	-0.021	-0.021	-0.024	-0.019	-0.021	-0.026	-0.024
Fiji	-0.011	-0.021	-0.021	-0.024	-0.019	-0.021	-0.025	-0.023
Grenada	-0.011	-0.021	-0.021	-0.024	-0.019	-0.021	-0.025	-0.023
Turkey	-0.011	-0.021	-0.021	-0.024	-0.019	-0.021	-0.025	-0.023
Lithuania	-0.011	-0.021	-0.021	-0.023	-0.019	-0.021	-0.025	-0.023
Romania	-0.011	-0.021	-0.021	-0.023	-0.019	-0.021	-0.025	-0.023
Iran	-0.010	-0.021	-0.021	-0.023	-0.019	-0.021	-0.025	-0.023
Mexico	-0.010	-0.021	-0.021	-0.023	-0.019	-0.021	-0.025	-0.023
Bahrain	-0.010	-0.021	-0.021	-0.023	-0.019	-0.021	-0.025	-0.023
Chile	-0.010	-0.021	-0.021	-0.023	-0.019	-0.021	-0.025	-0.023
Antigua & Barbuda	-0.010	-0.021	-0.021	-0.023	-0.019	-0.021	-0.025	-0.023
Poland	-0.010	-0.021	-0.021	-0.023	-0.019	-0.021	-0.025	-0.023
Trinidad & Tobago	-0.010	-0.021	-0.021	-0.023	-0.019	-0.021	-0.024	-0.023
Estonia	-0.010	-0.021	-0.021	-0.023	-0.019	-0.021	-0.024	-0.023
Gabon	-0.010	-0.021	-0.021	-0.023	-0.019	-0.021	-0.024	-0.023
Tunisia	-0.010	-0.021	-0.020	-0.023	-0.019	-0.021	-0.024	-0.023
St. Kitts & Nevis	-0.010	-0.021	-0.020	-0.023	-0.019	-0.021	-0.024	-0.023
Uruguay	-0.010	-0.021	-0.020	-0.023	-0.019	-0.021	-0.024	-0.022
Slovakia	-0.010	-0.020	-0.020	-0.023	-0.019	-0.021	-0.024	-0.022
Hungary	-0.009	-0.020	-0.020	-0.022	-0.018	-0.021	-0.024	-0.022
Argentina	-0.009	-0.020	-0.020	-0.022	-0.018	-0.020	-0.023	-0.022
Oman	-0.009	-0.020	-0.020	-0.022	-0.018	-0.020	-0.023	-0.022
Qatar	-0.008	-0.020	-0.020	-0.022	-0.018	-0.020	-0.023	-0.022
Slovenia	-0.008	-0.020	-0.020	-0.022	-0.018	-0.020	-0.023	-0.022
<i>High-income countries:</i>								
Czech Republic	-0.008	-0.020	-0.020	-0.022	-0.018	-0.020	-0.023	-0.021
Greece	-0.008	-0.020	-0.020	-0.021	-0.018	-0.020	-0.022	-0.021
Korea	-0.008	-0.020	-0.020	-0.021	-0.018	-0.020	-0.022	-0.021
Portugal	-0.007	-0.020	-0.020	-0.021	-0.018	-0.020	-0.022	-0.021
Spain	-0.007	-0.020	-0.020	-0.021	-0.018	-0.020	-0.022	-0.021
Ireland	-0.007	-0.020	-0.020	-0.021	-0.018	-0.020	-0.022	-0.021
Singapore	-0.007	-0.020	-0.019	-0.021	-0.018	-0.020	-0.022	-0.021
Mauritius	-0.007	-0.019	-0.019	-0.021	-0.018	-0.020	-0.022	-0.021
Israel	-0.007	-0.019	-0.019	-0.021	-0.018	-0.020	-0.022	-0.021
New Zealand	-0.007	-0.019	-0.019	-0.021	-0.018	-0.020	-0.022	-0.021

—Continued

Appendix table 5

**Cournot cross-price elasticity with changes in price for clothing and footwear, 114 countries in 1996<sup>1</sup>—Continued**

	Food, beverage, & tobacco	Gross rent, fuel, & power	House operations	Medical care	Education	Transport & communica- tion	Recreation <sup>2</sup>	Other
<i>High-income countries—Continued</i>								
Finland	-0.007	-0.019	-0.019	-0.021	-0.018	-0.020	-0.022	-0.021
Bahamas	-0.006	-0.019	-0.019	-0.021	-0.018	-0.019	-0.022	-0.021
Sweden	-0.006	-0.019	-0.019	-0.021	-0.018	-0.019	-0.022	-0.021
Netherlands	-0.006	-0.019	-0.019	-0.021	-0.018	-0.019	-0.022	-0.021
France	-0.005	-0.019	-0.019	-0.021	-0.018	-0.019	-0.021	-0.020
United Kingdom	-0.005	-0.019	-0.019	-0.021	-0.018	-0.019	-0.021	-0.020
Belgium	-0.005	-0.019	-0.019	-0.021	-0.018	-0.019	-0.021	-0.020
Norway	-0.005	-0.019	-0.019	-0.021	-0.018	-0.019	-0.021	-0.020
Italy	-0.005	-0.019	-0.019	-0.020	-0.018	-0.019	-0.021	-0.020
Austria	-0.005	-0.019	-0.019	-0.020	-0.018	-0.019	-0.021	-0.020
Germany	-0.005	-0.019	-0.019	-0.020	-0.018	-0.019	-0.021	-0.020
Australia	-0.005	-0.019	-0.019	-0.020	-0.018	-0.019	-0.021	-0.020
Japan	-0.005	-0.019	-0.019	-0.020	-0.017	-0.019	-0.021	-0.020
Canada	-0.005	-0.019	-0.019	-0.020	-0.017	-0.019	-0.021	-0.020
Bermuda	-0.004	-0.019	-0.019	-0.020	-0.017	-0.019	-0.021	-0.020
Switzerland	-0.004	-0.019	-0.019	-0.020	-0.017	-0.019	-0.021	-0.020
Barbados	-0.004	-0.019	-0.019	-0.020	-0.017	-0.019	-0.021	-0.020
Hong Kong	-0.004	-0.019	-0.019	-0.020	-0.017	-0.019	-0.021	-0.020
Iceland	-0.004	-0.019	-0.019	-0.020	-0.017	-0.019	-0.021	-0.020
Denmark	-0.004	-0.019	-0.019	-0.020	-0.017	-0.019	-0.021	-0.020
Luxembourg	-0.002	-0.019	-0.018	-0.020	-0.017	-0.019	-0.020	-0.020
United States	-0.002	-0.018	-0.018	-0.020	-0.017	-0.019	-0.020	-0.020
<i>Low-income average</i>	-0.014	-0.024	-0.024	-0.031	-0.021	-0.024	-0.043	-0.030
<i>Middle-income average</i>	-0.011	-0.021	-0.021	-0.024	-0.019	-0.021	-0.025	-0.023
<i>High-income average</i>	-0.006	-0.019	-0.019	-0.021	-0.018	-0.019	-0.021	-0.021

<sup>1</sup>Countries are reported based on ascending per capita real income levels.

<sup>2</sup>As the estimated budget share was negative for Tanzania we do not report the elasticity for this country.

Source: Authors' calculation using the 1996 ICP data.



**Slutsky cross-price elasticity with price change for gross rent/fuel/power, 114 countries in 1996<sup>1</sup>**

	Food, beverage, & tobacco	Clothing & footwear	House operations	Medical care	Education	Transport & communica- tion	Recreation <sup>2</sup>	Other
<i>Low-income countries:</i>								
Tanzania	0.065	0.075	0.110	0.240	0.089	0.115		0.213
Nigeria	0.070	0.082	0.117	0.192	0.097	0.121	0.580	0.181
Tajikistan	0.072	0.085	0.120	0.183	0.100	0.124	0.366	0.175
Zambia	0.072	0.086	0.121	0.182	0.101	0.124	0.348	0.174
Yemen	0.072	0.086	0.121	0.182	0.101	0.124	0.346	0.174
Malawi	0.073	0.088	0.123	0.178	0.103	0.126	0.301	0.171
Madagascar	0.073	0.088	0.123	0.178	0.103	0.126	0.301	0.171
Mali	0.074	0.088	0.123	0.178	0.104	0.127	0.291	0.171
Mongolia	0.074	0.089	0.123	0.177	0.104	0.127	0.289	0.171
Benin	0.076	0.093	0.128	0.173	0.109	0.131	0.242	0.168
Kenya	0.077	0.095	0.130	0.172	0.111	0.133	0.230	0.167
Sierra Leone	0.078	0.096	0.131	0.171	0.113	0.134	0.222	0.167
Nepal	0.078	0.096	0.131	0.171	0.113	0.134	0.222	0.167
Turkmenistan	0.078	0.097	0.132	0.171	0.114	0.135	0.219	0.167
Congo	0.079	0.098	0.134	0.170	0.115	0.137	0.214	0.167
Senegal	0.080	0.100	0.135	0.170	0.117	0.138	0.210	0.167
Vietnam	0.080	0.100	0.135	0.170	0.117	0.138	0.209	0.167
Bangladesh	0.080	0.100	0.136	0.170	0.118	0.138	0.208	0.167
Pakistan	0.081	0.103	0.139	0.170	0.121	0.141	0.203	0.167
Azerbaijan	0.081	0.104	0.140	0.171	0.122	0.142	0.201	0.168
Côte d'Ivoire	0.081	0.105	0.140	0.171	0.123	0.143	0.200	0.168
Paraguay	0.082	0.105	0.141	0.171	0.123	0.143	0.200	0.168
Uzbekistan	0.082	0.106	0.142	0.171	0.124	0.144	0.199	0.168
Kyrgyzstan	0.082	0.106	0.142	0.171	0.124	0.144	0.198	0.168
Cameroon	0.082	0.106	0.142	0.171	0.124	0.144	0.198	0.168
Moldova	0.082	0.106	0.142	0.171	0.125	0.144	0.198	0.168
Bolivia	0.082	0.107	0.143	0.171	0.126	0.145	0.197	0.169
Ecuador	0.082	0.107	0.143	0.171	0.126	0.146	0.197	0.169
Armenia	0.082	0.108	0.144	0.172	0.127	0.147	0.196	0.169
Sri Lanka	0.083	0.108	0.144	0.172	0.127	0.147	0.196	0.169
Jordan	0.083	0.109	0.145	0.172	0.128	0.148	0.195	0.170
Albania	0.083	0.111	0.147	0.173	0.130	0.149	0.195	0.171
Indonesia	0.083	0.111	0.147	0.173	0.131	0.150	0.194	0.171
Jamaica	0.083	0.111	0.147	0.173	0.131	0.150	0.194	0.171
Zimbabwe	0.083	0.111	0.148	0.173	0.131	0.150	0.194	0.171
Guinea	0.083	0.112	0.148	0.173	0.131	0.150	0.194	0.171
Syria	0.083	0.113	0.149	0.174	0.133	0.152	0.194	0.172
Georgia	0.083	0.113	0.150	0.174	0.133	0.152	0.194	0.172
<i>Middle-income countries:</i>								
Ukraine	0.084	0.115	0.151	0.175	0.135	0.154	0.193	0.173
Philippines	0.084	0.116	0.153	0.176	0.137	0.155	0.193	0.174
Peru	0.083	0.117	0.153	0.176	0.137	0.156	0.193	0.174
Botswana	0.083	0.117	0.153	0.176	0.137	0.156	0.193	0.174
Thailand	0.083	0.117	0.154	0.176	0.138	0.156	0.193	0.174
Morocco	0.083	0.118	0.154	0.177	0.138	0.157	0.193	0.175
Venezuela	0.083	0.118	0.155	0.177	0.138	0.157	0.193	0.175
Macedonia	0.083	0.119	0.156	0.177	0.139	0.158	0.193	0.175
Belize	0.083	0.119	0.156	0.177	0.139	0.158	0.193	0.176

—Continued

**Slutsky cross-price elasticity with price change for gross rent/fuel/power, 114 countries in 1996<sup>1</sup>—Continued**

	Food, beverage, & tobacco	Clothing & footwear	House operations	Medical care	Education	Transport & communica- tion	Recreation <sup>2</sup>	Other
<i>Middle-income countries—Continued</i>								
Egypt	0.083	0.119	0.156	0.177	0.140	0.158	0.193	0.176
St. Vincent & Grenadines	0.083	0.119	0.156	0.177	0.140	0.158	0.193	0.176
Swaziland	0.083	0.120	0.157	0.178	0.141	0.159	0.193	0.176
Lebanon	0.083	0.120	0.157	0.178	0.141	0.159	0.193	0.177
Belarus	0.083	0.120	0.157	0.178	0.141	0.160	0.193	0.177
Kazakhstan	0.083	0.121	0.157	0.178	0.142	0.160	0.193	0.177
Dominica	0.083	0.121	0.158	0.178	0.142	0.160	0.193	0.177
Latvia	0.083	0.122	0.159	0.179	0.143	0.161	0.193	0.178
St. Lucia	0.083	0.122	0.159	0.179	0.143	0.161	0.194	0.178
Brazil	0.083	0.122	0.159	0.179	0.143	0.161	0.194	0.178
Bulgaria	0.083	0.122	0.159	0.179	0.143	0.161	0.194	0.178
Russia	0.083	0.122	0.160	0.180	0.144	0.162	0.194	0.178
Fiji	0.082	0.123	0.160	0.180	0.145	0.162	0.194	0.179
Grenada	0.082	0.123	0.160	0.180	0.145	0.162	0.194	0.179
Turkey	0.082	0.123	0.161	0.180	0.145	0.163	0.194	0.179
Lithuania	0.082	0.124	0.161	0.181	0.146	0.163	0.194	0.179
Romania	0.082	0.124	0.162	0.181	0.146	0.164	0.194	0.180
Iran	0.081	0.125	0.163	0.182	0.147	0.165	0.195	0.180
Mexico	0.081	0.125	0.163	0.182	0.147	0.165	0.195	0.181
Bahrain	0.081	0.126	0.163	0.182	0.148	0.165	0.195	0.181
Chile	0.081	0.126	0.164	0.183	0.148	0.166	0.195	0.181
Antigua & Barbuda	0.081	0.126	0.164	0.183	0.148	0.166	0.195	0.181
Poland	0.080	0.127	0.164	0.183	0.149	0.166	0.195	0.182
Trinidad & Tobago	0.080	0.127	0.165	0.183	0.150	0.167	0.195	0.182
Estonia	0.080	0.128	0.166	0.184	0.150	0.168	0.196	0.182
Gabon	0.080	0.128	0.166	0.184	0.151	0.168	0.196	0.183
Tunisia	0.079	0.128	0.166	0.184	0.151	0.168	0.196	0.183
St. Kitts & Nevis	0.079	0.129	0.167	0.185	0.151	0.168	0.196	0.183
Uruguay	0.079	0.129	0.167	0.185	0.151	0.169	0.196	0.183
Slovakia	0.079	0.129	0.167	0.185	0.152	0.169	0.196	0.184
Hungary	0.077	0.131	0.169	0.186	0.154	0.171	0.197	0.185
Argentina	0.075	0.133	0.171	0.188	0.156	0.173	0.198	0.187
Oman	0.074	0.133	0.172	0.189	0.157	0.174	0.199	0.187
Qatar	0.073	0.135	0.173	0.189	0.158	0.175	0.199	0.188
Slovenia	0.072	0.135	0.174	0.190	0.159	0.176	0.200	0.189
<i>High-income countries:</i>								
Czech Republic	0.071	0.136	0.174	0.190	0.160	0.176	0.200	0.189
Greece	0.069	0.137	0.176	0.192	0.161	0.178	0.201	0.190
Korea	0.068	0.137	0.176	0.192	0.162	0.178	0.201	0.191
Portugal	0.067	0.138	0.177	0.192	0.162	0.179	0.201	0.191
Spain	0.067	0.138	0.177	0.192	0.162	0.179	0.201	0.191
Ireland	0.066	0.138	0.178	0.193	0.163	0.179	0.202	0.192
Singapore	0.065	0.139	0.178	0.193	0.164	0.180	0.202	0.192
Mauritius	0.063	0.140	0.179	0.194	0.165	0.181	0.203	0.193
Israel	0.062	0.140	0.180	0.195	0.165	0.181	0.203	0.194
New Zealand	0.061	0.140	0.180	0.195	0.166	0.182	0.203	0.194

—Continued

**Slutsky cross-price elasticity with price change for gross rent/fuel/power, 114 countries in 1996<sup>1</sup>—Continued**

	Food, beverage, & tobacco	Clothing & footwear	House operations	Medical care	Education	Transport & communica- tion	Recreation <sup>2</sup>	Other
<i>High-income countries—Continued</i>								
Finland	0.061	0.141	0.180	0.195	0.166	0.182	0.203	0.194
Bahamas	0.060	0.141	0.180	0.195	0.166	0.182	0.204	0.194
Sweden	0.057	0.142	0.182	0.196	0.168	0.184	0.205	0.195
Netherlands	0.056	0.142	0.182	0.197	0.168	0.184	0.205	0.196
France	0.053	0.143	0.183	0.198	0.169	0.185	0.205	0.197
United Kingdom	0.052	0.143	0.183	0.198	0.169	0.185	0.206	0.197
Belgium	0.052	0.144	0.184	0.198	0.169	0.185	0.206	0.197
Norway	0.051	0.144	0.184	0.198	0.170	0.185	0.206	0.197
Italy	0.051	0.144	0.184	0.198	0.170	0.185	0.206	0.197
Austria	0.049	0.144	0.184	0.198	0.170	0.186	0.206	0.197
Germany	0.049	0.144	0.184	0.198	0.170	0.186	0.206	0.197
Australia	0.048	0.145	0.185	0.199	0.171	0.186	0.206	0.198
Japan	0.047	0.145	0.185	0.199	0.171	0.187	0.207	0.198
Canada	0.046	0.145	0.185	0.199	0.171	0.187	0.207	0.198
Bermuda	0.043	0.146	0.186	0.200	0.172	0.188	0.207	0.199
Switzerland	0.042	0.146	0.187	0.200	0.173	0.188	0.208	0.199
Barbados	0.041	0.146	0.187	0.200	0.173	0.188	0.208	0.199
Hong Kong	0.041	0.146	0.187	0.200	0.173	0.188	0.208	0.199
Iceland	0.041	0.146	0.187	0.200	0.173	0.188	0.208	0.199
Denmark	0.040	0.146	0.187	0.201	0.173	0.189	0.208	0.200
Luxembourg	0.021	0.150	0.191	0.204	0.177	0.192	0.211	0.203
United States	0.017	0.150	0.191	0.204	0.178	0.193	0.211	0.204
<i>Low-income average</i>	0.079	0.100	0.136	0.175	0.118	0.139	0.236	0.171
<i>Middle-income average</i>	0.081	0.124	0.161	0.181	0.145	0.163	0.195	0.179
<i>High-income average</i>	0.052	0.143	0.183	0.197	0.168	0.184	0.205	0.196

<sup>1</sup>Countries are reported based on ascending per capita real income levels.

<sup>2</sup>As the estimated budget share was negative for Tanzania we do not report the elasticity for this country.

Source: Authors' calculation using the 1996 ICP data.

**Cournot cross-price elasticity with price change for gross rent/fuel/power, 114 countries in 1996<sup>1</sup>**

	Food, beverage, & tobacco	Clothing & footwear	House operations	Medical care	Education	Transport & communica- tion	Recreation <sup>2</sup>	Other
<i>Low-income countries:</i>								
Tanzania	0.006	0.007	0.011	0.023	0.009	0.011		0.021
Nigeria	0.005	0.006	0.008	0.013	0.007	0.008	0.040	0.012
Tajikistan	0.004	0.005	0.007	0.011	0.006	0.007	0.021	0.010
Zambia	0.004	0.005	0.007	0.010	0.006	0.007	0.019	0.010
Yemen	0.004	0.005	0.007	0.010	0.006	0.007	0.019	0.010
Malawi	0.004	0.004	0.006	0.009	0.005	0.006	0.015	0.008
Madagascar	0.004	0.004	0.006	0.009	0.005	0.006	0.015	0.008
Mali	0.003	0.004	0.006	0.008	0.005	0.006	0.014	0.008
Mongolia	0.003	0.004	0.006	0.008	0.005	0.006	0.014	0.008
Benin	0.003	0.003	0.004	0.006	0.004	0.004	0.008	0.006
Kenya	0.002	0.003	0.004	0.005	0.003	0.004	0.007	0.005
Sierra Leone	0.002	0.002	0.003	0.004	0.003	0.003	0.005	0.004
Nepal	0.002	0.002	0.003	0.004	0.003	0.003	0.005	0.004
Turkmenistan	0.002	0.002	0.003	0.004	0.002	0.003	0.005	0.004
Congo	0.001	0.002	0.002	0.003	0.002	0.002	0.004	0.003
Senegal	0.001	0.001	0.002	0.002	0.002	0.002	0.003	0.002
Vietnam	0.001	0.001	0.002	0.002	0.002	0.002	0.003	0.002
Bangladesh	0.001	0.001	0.002	0.002	0.001	0.002	0.003	0.002
Pakistan	0.000	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Azerbaijan	0.000	0.000	0.000	0.001	0.000	0.000	0.001	0.000
Côte d'Ivoire	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Paraguay	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Uzbekistan	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Kyrgyzstan	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Cameroon	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Moldova	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Bolivia	0.000	0.000	0.000	-0.001	0.000	0.000	-0.001	-0.001
Ecuador	0.000	0.000	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001
Armenia	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001
Sri Lanka	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001
Jordan	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.002	-0.001
Albania	-0.001	-0.001	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002
Indonesia	-0.001	-0.001	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002
Jamaica	-0.001	-0.001	-0.002	-0.002	-0.002	-0.002	-0.003	-0.002
Zimbabwe	-0.001	-0.001	-0.002	-0.002	-0.002	-0.002	-0.003	-0.002
Guinea	-0.001	-0.002	-0.002	-0.002	-0.002	-0.002	-0.003	-0.002
Syria	-0.001	-0.002	-0.002	-0.003	-0.002	-0.002	-0.003	-0.003
Georgia	-0.001	-0.002	-0.003	-0.003	-0.002	-0.003	-0.003	-0.003
<i>Middle-income countries:</i>								
Ukraine	-0.002	-0.002	-0.003	-0.004	-0.003	-0.003	-0.004	-0.004
Philippines	-0.002	-0.003	-0.003	-0.004	-0.003	-0.004	-0.004	-0.004
Peru	-0.002	-0.003	-0.004	-0.004	-0.003	-0.004	-0.005	-0.004
Botswana	-0.002	-0.003	-0.004	-0.004	-0.003	-0.004	-0.005	-0.004
Thailand	-0.002	-0.003	-0.004	-0.004	-0.003	-0.004	-0.005	-0.004
Morocco	-0.002	-0.003	-0.004	-0.004	-0.004	-0.004	-0.005	-0.004
Venezuela	-0.002	-0.003	-0.004	-0.005	-0.004	-0.004	-0.005	-0.005
Macedonia	-0.002	-0.003	-0.004	-0.005	-0.004	-0.004	-0.005	-0.005
Belize	-0.002	-0.003	-0.004	-0.005	-0.004	-0.004	-0.005	-0.005

—Continued

**Cournot cross-price elasticity with price change for gross rent/fuel/power, 114 countries in 1996<sup>1</sup>—Continued**

	Food, beverage, & tobacco	Clothing & footwear	House operations	Medical care	Education	Transport & communica- tion	Recreation <sup>2</sup>	Other
<i>Middle-income countries—Continued</i>								
Egypt	-0.002	-0.003	-0.004	-0.005	-0.004	-0.004	-0.005	-0.005
St. Vincent & Grenadines	-0.002	-0.003	-0.004	-0.005	-0.004	-0.004	-0.005	-0.005
Swaziland	-0.002	-0.004	-0.005	-0.005	-0.004	-0.005	-0.006	-0.005
Lebanon	-0.003	-0.004	-0.005	-0.005	-0.004	-0.005	-0.006	-0.005
Belarus	-0.003	-0.004	-0.005	-0.005	-0.004	-0.005	-0.006	-0.005
Kazakhstan	-0.003	-0.004	-0.005	-0.005	-0.004	-0.005	-0.006	-0.005
Dominica	-0.003	-0.004	-0.005	-0.005	-0.004	-0.005	-0.006	-0.005
Latvia	-0.003	-0.004	-0.005	-0.006	-0.005	-0.005	-0.006	-0.006
St. Lucia	-0.003	-0.004	-0.005	-0.006	-0.005	-0.005	-0.006	-0.006
Brazil	-0.003	-0.004	-0.005	-0.006	-0.005	-0.005	-0.006	-0.006
Bulgaria	-0.003	-0.004	-0.005	-0.006	-0.005	-0.005	-0.006	-0.006
Russia	-0.003	-0.004	-0.005	-0.006	-0.005	-0.005	-0.007	-0.006
Fiji	-0.003	-0.004	-0.006	-0.006	-0.005	-0.006	-0.007	-0.006
Grenada	-0.003	-0.004	-0.006	-0.006	-0.005	-0.006	-0.007	-0.006
Turkey	-0.003	-0.004	-0.006	-0.006	-0.005	-0.006	-0.007	-0.006
Lithuania	-0.003	-0.005	-0.006	-0.007	-0.005	-0.006	-0.007	-0.007
Romania	-0.003	-0.005	-0.006	-0.007	-0.005	-0.006	-0.007	-0.007
Iran	-0.003	-0.005	-0.006	-0.007	-0.006	-0.006	-0.007	-0.007
Mexico	-0.003	-0.005	-0.006	-0.007	-0.006	-0.006	-0.008	-0.007
Bahrain	-0.003	-0.005	-0.007	-0.007	-0.006	-0.007	-0.008	-0.007
Chile	-0.003	-0.005	-0.007	-0.007	-0.006	-0.007	-0.008	-0.007
Antigua & Barbuda	-0.003	-0.005	-0.007	-0.007	-0.006	-0.007	-0.008	-0.007
Poland	-0.003	-0.005	-0.007	-0.008	-0.006	-0.007	-0.008	-0.008
Trinidad & Tobago	-0.003	-0.005	-0.007	-0.008	-0.006	-0.007	-0.008	-0.008
Estonia	-0.003	-0.005	-0.007	-0.008	-0.006	-0.007	-0.008	-0.008
Gabon	-0.003	-0.006	-0.007	-0.008	-0.007	-0.007	-0.008	-0.008
Tunisia	-0.003	-0.006	-0.007	-0.008	-0.007	-0.007	-0.009	-0.008
St. Kitts & Nevis	-0.004	-0.006	-0.007	-0.008	-0.007	-0.007	-0.009	-0.008
Uruguay	-0.004	-0.006	-0.007	-0.008	-0.007	-0.008	-0.009	-0.008
Slovakia	-0.004	-0.006	-0.008	-0.008	-0.007	-0.008	-0.009	-0.008
Hungary	-0.004	-0.006	-0.008	-0.009	-0.007	-0.008	-0.009	-0.009
Argentina	-0.004	-0.007	-0.009	-0.009	-0.008	-0.009	-0.010	-0.009
Oman	-0.004	-0.007	-0.009	-0.010	-0.008	-0.009	-0.010	-0.010
Qatar	-0.004	-0.007	-0.009	-0.010	-0.008	-0.009	-0.011	-0.010
Slovenia	-0.004	-0.007	-0.009	-0.010	-0.009	-0.009	-0.011	-0.010
<i>High-income countries:</i>								
Czech Republic	-0.004	-0.007	-0.010	-0.010	-0.009	-0.010	-0.011	-0.010
Greece	-0.004	-0.008	-0.010	-0.011	-0.009	-0.010	-0.011	-0.011
Korea	-0.004	-0.008	-0.010	-0.011	-0.009	-0.010	-0.011	-0.011
Portugal	-0.004	-0.008	-0.010	-0.011	-0.009	-0.010	-0.012	-0.011
Spain	-0.004	-0.008	-0.010	-0.011	-0.009	-0.010	-0.012	-0.011
Ireland	-0.004	-0.008	-0.010	-0.011	-0.010	-0.010	-0.012	-0.011
Singapore	-0.004	-0.008	-0.011	-0.011	-0.010	-0.011	-0.012	-0.011
Mauritius	-0.004	-0.008	-0.011	-0.012	-0.010	-0.011	-0.012	-0.012
Israel	-0.004	-0.009	-0.011	-0.012	-0.010	-0.011	-0.012	-0.012
New Zealand	-0.004	-0.009	-0.011	-0.012	-0.010	-0.011	-0.012	-0.012

—Continued

**Cournot cross-price elasticity with price change for gross rent/fuel/power, 114 countries in 1996<sup>1</sup>—Continued**

	Food, beverage, & tobacco	Clothing & footwear	House operations	Medical care	Education	Transport & communica- tion	Recreation <sup>2</sup>	Other
<i>High-income countries—Continued</i>								
Finland	-0.004	-0.009	-0.011	-0.012	-0.010	-0.011	-0.013	-0.012
Bahamas	-0.004	-0.009	-0.011	-0.012	-0.010	-0.011	-0.013	-0.012
Sweden	-0.004	-0.009	-0.012	-0.012	-0.011	-0.012	-0.013	-0.012
Netherlands	-0.004	-0.009	-0.012	-0.013	-0.011	-0.012	-0.013	-0.012
France	-0.003	-0.009	-0.012	-0.013	-0.011	-0.012	-0.013	-0.013
United Kingdom	-0.003	-0.009	-0.012	-0.013	-0.011	-0.012	-0.013	-0.013
Belgium	-0.003	-0.009	-0.012	-0.013	-0.011	-0.012	-0.013	-0.013
Norway	-0.003	-0.009	-0.012	-0.013	-0.011	-0.012	-0.013	-0.013
Italy	-0.003	-0.009	-0.012	-0.013	-0.011	-0.012	-0.014	-0.013
Austria	-0.003	-0.010	-0.012	-0.013	-0.011	-0.012	-0.014	-0.013
Germany	-0.003	-0.010	-0.012	-0.013	-0.011	-0.012	-0.014	-0.013
Australia	-0.003	-0.010	-0.012	-0.013	-0.011	-0.012	-0.014	-0.013
Japan	-0.003	-0.010	-0.012	-0.013	-0.011	-0.013	-0.014	-0.013
Canada	-0.003	-0.010	-0.013	-0.013	-0.012	-0.013	-0.014	-0.013
Bermuda	-0.003	-0.010	-0.013	-0.014	-0.012	-0.013	-0.014	-0.014
Switzerland	-0.003	-0.010	-0.013	-0.014	-0.012	-0.013	-0.014	-0.014
Barbados	-0.003	-0.010	-0.013	-0.014	-0.012	-0.013	-0.014	-0.014
Hong Kong	-0.003	-0.010	-0.013	-0.014	-0.012	-0.013	-0.014	-0.014
Iceland	-0.003	-0.010	-0.013	-0.014	-0.012	-0.013	-0.014	-0.014
Denmark	-0.003	-0.010	-0.013	-0.014	-0.012	-0.013	-0.014	-0.014
Luxembourg	-0.002	-0.011	-0.014	-0.015	-0.013	-0.014	-0.015	-0.015
United States	-0.001	-0.011	-0.014	-0.015	-0.013	-0.014	-0.016	-0.015
<i>Low-income average</i>	0.001	0.001	0.002	0.003	0.002	0.002	0.005	0.003
<i>Middle-income average</i>	-0.003	-0.004	-0.006	-0.007	-0.005	-0.006	-0.007	-0.006
<i>High-income average</i>	-0.003	-0.009	-0.012	-0.013	-0.011	-0.012	-0.013	-0.013

<sup>1</sup>Countries are reported based on ascending per capita real income levels.

<sup>2</sup>As the estimated budget share was negative for Tanzania we do not report the elasticity for this country.

Source: Authors' calculation using the 1996 ICP data.

**Slutsky cross-price elasticity with price change for house furnishings and operations, 114 countries in 1996<sup>1</sup>**

	Food, beverage, & tobacco	Clothing & footwear	Gross rent, fuel & power	Medical care	Education	Transport & communica- tion	Recreation <sup>2</sup>	Other
<i>Low-income countries:</i>								
Tanzania	0.028	0.033	0.048	0.104	0.039	0.050		0.093
Nigeria	0.030	0.036	0.051	0.084	0.042	0.053	0.252	0.079
Tajikistan	0.031	0.037	0.053	0.080	0.044	0.054	0.159	0.076
Zambia	0.031	0.037	0.053	0.079	0.044	0.054	0.151	0.076
Yemen	0.031	0.037	0.053	0.079	0.044	0.054	0.151	0.075
Malawi	0.032	0.038	0.054	0.077	0.045	0.055	0.131	0.074
Madagascar	0.032	0.038	0.054	0.077	0.045	0.055	0.131	0.074
Mali	0.032	0.038	0.054	0.077	0.045	0.055	0.127	0.074
Mongolia	0.032	0.038	0.054	0.077	0.045	0.055	0.126	0.074
Benin	0.033	0.040	0.056	0.075	0.047	0.057	0.105	0.073
Kenya	0.033	0.041	0.057	0.074	0.048	0.058	0.100	0.072
Sierra Leone	0.034	0.042	0.057	0.074	0.049	0.058	0.096	0.072
Nepal	0.034	0.042	0.057	0.074	0.049	0.058	0.096	0.072
Turkmenistan	0.034	0.042	0.058	0.074	0.049	0.059	0.095	0.072
Congo	0.034	0.043	0.058	0.074	0.050	0.059	0.093	0.072
Senegal	0.034	0.043	0.059	0.074	0.051	0.060	0.091	0.072
Vietnam	0.035	0.043	0.059	0.074	0.051	0.060	0.090	0.072
Bangladesh	0.035	0.043	0.059	0.074	0.051	0.060	0.090	0.072
Pakistan	0.035	0.045	0.060	0.074	0.052	0.061	0.088	0.072
Azerbaijan	0.035	0.045	0.061	0.074	0.053	0.062	0.087	0.073
Côte d'Ivoire	0.035	0.045	0.061	0.074	0.053	0.062	0.087	0.073
Paraguay	0.035	0.045	0.061	0.074	0.053	0.062	0.086	0.073
Uzbekistan	0.035	0.046	0.062	0.074	0.054	0.062	0.086	0.073
Kyrgyzstan	0.035	0.046	0.062	0.074	0.054	0.062	0.086	0.073
Cameroon	0.035	0.046	0.062	0.074	0.054	0.063	0.086	0.073
Moldova	0.035	0.046	0.062	0.074	0.054	0.063	0.086	0.073
Bolivia	0.036	0.046	0.062	0.074	0.054	0.063	0.085	0.073
Ecuador	0.036	0.046	0.062	0.074	0.055	0.063	0.085	0.073
Armenia	0.036	0.047	0.063	0.074	0.055	0.063	0.085	0.073
Sri Lanka	0.036	0.047	0.063	0.074	0.055	0.063	0.085	0.073
Jordan	0.036	0.047	0.063	0.074	0.056	0.064	0.085	0.073
Albania	0.036	0.048	0.064	0.075	0.056	0.065	0.084	0.074
Indonesia	0.036	0.048	0.064	0.075	0.056	0.065	0.084	0.074
Jamaica	0.036	0.048	0.064	0.075	0.057	0.065	0.084	0.074
Zimbabwe	0.036	0.048	0.064	0.075	0.057	0.065	0.084	0.074
Guinea	0.036	0.048	0.064	0.075	0.057	0.065	0.084	0.074
Syria	0.036	0.049	0.065	0.075	0.057	0.066	0.084	0.074
Georgia	0.036	0.049	0.065	0.075	0.057	0.066	0.084	0.074
<i>Middle-income countries:</i>								
Ukraine	0.036	0.050	0.066	0.076	0.058	0.066	0.084	0.075
Philippines	0.036	0.050	0.066	0.076	0.059	0.067	0.083	0.075
Peru	0.036	0.050	0.067	0.076	0.059	0.067	0.083	0.075
Botswana	0.036	0.051	0.067	0.076	0.059	0.067	0.083	0.075
Thailand	0.036	0.051	0.067	0.076	0.059	0.067	0.083	0.075
Morocco	0.036	0.051	0.067	0.076	0.060	0.068	0.083	0.076
Venezuela	0.036	0.051	0.067	0.076	0.060	0.068	0.083	0.076
Macedonia	0.036	0.051	0.067	0.077	0.060	0.068	0.083	0.076
Belize	0.036	0.051	0.067	0.077	0.060	0.068	0.083	0.076

—Continued



**Slutsky cross-price elasticity with price change for house furnishings and operations, 114 countries in 1996<sup>1</sup>—Continued**

	Food, beverage, & tobacco	Clothing & footwear	Gross rent, fuel, & power	Medical care	Education	Transport & communica- tion	Recreation <sup>2</sup>	Other
<i>Middle-income countries—Continued</i>								
Egypt	0.036	0.051	0.067	0.077	0.060	0.068	0.083	0.076
St. Vincent & Grenadines	0.036	0.051	0.067	0.077	0.060	0.068	0.083	0.076
Swaziland	0.036	0.052	0.068	0.077	0.061	0.069	0.083	0.076
Lebanon	0.036	0.052	0.068	0.077	0.061	0.069	0.083	0.076
Belarus	0.036	0.052	0.068	0.077	0.061	0.069	0.083	0.076
Kazakhstan	0.036	0.052	0.068	0.077	0.061	0.069	0.083	0.076
Dominica	0.036	0.052	0.068	0.077	0.061	0.069	0.083	0.076
Latvia	0.036	0.052	0.069	0.077	0.062	0.069	0.084	0.077
St. Lucia	0.036	0.053	0.069	0.077	0.062	0.069	0.084	0.077
Brazil	0.036	0.053	0.069	0.077	0.062	0.070	0.084	0.077
Bulgaria	0.036	0.053	0.069	0.077	0.062	0.070	0.084	0.077
Russia	0.036	0.053	0.069	0.078	0.062	0.070	0.084	0.077
Fiji	0.036	0.053	0.069	0.078	0.062	0.070	0.084	0.077
Grenada	0.036	0.053	0.069	0.078	0.062	0.070	0.084	0.077
Turkey	0.035	0.053	0.070	0.078	0.063	0.070	0.084	0.077
Lithuania	0.035	0.054	0.070	0.078	0.063	0.071	0.084	0.077
Romania	0.035	0.054	0.070	0.078	0.063	0.071	0.084	0.078
Iran	0.035	0.054	0.070	0.078	0.063	0.071	0.084	0.078
Mexico	0.035	0.054	0.071	0.079	0.064	0.071	0.084	0.078
Bahrain	0.035	0.054	0.071	0.079	0.064	0.071	0.084	0.078
Chile	0.035	0.054	0.071	0.079	0.064	0.072	0.084	0.078
Antigua & Barbuda	0.035	0.054	0.071	0.079	0.064	0.072	0.084	0.078
Poland	0.035	0.055	0.071	0.079	0.064	0.072	0.084	0.078
Trinidad & Tobago	0.035	0.055	0.071	0.079	0.065	0.072	0.084	0.079
Estonia	0.034	0.055	0.072	0.079	0.065	0.072	0.084	0.079
Gabon	0.034	0.055	0.072	0.079	0.065	0.072	0.084	0.079
Tunisia	0.034	0.055	0.072	0.080	0.065	0.073	0.085	0.079
St. Kitts & Nevis	0.034	0.056	0.072	0.080	0.065	0.073	0.085	0.079
Uruguay	0.034	0.056	0.072	0.080	0.065	0.073	0.085	0.079
Slovakia	0.034	0.056	0.072	0.080	0.066	0.073	0.085	0.079
Hungary	0.033	0.056	0.073	0.080	0.066	0.074	0.085	0.080
Argentina	0.032	0.057	0.074	0.081	0.067	0.075	0.085	0.080
Oman	0.032	0.058	0.074	0.081	0.068	0.075	0.086	0.081
Qatar	0.031	0.058	0.075	0.082	0.068	0.075	0.086	0.081
Slovenia	0.031	0.058	0.075	0.082	0.069	0.076	0.086	0.081
<i>High-income countries:</i>								
Czech Republic	0.031	0.058	0.075	0.082	0.069	0.076	0.086	0.082
Greece	0.030	0.059	0.076	0.083	0.070	0.077	0.087	0.082
Korea	0.029	0.059	0.076	0.083	0.070	0.077	0.087	0.082
Portugal	0.029	0.059	0.076	0.083	0.070	0.077	0.087	0.082
Spain	0.029	0.059	0.076	0.083	0.070	0.077	0.087	0.082
Ireland	0.028	0.060	0.077	0.083	0.070	0.077	0.087	0.083
Singapore	0.028	0.060	0.077	0.083	0.071	0.078	0.087	0.083
Mauritius	0.027	0.060	0.077	0.084	0.071	0.078	0.087	0.083
Israel	0.027	0.060	0.078	0.084	0.071	0.078	0.088	0.083
New Zealand	0.026	0.061	0.078	0.084	0.071	0.078	0.088	0.084

—Continued

Appendix table 8

**Slutsky cross-price elasticity with price change for house furnishings and operations, 114 countries in 1996<sup>1</sup>—Continued**

	Food, beverage, & tobacco	Clothing & footwear	Gross rent, fuel & power	Medical care	Education	Transport & communica- tion	Recreation <sup>2</sup>	Other
<i>High-income countries—Continued</i>								
Finland	0.026	0.061	0.078	0.084	0.071	0.078	0.088	0.084
Bahamas	0.026	0.061	0.078	0.084	0.072	0.078	0.088	0.084
Sweden	0.024	0.061	0.079	0.085	0.072	0.079	0.088	0.084
Netherlands	0.024	0.061	0.079	0.085	0.072	0.079	0.088	0.084
France	0.023	0.062	0.079	0.085	0.073	0.080	0.089	0.085
United Kingdom	0.023	0.062	0.079	0.085	0.073	0.080	0.089	0.085
Belgium	0.022	0.062	0.079	0.085	0.073	0.080	0.089	0.085
Norway	0.022	0.062	0.079	0.085	0.073	0.080	0.089	0.085
Italy	0.022	0.062	0.079	0.085	0.073	0.080	0.089	0.085
Austria	0.021	0.062	0.080	0.085	0.073	0.080	0.089	0.085
Germany	0.021	0.062	0.080	0.085	0.073	0.080	0.089	0.085
Australia	0.021	0.062	0.080	0.086	0.074	0.080	0.089	0.085
Japan	0.020	0.062	0.080	0.086	0.074	0.080	0.089	0.085
Canada	0.020	0.063	0.080	0.086	0.074	0.081	0.089	0.085
Bermuda	0.018	0.063	0.080	0.086	0.074	0.081	0.089	0.086
Switzerland	0.018	0.063	0.081	0.086	0.074	0.081	0.089	0.086
Barbados	0.018	0.063	0.081	0.086	0.074	0.081	0.089	0.086
Hong Kong	0.018	0.063	0.081	0.086	0.074	0.081	0.090	0.086
Iceland	0.018	0.063	0.081	0.086	0.074	0.081	0.090	0.086
Denmark	0.017	0.063	0.081	0.086	0.075	0.081	0.090	0.086
Luxembourg	0.009	0.065	0.082	0.088	0.076	0.083	0.091	0.087
United States	0.007	0.065	0.083	0.088	0.077	0.083	0.091	0.088
<i>Low-income average</i>	0.034	0.043	0.059	0.076	0.051	0.060	0.102	0.074
<i>Middle-income average</i>	0.035	0.053	0.070	0.078	0.063	0.070	0.084	0.077
<i>High-income average</i>	0.023	0.061	0.079	0.085	0.073	0.079	0.088	0.084

<sup>1</sup>Countries are reported based on ascending per capita real income levels.

<sup>2</sup>As the estimated budget share was negative for Tanzania we do not report the elasticity for this country.

Source: Authors' calculation using the 1996 ICP data.

**Cournot cross-price elasticity with price change for house furnishings and operations, 114 countries in 1996<sup>1</sup>**

	Food, beverage, & tobacco	Clothing & footwear	Gross rent, fuel, & power	Medical care	Education	Transport & communica- tion	Recreation <sup>2</sup>	Other
<i>Low-income countries:</i>								
Tanzania	0.003	0.003	0.004	0.009	0.003	0.004		0.008
Nigeria	0.002	0.002	0.003	0.005	0.003	0.003	0.016	0.005
Tajikistan	0.002	0.002	0.003	0.004	0.002	0.003	0.008	0.004
Zambia	0.002	0.002	0.003	0.004	0.002	0.003	0.008	0.004
Yemen	0.002	0.002	0.003	0.004	0.002	0.003	0.007	0.004
Malawi	0.001	0.002	0.002	0.003	0.002	0.002	0.006	0.003
Madagascar	0.001	0.002	0.002	0.003	0.002	0.002	0.006	0.003
Mali	0.001	0.002	0.002	0.003	0.002	0.002	0.005	0.003
Mongolia	0.001	0.002	0.002	0.003	0.002	0.002	0.005	0.003
Benin	0.001	0.001	0.002	0.002	0.001	0.002	0.003	0.002
Kenya	0.001	0.001	0.001	0.002	0.001	0.001	0.002	0.002
Sierra Leone	0.001	0.001	0.001	0.001	0.001	0.001	0.002	0.001
Nepal	0.001	0.001	0.001	0.001	0.001	0.001	0.002	0.001
Turkmenistan	0.001	0.001	0.001	0.001	0.001	0.001	0.002	0.001
Congo	0.000	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Senegal	0.000	0.000	0.001	0.001	0.001	0.001	0.001	0.001
Vietnam	0.000	0.000	0.001	0.001	0.000	0.001	0.001	0.001
Bangladesh	0.000	0.000	0.000	0.001	0.000	0.001	0.001	0.001
Pakistan	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Azerbaijan	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Côte d'Ivoire	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Paraguay	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Uzbekistan	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Kyrgyzstan	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Cameroon	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Moldova	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Bolivia	0.000	0.000	0.000	-0.001	0.000	0.000	-0.001	-0.001
Ecuador	0.000	0.000	0.000	-0.001	0.000	-0.001	-0.001	-0.001
Armenia	0.000	0.000	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001
Sri Lanka	0.000	0.000	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001
Jordan	0.000	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001
Albania	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001
Indonesia	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001
Jamaica	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001
Zimbabwe	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001
Guinea	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001
Syria	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.002	-0.001
Georgia	-0.001	-0.001	-0.001	-0.002	-0.001	-0.001	-0.002	-0.001
<i>Middle-income countries:</i>								
Ukraine	-0.001	-0.001	-0.002	-0.002	-0.001	-0.002	-0.002	-0.002
Philippines	-0.001	-0.001	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002
Peru	-0.001	-0.001	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002
Botswana	-0.001	-0.001	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002
Thailand	-0.001	-0.001	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002
Morocco	-0.001	-0.001	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002
Venezuela	-0.001	-0.001	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002
Macedonia	-0.001	-0.002	-0.002	-0.002	-0.002	-0.002	-0.003	-0.002
Belize	-0.001	-0.002	-0.002	-0.002	-0.002	-0.002	-0.003	-0.002

—Continued

**Cournot cross-price elasticity with price change for house furnishings and operations, 114 countries in 1996<sup>1</sup>—Continued**

	Food, beverage, & tobacco	Clothing & footwear	Gross rent, fuel, & power	Medical care	Education	Transport & communica- tion	Recreation <sup>2</sup>	Other
<i>Middle-income countries—Continued</i>								
Egypt	-0.001	-0.002	-0.002	-0.002	-0.002	-0.002	-0.003	-0.002
St. Vincent & Grenadines	-0.001	-0.002	-0.002	-0.002	-0.002	-0.002	-0.003	-0.002
Swaziland	-0.001	-0.002	-0.002	-0.002	-0.002	-0.002	-0.003	-0.002
Lebanon	-0.001	-0.002	-0.002	-0.003	-0.002	-0.002	-0.003	-0.003
Belarus	-0.001	-0.002	-0.002	-0.003	-0.002	-0.002	-0.003	-0.003
Kazakhstan	-0.001	-0.002	-0.002	-0.003	-0.002	-0.002	-0.003	-0.003
Dominica	-0.001	-0.002	-0.002	-0.003	-0.002	-0.002	-0.003	-0.003
Latvia	-0.001	-0.002	-0.002	-0.003	-0.002	-0.002	-0.003	-0.003
St. Lucia	-0.001	-0.002	-0.002	-0.003	-0.002	-0.002	-0.003	-0.003
Brazil	-0.001	-0.002	-0.002	-0.003	-0.002	-0.002	-0.003	-0.003
Bulgaria	-0.001	-0.002	-0.002	-0.003	-0.002	-0.002	-0.003	-0.003
Russia	-0.001	-0.002	-0.003	-0.003	-0.002	-0.003	-0.003	-0.003
Fiji	-0.001	-0.002	-0.003	-0.003	-0.002	-0.003	-0.003	-0.003
Grenada	-0.001	-0.002	-0.003	-0.003	-0.002	-0.003	-0.003	-0.003
Turkey	-0.001	-0.002	-0.003	-0.003	-0.002	-0.003	-0.003	-0.003
Lithuania	-0.001	-0.002	-0.003	-0.003	-0.002	-0.003	-0.003	-0.003
Romania	-0.001	-0.002	-0.003	-0.003	-0.003	-0.003	-0.003	-0.003
Iran	-0.001	-0.002	-0.003	-0.003	-0.003	-0.003	-0.003	-0.003
Mexico	-0.001	-0.002	-0.003	-0.003	-0.003	-0.003	-0.004	-0.003
Bahrain	-0.001	-0.002	-0.003	-0.003	-0.003	-0.003	-0.004	-0.003
Chile	-0.001	-0.002	-0.003	-0.003	-0.003	-0.003	-0.004	-0.003
Antigua & Barbuda	-0.002	-0.002	-0.003	-0.003	-0.003	-0.003	-0.004	-0.003
Poland	-0.002	-0.002	-0.003	-0.003	-0.003	-0.003	-0.004	-0.003
Trinidad & Tobago	-0.002	-0.002	-0.003	-0.004	-0.003	-0.003	-0.004	-0.004
Estonia	-0.002	-0.003	-0.003	-0.004	-0.003	-0.003	-0.004	-0.004
Gabon	-0.002	-0.003	-0.003	-0.004	-0.003	-0.003	-0.004	-0.004
Tunisia	-0.002	-0.003	-0.003	-0.004	-0.003	-0.003	-0.004	-0.004
St. Kitts & Nevis	-0.002	-0.003	-0.003	-0.004	-0.003	-0.003	-0.004	-0.004
Uruguay	-0.002	-0.003	-0.003	-0.004	-0.003	-0.003	-0.004	-0.004
Slovakia	-0.002	-0.003	-0.003	-0.004	-0.003	-0.003	-0.004	-0.004
Hungary	-0.002	-0.003	-0.004	-0.004	-0.003	-0.004	-0.004	-0.004
Argentina	-0.002	-0.003	-0.004	-0.004	-0.004	-0.004	-0.005	-0.004
Oman	-0.002	-0.003	-0.004	-0.004	-0.004	-0.004	-0.005	-0.004
Qatar	-0.002	-0.003	-0.004	-0.005	-0.004	-0.004	-0.005	-0.005
Slovenia	-0.002	-0.003	-0.004	-0.005	-0.004	-0.004	-0.005	-0.005
<i>High-income countries:</i>								
Czech Republic	-0.002	-0.003	-0.004	-0.005	-0.004	-0.004	-0.005	-0.005
Greece	-0.002	-0.003	-0.004	-0.005	-0.004	-0.005	-0.005	-0.005
Korea	-0.002	-0.004	-0.005	-0.005	-0.004	-0.005	-0.005	-0.005
Portugal	-0.002	-0.004	-0.005	-0.005	-0.004	-0.005	-0.005	-0.005
Spain	-0.002	-0.004	-0.005	-0.005	-0.004	-0.005	-0.005	-0.005
Ireland	-0.002	-0.004	-0.005	-0.005	-0.004	-0.005	-0.005	-0.005
Singapore	-0.002	-0.004	-0.005	-0.005	-0.004	-0.005	-0.005	-0.005
Mauritius	-0.002	-0.004	-0.005	-0.005	-0.004	-0.005	-0.005	-0.005
Israel	-0.002	-0.004	-0.005	-0.005	-0.005	-0.005	-0.006	-0.005
New Zealand	-0.002	-0.004	-0.005	-0.005	-0.005	-0.005	-0.006	-0.005

—Continued

Appendix table 9

**Cournot cross-price elasticity with price change for house furnishings and operations, 114 countries in 1996<sup>1</sup>—Continued**

	Food, beverage, & tobacco	Clothing & footwear	Gross rent, fuel, & power	Medical care	Education	Transport & communica- tion	Recreation <sup>2</sup>	Other
<i>High-income countries—Continued</i>								
Finland	-0.002	-0.004	-0.005	-0.005	-0.005	-0.005	-0.006	-0.005
Bahamas	-0.002	-0.004	-0.005	-0.005	-0.005	-0.005	-0.006	-0.005
Sweden	-0.002	-0.004	-0.005	-0.006	-0.005	-0.005	-0.006	-0.006
Netherlands	-0.002	-0.004	-0.005	-0.006	-0.005	-0.005	-0.006	-0.006
France	-0.002	-0.004	-0.005	-0.006	-0.005	-0.005	-0.006	-0.006
United Kingdom	-0.002	-0.004	-0.005	-0.006	-0.005	-0.005	-0.006	-0.006
Belgium	-0.002	-0.004	-0.005	-0.006	-0.005	-0.005	-0.006	-0.006
Norway	-0.001	-0.004	-0.005	-0.006	-0.005	-0.005	-0.006	-0.006
Italy	-0.001	-0.004	-0.005	-0.006	-0.005	-0.005	-0.006	-0.006
Austria	-0.001	-0.004	-0.005	-0.006	-0.005	-0.005	-0.006	-0.006
Germany	-0.001	-0.004	-0.005	-0.006	-0.005	-0.005	-0.006	-0.006
Australia	-0.001	-0.004	-0.005	-0.006	-0.005	-0.006	-0.006	-0.006
Japan	-0.001	-0.004	-0.006	-0.006	-0.005	-0.006	-0.006	-0.006
Canada	-0.001	-0.004	-0.006	-0.006	-0.005	-0.006	-0.006	-0.006
Bermuda	-0.001	-0.004	-0.006	-0.006	-0.005	-0.006	-0.006	-0.006
Switzerland	-0.001	-0.004	-0.006	-0.006	-0.005	-0.006	-0.006	-0.006
Barbados	-0.001	-0.004	-0.006	-0.006	-0.005	-0.006	-0.006	-0.006
Hong Kong	-0.001	-0.004	-0.006	-0.006	-0.005	-0.006	-0.006	-0.006
Iceland	-0.001	-0.004	-0.006	-0.006	-0.005	-0.006	-0.006	-0.006
Denmark	-0.001	-0.004	-0.006	-0.006	-0.005	-0.006	-0.006	-0.006
Luxembourg	-0.001	-0.005	-0.006	-0.007	-0.006	-0.006	-0.007	-0.007
United States	-0.001	-0.005	-0.006	-0.007	-0.006	-0.006	-0.007	-0.007
<i>Low-income average</i>	0.000	0.000	0.001	0.001	0.000	0.001	0.002	0.001
<i>Middle-income average</i>	-0.001	-0.002	-0.003	-0.003	-0.002	-0.003	-0.003	-0.003
<i>High-income average</i>	-0.001	-0.004	-0.005	-0.006	-0.005	-0.005	-0.006	-0.006

<sup>1</sup>Countries are reported based on ascending per capita real income levels.

<sup>2</sup>As the estimated budget share was negative for Tanzania we do not report the elasticity for this country.

Source: Authors' calculation using the 1996 ICP data.

**Slutsky cross-price elasticity with price change for medical care, 114 countries in 1996<sup>1</sup>**

	Food, beverage, & tobacco	Clothing & footwear	Gross rent, fuel, & power	House operations	Education	Transport & communica- tion	Recreation <sup>2</sup>	Other
<i>Low-income countries:</i>								
Tanzania	0.024	0.027	0.040	0.040	0.032	0.042		0.077
Nigeria	0.028	0.034	0.048	0.048	0.039	0.049	0.236	0.074
Tajikistan	0.030	0.036	0.051	0.051	0.043	0.053	0.156	0.074
Zambia	0.031	0.037	0.052	0.052	0.043	0.053	0.149	0.074
Yemen	0.031	0.037	0.052	0.052	0.043	0.053	0.148	0.074
Malawi	0.032	0.038	0.054	0.054	0.045	0.055	0.132	0.075
Madagascar	0.032	0.039	0.054	0.054	0.045	0.055	0.132	0.075
Mali	0.032	0.039	0.055	0.054	0.046	0.056	0.129	0.075
Mongolia	0.033	0.039	0.055	0.054	0.046	0.056	0.128	0.075
Benin	0.035	0.043	0.059	0.059	0.050	0.061	0.112	0.078
Kenya	0.036	0.045	0.061	0.061	0.052	0.062	0.108	0.079
Sierra Leone	0.037	0.046	0.063	0.063	0.054	0.064	0.106	0.080
Nepal	0.037	0.046	0.063	0.063	0.054	0.064	0.106	0.080
Turkmenistan	0.038	0.047	0.064	0.064	0.055	0.065	0.105	0.080
Congo	0.039	0.048	0.065	0.065	0.056	0.067	0.104	0.081
Senegal	0.039	0.049	0.067	0.067	0.058	0.068	0.103	0.082
Vietnam	0.039	0.050	0.067	0.067	0.058	0.068	0.103	0.082
Bangladesh	0.040	0.050	0.067	0.067	0.058	0.069	0.103	0.083
Pakistan	0.041	0.052	0.070	0.070	0.061	0.071	0.103	0.085
Azerbaijan	0.042	0.053	0.072	0.071	0.062	0.073	0.102	0.086
Côte d'Ivoire	0.042	0.054	0.072	0.072	0.063	0.073	0.102	0.086
Paraguay	0.042	0.054	0.073	0.072	0.063	0.074	0.103	0.086
Uzbekistan	0.042	0.055	0.073	0.073	0.064	0.075	0.103	0.087
Kyrgyzstan	0.042	0.055	0.074	0.073	0.064	0.075	0.103	0.087
Cameroon	0.042	0.055	0.074	0.073	0.064	0.075	0.103	0.087
Moldova	0.042	0.055	0.074	0.073	0.064	0.075	0.103	0.087
Bolivia	0.043	0.056	0.075	0.074	0.065	0.076	0.103	0.088
Ecuador	0.043	0.056	0.075	0.075	0.066	0.076	0.103	0.088
Armenia	0.043	0.057	0.076	0.076	0.067	0.077	0.103	0.089
Sri Lanka	0.043	0.057	0.076	0.076	0.067	0.077	0.103	0.089
Jordan	0.044	0.058	0.077	0.077	0.068	0.078	0.103	0.090
Albania	0.044	0.059	0.079	0.078	0.069	0.080	0.104	0.091
Indonesia	0.044	0.060	0.079	0.079	0.070	0.080	0.104	0.091
Jamaica	0.045	0.060	0.079	0.079	0.070	0.080	0.104	0.092
Zimbabwe	0.045	0.060	0.079	0.079	0.070	0.080	0.104	0.092
Guinea	0.045	0.060	0.080	0.080	0.071	0.081	0.104	0.092
Syria	0.045	0.061	0.081	0.081	0.072	0.082	0.105	0.093
Georgia	0.045	0.061	0.081	0.081	0.072	0.082	0.105	0.093
<i>Middle-income countries:</i>								
Ukraine	0.046	0.063	0.083	0.083	0.074	0.084	0.106	0.095
Philippines	0.046	0.064	0.085	0.084	0.075	0.085	0.106	0.096
Peru	0.046	0.065	0.085	0.085	0.076	0.086	0.107	0.096
Botswana	0.046	0.065	0.085	0.085	0.076	0.086	0.107	0.096
Thailand	0.046	0.065	0.085	0.085	0.076	0.086	0.107	0.097
Morocco	0.046	0.065	0.086	0.086	0.077	0.087	0.107	0.097
Venezuela	0.046	0.066	0.086	0.086	0.077	0.087	0.107	0.097
Macedonia	0.047	0.066	0.087	0.087	0.078	0.088	0.108	0.098
Belize	0.047	0.066	0.087	0.087	0.078	0.088	0.108	0.098

—Continued

**Slutsky cross-price elasticity with price change for medical care, 114 countries in 1996<sup>1</sup>—Continued**

	Food, beverage, & tobacco	Clothing & footwear	Gross rent, fuel, & power	House operations	Education	Transport & communica- tion	Recreation <sup>2</sup>	Other
<i>Middle-income countries—Continued</i>								
Egypt	0.047	0.066	0.087	0.087	0.078	0.088	0.108	0.098
St. Vincent & Grenadines	0.047	0.066	0.087	0.087	0.078	0.088	0.108	0.098
Swaziland	0.047	0.067	0.088	0.088	0.079	0.089	0.109	0.099
Lebanon	0.047	0.068	0.089	0.088	0.080	0.090	0.109	0.099
Belarus	0.047	0.068	0.089	0.089	0.080	0.090	0.109	0.100
Kazakhstan	0.047	0.068	0.089	0.089	0.080	0.090	0.109	0.100
Dominica	0.047	0.068	0.089	0.089	0.080	0.090	0.109	0.100
Latvia	0.047	0.069	0.090	0.090	0.081	0.091	0.110	0.101
St. Lucia	0.047	0.069	0.090	0.090	0.081	0.091	0.110	0.101
Brazil	0.047	0.069	0.090	0.090	0.081	0.091	0.110	0.101
Bulgaria	0.047	0.069	0.090	0.090	0.081	0.091	0.110	0.101
Russia	0.047	0.070	0.091	0.091	0.082	0.092	0.110	0.101
Fiji	0.047	0.070	0.092	0.091	0.083	0.093	0.111	0.102
Grenada	0.047	0.070	0.092	0.091	0.083	0.093	0.111	0.102
Turkey	0.047	0.071	0.092	0.092	0.083	0.093	0.111	0.102
Lithuania	0.047	0.071	0.093	0.092	0.083	0.094	0.111	0.103
Romania	0.047	0.071	0.093	0.093	0.084	0.094	0.111	0.103
Iran	0.047	0.072	0.094	0.094	0.085	0.095	0.112	0.104
Mexico	0.047	0.072	0.094	0.094	0.085	0.095	0.112	0.104
Bahrain	0.047	0.073	0.095	0.094	0.086	0.096	0.113	0.105
Chile	0.047	0.073	0.095	0.095	0.086	0.096	0.113	0.105
Antigua & Barbuda	0.047	0.073	0.095	0.095	0.086	0.096	0.113	0.105
Poland	0.047	0.074	0.096	0.095	0.087	0.097	0.113	0.105
Trinidad & Tobago	0.047	0.074	0.096	0.096	0.087	0.097	0.114	0.106
Estonia	0.047	0.075	0.097	0.097	0.088	0.098	0.114	0.106
Gabon	0.046	0.075	0.097	0.097	0.088	0.098	0.114	0.107
Tunisia	0.046	0.075	0.097	0.097	0.088	0.098	0.114	0.107
St. Kitts & Nevis	0.046	0.075	0.098	0.097	0.088	0.099	0.115	0.107
Uruguay	0.046	0.075	0.098	0.098	0.089	0.099	0.115	0.107
Slovakia	0.046	0.076	0.098	0.098	0.089	0.099	0.115	0.108
Hungary	0.046	0.077	0.100	0.100	0.091	0.101	0.116	0.109
Argentina	0.045	0.079	0.102	0.102	0.093	0.103	0.118	0.111
Oman	0.044	0.080	0.103	0.103	0.094	0.104	0.118	0.112
Qatar	0.044	0.081	0.104	0.104	0.095	0.105	0.119	0.113
Slovenia	0.043	0.081	0.104	0.104	0.095	0.105	0.120	0.113
<i>High-income countries:</i>								
Czech Republic	0.043	0.082	0.105	0.105	0.096	0.106	0.120	0.114
Greece	0.042	0.083	0.107	0.106	0.098	0.107	0.121	0.115
Korea	0.041	0.083	0.107	0.107	0.098	0.108	0.122	0.115
Portugal	0.041	0.083	0.107	0.107	0.098	0.108	0.122	0.116
Spain	0.041	0.084	0.108	0.107	0.098	0.108	0.122	0.116
Ireland	0.040	0.084	0.108	0.108	0.099	0.109	0.123	0.116
Singapore	0.040	0.084	0.109	0.108	0.100	0.109	0.123	0.117
Mauritius	0.039	0.085	0.109	0.109	0.100	0.110	0.124	0.118
Israel	0.038	0.086	0.110	0.110	0.101	0.111	0.124	0.118
New Zealand	0.037	0.086	0.110	0.110	0.101	0.111	0.124	0.119

—Continued



**Slutsky cross-price elasticity with price change for medical care, 114 countries in 1996<sup>1</sup>—Continued**

	Food, beverage, & tobacco	Clothing & footwear	Gross rent, fuel, & power	House operations	Education	Transport & communica- tion	Recreation <sup>2</sup>	Other
<i>High-income countries—Continued</i>								
Finland	0.037	0.086	0.110	0.110	0.101	0.111	0.124	0.119
Bahamas	0.037	0.086	0.111	0.110	0.102	0.111	0.125	0.119
Sweden	0.035	0.087	0.112	0.112	0.103	0.113	0.126	0.120
Netherlands	0.034	0.088	0.112	0.112	0.103	0.113	0.126	0.120
France	0.032	0.089	0.113	0.113	0.104	0.114	0.127	0.121
United Kingdom	0.032	0.089	0.114	0.113	0.105	0.114	0.127	0.121
Belgium	0.032	0.089	0.114	0.114	0.105	0.115	0.127	0.122
Norway	0.032	0.089	0.114	0.114	0.105	0.115	0.127	0.122
Italy	0.031	0.089	0.114	0.114	0.105	0.115	0.127	0.122
Austria	0.031	0.089	0.114	0.114	0.105	0.115	0.128	0.122
Germany	0.030	0.089	0.114	0.114	0.106	0.115	0.128	0.122
Australia	0.030	0.090	0.115	0.115	0.106	0.116	0.128	0.123
Japan	0.029	0.090	0.115	0.115	0.106	0.116	0.128	0.123
Canada	0.028	0.090	0.115	0.115	0.107	0.116	0.129	0.123
Bermuda	0.027	0.091	0.116	0.116	0.107	0.117	0.129	0.124
Switzerland	0.026	0.091	0.116	0.116	0.108	0.117	0.129	0.124
Barbados	0.026	0.091	0.117	0.116	0.108	0.117	0.129	0.124
Hong Kong	0.026	0.091	0.117	0.116	0.108	0.117	0.130	0.124
Iceland	0.025	0.091	0.117	0.116	0.108	0.117	0.130	0.124
Denmark	0.025	0.091	0.117	0.117	0.108	0.118	0.130	0.125
Luxembourg	0.013	0.094	0.121	0.120	0.112	0.121	0.133	0.128
United States	0.011	0.095	0.121	0.121	0.112	0.122	0.133	0.128
<i>Low-income average</i>	0.039	0.050	0.067	0.067	0.058	0.068	0.114	0.084
<i>Middle-income average</i>	0.046	0.071	0.092	0.092	0.083	0.093	0.111	0.103
<i>High-income average</i>	0.032	0.088	0.113	0.113	0.104	0.114	0.126	0.121

<sup>1</sup>Countries are reported based on ascending per capita real income levels.

<sup>2</sup>As the estimated budget share was negative for Tanzania we do not report the elasticity for this country.

Source: Authors' calculation using the 1996 ICP data.

**Cournot cross-price elasticity with price change for medical care, 114 countries in 1996<sup>1</sup>**

	Food, beverage, & tobacco	Clothing & footwear	Gross rent, fuel, & power	House operations	Education	Transport & communica- tion	Recreation <sup>2</sup>	Other
<i>Low-income countries:</i>								
Tanzania	0.014	0.016	0.023	0.023	0.019	0.024		0.045
Nigeria	0.012	0.014	0.021	0.020	0.017	0.021	0.101	0.032
Tajikistan	0.012	0.014	0.019	0.019	0.016	0.020	0.059	0.028
Zambia	0.011	0.014	0.019	0.019	0.016	0.020	0.055	0.027
Yemen	0.011	0.014	0.019	0.019	0.016	0.020	0.055	0.027
Malawi	0.011	0.013	0.018	0.018	0.015	0.019	0.045	0.026
Madagascar	0.011	0.013	0.018	0.018	0.015	0.019	0.045	0.026
Mali	0.011	0.013	0.018	0.018	0.015	0.019	0.043	0.025
Mongolia	0.011	0.013	0.018	0.018	0.015	0.019	0.043	0.025
Benin	0.010	0.012	0.017	0.017	0.014	0.017	0.032	0.022
Kenya	0.010	0.012	0.016	0.016	0.014	0.016	0.028	0.021
Sierra Leone	0.009	0.011	0.016	0.015	0.013	0.016	0.026	0.020
Nepal	0.009	0.011	0.016	0.015	0.013	0.016	0.026	0.020
Turkmenistan	0.009	0.011	0.015	0.015	0.013	0.016	0.025	0.019
Congo	0.009	0.011	0.015	0.015	0.013	0.015	0.024	0.018
Senegal	0.008	0.011	0.014	0.014	0.012	0.015	0.022	0.018
Vietnam	0.008	0.010	0.014	0.014	0.012	0.014	0.022	0.017
Bangladesh	0.008	0.010	0.014	0.014	0.012	0.014	0.022	0.017
Pakistan	0.008	0.010	0.013	0.013	0.012	0.013	0.019	0.016
Azerbaijan	0.007	0.010	0.013	0.013	0.011	0.013	0.018	0.015
Côte d'Ivoire	0.007	0.009	0.013	0.013	0.011	0.013	0.018	0.015
Paraguay	0.007	0.009	0.013	0.013	0.011	0.013	0.018	0.015
Uzbekistan	0.007	0.009	0.012	0.012	0.011	0.013	0.017	0.015
Kyrgyzstan	0.007	0.009	0.012	0.012	0.011	0.013	0.017	0.015
Cameroon	0.007	0.009	0.012	0.012	0.011	0.012	0.017	0.015
Moldova	0.007	0.009	0.012	0.012	0.011	0.012	0.017	0.015
Bolivia	0.007	0.009	0.012	0.012	0.011	0.012	0.017	0.014
Ecuador	0.007	0.009	0.012	0.012	0.010	0.012	0.016	0.014
Armenia	0.007	0.009	0.012	0.012	0.010	0.012	0.016	0.014
Sri Lanka	0.007	0.009	0.012	0.012	0.010	0.012	0.016	0.014
Jordan	0.006	0.008	0.011	0.011	0.010	0.011	0.015	0.013
Albania	0.006	0.008	0.011	0.011	0.010	0.011	0.014	0.013
Indonesia	0.006	0.008	0.011	0.011	0.009	0.011	0.014	0.012
Jamaica	0.006	0.008	0.011	0.011	0.009	0.011	0.014	0.012
Zimbabwe	0.006	0.008	0.011	0.011	0.009	0.011	0.014	0.012
Guinea	0.006	0.008	0.010	0.010	0.009	0.011	0.014	0.012
Syria	0.006	0.008	0.010	0.010	0.009	0.010	0.013	0.012
Georgia	0.006	0.008	0.010	0.010	0.009	0.010	0.013	0.012
<i>Middle-income countries:</i>								
Ukraine	0.005	0.007	0.009	0.009	0.008	0.010	0.012	0.011
Philippines	0.005	0.007	0.009	0.009	0.008	0.009	0.011	0.010
Peru	0.005	0.007	0.009	0.009	0.008	0.009	0.011	0.010
Botswana	0.005	0.007	0.009	0.009	0.008	0.009	0.011	0.010
Thailand	0.005	0.007	0.009	0.009	0.008	0.009	0.011	0.010
Morocco	0.005	0.007	0.009	0.009	0.008	0.009	0.011	0.010
Venezuela	0.005	0.007	0.009	0.009	0.008	0.009	0.011	0.010
Macedonia	0.004	0.006	0.008	0.008	0.007	0.008	0.010	0.009
Belize	0.004	0.006	0.008	0.008	0.007	0.008	0.010	0.009

—Continued

**Cournot cross-price elasticity with price change for medical care, 114 countries in 1996<sup>1</sup>—Continued**

	Food, beverage, & tobacco	Clothing & footwear	Gross rent, fuel, & power	House operations	Education	Transport & communica- tion	Recreation <sup>2</sup>	Other
<i>Middle-income countries—Continued</i>								
Egypt	0.004	0.006	0.008	0.008	0.007	0.008	0.010	0.009
St. Vincent & Grenadines	0.004	0.006	0.008	0.008	0.007	0.008	0.010	0.009
Swaziland	0.004	0.006	0.008	0.008	0.007	0.008	0.010	0.009
Lebanon	0.004	0.006	0.008	0.008	0.007	0.008	0.010	0.009
Belarus	0.004	0.006	0.008	0.008	0.007	0.008	0.010	0.009
Kazakhstan	0.004	0.006	0.008	0.008	0.007	0.008	0.010	0.009
Dominica	0.004	0.006	0.008	0.008	0.007	0.008	0.010	0.009
Latvia	0.004	0.006	0.008	0.007	0.007	0.008	0.009	0.008
St. Lucia	0.004	0.006	0.007	0.007	0.007	0.008	0.009	0.008
Brazil	0.004	0.006	0.007	0.007	0.007	0.008	0.009	0.008
Bulgaria	0.004	0.006	0.007	0.007	0.007	0.007	0.009	0.008
Russia	0.004	0.006	0.007	0.007	0.007	0.007	0.009	0.008
Fiji	0.004	0.005	0.007	0.007	0.006	0.007	0.008	0.008
Grenada	0.004	0.005	0.007	0.007	0.006	0.007	0.008	0.008
Turkey	0.004	0.005	0.007	0.007	0.006	0.007	0.008	0.008
Lithuania	0.003	0.005	0.007	0.007	0.006	0.007	0.008	0.008
Romania	0.003	0.005	0.007	0.007	0.006	0.007	0.008	0.007
Iran	0.003	0.005	0.006	0.006	0.006	0.007	0.008	0.007
Mexico	0.003	0.005	0.006	0.006	0.006	0.006	0.008	0.007
Bahrain	0.003	0.005	0.006	0.006	0.006	0.006	0.007	0.007
Chile	0.003	0.005	0.006	0.006	0.006	0.006	0.007	0.007
Antigua & Barbuda	0.003	0.005	0.006	0.006	0.006	0.006	0.007	0.007
Poland	0.003	0.005	0.006	0.006	0.005	0.006	0.007	0.007
Trinidad & Tobago	0.003	0.004	0.006	0.006	0.005	0.006	0.007	0.006
Estonia	0.003	0.004	0.006	0.006	0.005	0.006	0.007	0.006
Gabon	0.003	0.004	0.006	0.006	0.005	0.006	0.007	0.006
Tunisia	0.003	0.004	0.005	0.005	0.005	0.006	0.006	0.006
St. Kitts & Nevis	0.003	0.004	0.005	0.005	0.005	0.005	0.006	0.006
Uruguay	0.003	0.004	0.005	0.005	0.005	0.005	0.006	0.006
Slovakia	0.002	0.004	0.005	0.005	0.005	0.005	0.006	0.006
Hungary	0.002	0.004	0.005	0.005	0.004	0.005	0.006	0.005
Argentina	0.002	0.003	0.004	0.004	0.004	0.004	0.005	0.005
Oman	0.002	0.003	0.004	0.004	0.004	0.004	0.005	0.004
Qatar	0.002	0.003	0.004	0.004	0.003	0.004	0.004	0.004
Slovenia	0.001	0.003	0.004	0.004	0.003	0.004	0.004	0.004
<i>High-income countries:</i>								
Czech Republic	0.001	0.003	0.003	0.003	0.003	0.003	0.004	0.004
Greece	0.001	0.002	0.003	0.003	0.003	0.003	0.003	0.003
Korea	0.001	0.002	0.003	0.003	0.003	0.003	0.003	0.003
Portugal	0.001	0.002	0.003	0.003	0.002	0.003	0.003	0.003
Spain	0.001	0.002	0.003	0.003	0.002	0.003	0.003	0.003
Ireland	0.001	0.002	0.003	0.003	0.002	0.003	0.003	0.003
Singapore	0.001	0.002	0.002	0.002	0.002	0.002	0.003	0.003
Mauritius	0.001	0.002	0.002	0.002	0.002	0.002	0.002	0.002
Israel	0.001	0.002	0.002	0.002	0.002	0.002	0.002	0.002
New Zealand	0.001	0.001	0.002	0.002	0.002	0.002	0.002	0.002

—Continued

**Cournot cross-price elasticity with price change for medical care, 114 countries in 1996<sup>1</sup>—Continued**

	Food, beverage, & tobacco	Clothing & footwear	Gross rent, fuel, & power	House operations	Education	Transport & communica- tion	Recreation <sup>2</sup>	Other
<i>High-income countries—Continued</i>								
Finland	0.001	0.001	0.002	0.002	0.002	0.002	0.002	0.002
Bahamas	0.001	0.001	0.002	0.002	0.002	0.002	0.002	0.002
Sweden	0.000	0.001	0.001	0.001	0.001	0.001	0.002	0.002
Netherlands	0.000	0.001	0.001	0.001	0.001	0.001	0.002	0.001
France	0.000	0.001	0.001	0.001	0.001	0.001	0.001	0.001
United Kingdom	0.000	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Belgium	0.000	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Norway	0.000	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Italy	0.000	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Austria	0.000	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Germany	0.000	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Australia	0.000	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Japan	0.000	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Canada	0.000	0.000	0.001	0.001	0.001	0.001	0.001	0.001
Bermuda	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Switzerland	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Barbados	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Hong Kong	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Iceland	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Denmark	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Luxembourg	0.000	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001
United States	0.000	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001
<i>Low-income average</i>	0.008	0.010	0.014	0.014	0.012	0.015	0.027	0.019
<i>Middle-income average</i>	0.004	0.005	0.007	0.007	0.006	0.007	0.008	0.008
<i>High-income average</i>	0.000	0.001	0.001	0.001	0.001	0.001	0.001	0.001

<sup>1</sup>Countries are reported based on ascending per capita real income levels.

<sup>2</sup>As the estimated budget share was negative for Tanzania we do not report the elasticity for this country.

Source: Authors' calculation using the 1996 ICP data.

**Slutsky cross-price elasticity with price change for education, 114 countries in 1996<sup>1</sup>**

	Food, beverage, & tobacco	Clothing & footwear	Gross rent, fuel, & power	House operations	Medical care	Transport & communica- tion	Recreation <sup>2</sup>	Other
<i>Low-income countries:</i>								
Tanzania	0.038	0.045	0.066	0.065	0.142	0.068		0.126
Nigeria	0.039	0.046	0.066	0.065	0.107	0.067	0.323	0.101
Tajikistan	0.039	0.046	0.066	0.065	0.099	0.067	0.199	0.095
Zambia	0.039	0.046	0.066	0.065	0.098	0.067	0.188	0.094
Yemen	0.039	0.046	0.066	0.065	0.098	0.067	0.187	0.094
Malawi	0.039	0.047	0.066	0.065	0.095	0.067	0.161	0.091
Madagascar	0.039	0.047	0.066	0.065	0.095	0.067	0.160	0.091
Mali	0.039	0.047	0.066	0.065	0.094	0.067	0.155	0.091
Mongolia	0.039	0.047	0.066	0.065	0.094	0.067	0.153	0.090
Benin	0.039	0.048	0.066	0.066	0.089	0.067	0.124	0.086
Kenya	0.039	0.048	0.066	0.066	0.087	0.067	0.117	0.085
Sierra Leone	0.039	0.048	0.066	0.066	0.086	0.067	0.111	0.084
Nepal	0.039	0.048	0.066	0.066	0.086	0.067	0.111	0.084
Turkmenistan	0.039	0.048	0.066	0.066	0.085	0.067	0.109	0.083
Congo	0.039	0.049	0.066	0.066	0.084	0.067	0.106	0.082
Senegal	0.039	0.049	0.066	0.066	0.083	0.068	0.103	0.082
Vietnam	0.039	0.049	0.066	0.066	0.083	0.068	0.102	0.081
Bangladesh	0.039	0.049	0.067	0.066	0.083	0.068	0.102	0.081
Pakistan	0.039	0.049	0.067	0.066	0.082	0.068	0.097	0.080
Azerbaijan	0.039	0.050	0.067	0.067	0.081	0.068	0.096	0.080
Côte d'Ivoire	0.039	0.050	0.067	0.067	0.081	0.068	0.095	0.080
Paraguay	0.039	0.050	0.067	0.067	0.081	0.068	0.095	0.080
Uzbekistan	0.039	0.050	0.067	0.067	0.081	0.068	0.094	0.079
Kyrgyzstan	0.039	0.050	0.067	0.067	0.081	0.068	0.094	0.079
Cameroon	0.039	0.050	0.067	0.067	0.081	0.068	0.093	0.079
Moldova	0.039	0.050	0.067	0.067	0.081	0.068	0.093	0.079
Bolivia	0.038	0.050	0.067	0.067	0.080	0.068	0.092	0.079
Ecuador	0.038	0.050	0.067	0.067	0.080	0.068	0.092	0.079
Armenia	0.038	0.050	0.067	0.067	0.080	0.068	0.091	0.079
Sri Lanka	0.038	0.050	0.067	0.067	0.080	0.068	0.091	0.079
Jordan	0.038	0.051	0.067	0.067	0.080	0.068	0.090	0.078
Albania	0.038	0.051	0.068	0.067	0.079	0.068	0.089	0.078
Indonesia	0.038	0.051	0.068	0.067	0.079	0.068	0.089	0.078
Jamaica	0.038	0.051	0.068	0.067	0.079	0.068	0.089	0.078
Zimbabwe	0.038	0.051	0.068	0.067	0.079	0.068	0.089	0.078
Guinea	0.038	0.051	0.068	0.067	0.079	0.069	0.088	0.078
Syria	0.038	0.051	0.068	0.068	0.079	0.069	0.088	0.078
Georgia	0.038	0.051	0.068	0.068	0.079	0.069	0.088	0.078
<i>Middle-income countries:</i>								
Ukraine	0.037	0.052	0.068	0.068	0.078	0.069	0.086	0.077
Philippines	0.037	0.052	0.068	0.068	0.078	0.069	0.086	0.077
Peru	0.037	0.052	0.068	0.068	0.078	0.069	0.086	0.077
Botswana	0.037	0.052	0.068	0.068	0.078	0.069	0.086	0.077
Thailand	0.037	0.052	0.068	0.068	0.078	0.069	0.085	0.077
Morocco	0.037	0.052	0.068	0.068	0.078	0.069	0.085	0.077
Venezuela	0.037	0.052	0.068	0.068	0.078	0.069	0.085	0.077
Macedonia	0.037	0.052	0.068	0.068	0.078	0.069	0.085	0.077
Belize	0.037	0.052	0.069	0.068	0.078	0.069	0.085	0.077

—Continued

**Slutsky cross-price elasticity with price change for education, 114 countries in 1996<sup>1</sup>—Continued**

	Food, beverage, & tobacco	Clothing & footwear	Gross rent, fuel, & power	House operations	Medical care	Transport & communica- tion	Recreation <sup>2</sup>	Other
<i>Middle-income countries—Continued</i>								
Egypt	0.037	0.052	0.069	0.068	0.078	0.069	0.085	0.077
St. Vincent & Grenadines	0.037	0.052	0.069	0.068	0.078	0.069	0.085	0.077
Swaziland	0.036	0.052	0.069	0.068	0.078	0.069	0.084	0.077
Lebanon	0.036	0.052	0.069	0.069	0.078	0.069	0.084	0.077
Belarus	0.036	0.052	0.069	0.069	0.078	0.069	0.084	0.077
Kazakhstan	0.036	0.052	0.069	0.069	0.078	0.069	0.084	0.077
Dominica	0.036	0.052	0.069	0.069	0.078	0.069	0.084	0.077
Latvia	0.036	0.053	0.069	0.069	0.078	0.070	0.084	0.077
St. Lucia	0.036	0.053	0.069	0.069	0.078	0.070	0.084	0.077
Brazil	0.036	0.053	0.069	0.069	0.078	0.070	0.084	0.077
Bulgaria	0.036	0.053	0.069	0.069	0.078	0.070	0.084	0.077
Russia	0.036	0.053	0.069	0.069	0.077	0.070	0.083	0.077
Fiji	0.035	0.053	0.069	0.069	0.077	0.070	0.083	0.077
Grenada	0.035	0.053	0.069	0.069	0.077	0.070	0.083	0.077
Turkey	0.035	0.053	0.069	0.069	0.077	0.070	0.083	0.077
Lithuania	0.035	0.053	0.069	0.069	0.077	0.070	0.083	0.077
Romania	0.035	0.053	0.069	0.069	0.077	0.070	0.083	0.077
Iran	0.035	0.053	0.069	0.069	0.077	0.070	0.083	0.077
Mexico	0.035	0.053	0.069	0.069	0.077	0.070	0.083	0.077
Bahrain	0.034	0.053	0.069	0.069	0.077	0.070	0.083	0.077
Chile	0.034	0.053	0.069	0.069	0.077	0.070	0.083	0.077
Antigua & Barbuda	0.034	0.053	0.070	0.069	0.077	0.070	0.083	0.077
Poland	0.034	0.054	0.070	0.069	0.077	0.070	0.082	0.077
Trinidad & Tobago	0.034	0.054	0.070	0.069	0.077	0.070	0.082	0.077
Estonia	0.034	0.054	0.070	0.070	0.077	0.070	0.082	0.077
Gabon	0.033	0.054	0.070	0.070	0.077	0.070	0.082	0.077
Tunisia	0.033	0.054	0.070	0.070	0.077	0.070	0.082	0.077
St. Kitts & Nevis	0.033	0.054	0.070	0.070	0.077	0.070	0.082	0.077
Uruguay	0.033	0.054	0.070	0.070	0.077	0.071	0.082	0.077
Slovakia	0.033	0.054	0.070	0.070	0.077	0.071	0.082	0.077
Hungary	0.032	0.054	0.070	0.070	0.077	0.071	0.082	0.077
Argentina	0.031	0.054	0.070	0.070	0.077	0.071	0.081	0.077
Oman	0.030	0.055	0.071	0.070	0.077	0.071	0.081	0.077
Qatar	0.030	0.055	0.071	0.071	0.077	0.071	0.081	0.077
Slovenia	0.029	0.055	0.071	0.071	0.077	0.071	0.081	0.077
<i>High-income countries:</i>								
Czech Republic	0.029	0.055	0.071	0.071	0.077	0.071	0.081	0.077
Greece	0.028	0.055	0.071	0.071	0.077	0.072	0.081	0.077
Korea	0.027	0.055	0.071	0.071	0.077	0.072	0.081	0.077
Portugal	0.027	0.055	0.071	0.071	0.077	0.072	0.081	0.077
Spain	0.027	0.055	0.071	0.071	0.077	0.072	0.081	0.077
Ireland	0.026	0.055	0.071	0.071	0.077	0.072	0.081	0.077
Singapore	0.026	0.056	0.071	0.071	0.077	0.072	0.081	0.077
Mauritius	0.025	0.056	0.072	0.071	0.077	0.072	0.081	0.077
Israel	0.025	0.056	0.072	0.071	0.077	0.072	0.081	0.077
New Zealand	0.024	0.056	0.072	0.072	0.077	0.072	0.081	0.077

—Continued

**Slutsky cross-price elasticity with price change for education, 114 countries in 1996<sup>1</sup>—Continued**

	Food, beverage, & tobacco	Clothing & footwear	Gross rent, fuel, & power	House operations	Medical care	Transport & communica- tion	Recreation <sup>2</sup>	Other
<i>High-income countries—Continued</i>								
Finland	0.024	0.056	0.072	0.072	0.077	0.072	0.081	0.077
Bahamas	0.024	0.056	0.072	0.072	0.077	0.072	0.081	0.077
Sweden	0.022	0.056	0.072	0.072	0.078	0.072	0.081	0.077
Netherlands	0.022	0.056	0.072	0.072	0.078	0.072	0.081	0.077
France	0.021	0.056	0.072	0.072	0.078	0.073	0.081	0.077
United Kingdom	0.021	0.056	0.072	0.072	0.078	0.073	0.081	0.077
Belgium	0.020	0.056	0.072	0.072	0.078	0.073	0.081	0.077
Norway	0.020	0.056	0.072	0.072	0.078	0.073	0.081	0.077
Italy	0.020	0.056	0.072	0.072	0.078	0.073	0.081	0.077
Austria	0.019	0.056	0.072	0.072	0.078	0.073	0.081	0.077
Germany	0.019	0.056	0.072	0.072	0.078	0.073	0.081	0.077
Australia	0.019	0.057	0.072	0.072	0.078	0.073	0.081	0.077
Japan	0.018	0.057	0.072	0.072	0.078	0.073	0.081	0.077
Canada	0.018	0.057	0.072	0.072	0.078	0.073	0.081	0.077
Bermuda	0.017	0.057	0.073	0.072	0.078	0.073	0.081	0.077
Switzerland	0.016	0.057	0.073	0.072	0.078	0.073	0.081	0.077
Barbados	0.016	0.057	0.073	0.072	0.078	0.073	0.081	0.077
Hong Kong	0.016	0.057	0.073	0.072	0.078	0.073	0.081	0.077
Iceland	0.016	0.057	0.073	0.073	0.078	0.073	0.081	0.077
Denmark	0.016	0.057	0.073	0.073	0.078	0.073	0.081	0.077
Luxembourg	0.008	0.057	0.073	0.073	0.078	0.074	0.081	0.078
United States	0.007	0.057	0.073	0.073	0.078	0.074	0.081	0.078
<i>Low-income average</i>	0.039	0.049	0.067	0.066	0.087	0.068	0.117	0.084
<i>Middle-income average</i>	0.035	0.053	0.069	0.069	0.078	0.070	0.083	0.077
<i>High-income average</i>	0.021	0.056	0.072	0.072	0.078	0.073	0.081	0.077

<sup>1</sup>Countries are reported based on ascending per capita real income levels.

<sup>2</sup>As the estimated budget share was negative for Tanzania we do not report the elasticity for this country.

Source: Authors' calculation using the 1996 ICP data.



**Cournot cross-price elasticity with price change for education, 114 countries in 1996<sup>1</sup>**

	Food, beverage, & tobacco	Clothing & footwear	Gross rent, fuel, & power	House operations	Medical care	Transport & communica- tion	Recreation <sup>2</sup>	Other
<i>Low-income countries:</i>								
Tanzania	-0.005	-0.006	-0.009	-0.009	-0.019	-0.009		-0.017
Nigeria	-0.005	-0.006	-0.009	-0.009	-0.015	-0.009	-0.044	-0.014
Tajikistan	-0.005	-0.006	-0.009	-0.009	-0.014	-0.009	-0.027	-0.013
Zambia	-0.005	-0.006	-0.009	-0.009	-0.014	-0.009	-0.026	-0.013
Yemen	-0.005	-0.006	-0.009	-0.009	-0.014	-0.009	-0.026	-0.013
Malawi	-0.005	-0.006	-0.009	-0.009	-0.013	-0.009	-0.022	-0.013
Madagascar	-0.005	-0.006	-0.009	-0.009	-0.013	-0.009	-0.022	-0.013
Mali	-0.005	-0.006	-0.009	-0.009	-0.013	-0.009	-0.021	-0.013
Mongolia	-0.005	-0.007	-0.009	-0.009	-0.013	-0.009	-0.021	-0.013
Benin	-0.005	-0.007	-0.009	-0.009	-0.012	-0.009	-0.017	-0.012
Kenya	-0.006	-0.007	-0.009	-0.009	-0.012	-0.009	-0.016	-0.012
Sierra Leone	-0.006	-0.007	-0.009	-0.009	-0.012	-0.010	-0.016	-0.012
Nepal	-0.006	-0.007	-0.009	-0.009	-0.012	-0.010	-0.016	-0.012
Turkmenistan	-0.006	-0.007	-0.009	-0.009	-0.012	-0.010	-0.015	-0.012
Congo	-0.006	-0.007	-0.009	-0.009	-0.012	-0.010	-0.015	-0.012
Senegal	-0.006	-0.007	-0.009	-0.009	-0.012	-0.010	-0.015	-0.012
Vietnam	-0.006	-0.007	-0.010	-0.009	-0.012	-0.010	-0.015	-0.012
Bangladesh	-0.006	-0.007	-0.010	-0.009	-0.012	-0.010	-0.015	-0.012
Pakistan	-0.006	-0.007	-0.010	-0.010	-0.012	-0.010	-0.014	-0.012
Azerbaijan	-0.006	-0.007	-0.010	-0.010	-0.012	-0.010	-0.014	-0.012
Côte d'Ivoire	-0.006	-0.007	-0.010	-0.010	-0.012	-0.010	-0.014	-0.012
Paraguay	-0.006	-0.007	-0.010	-0.010	-0.012	-0.010	-0.014	-0.012
Uzbekistan	-0.006	-0.007	-0.010	-0.010	-0.012	-0.010	-0.014	-0.012
Kyrgyzstan	-0.006	-0.007	-0.010	-0.010	-0.012	-0.010	-0.014	-0.012
Cameroon	-0.006	-0.007	-0.010	-0.010	-0.012	-0.010	-0.014	-0.012
Moldova	-0.006	-0.007	-0.010	-0.010	-0.012	-0.010	-0.014	-0.012
Bolivia	-0.006	-0.007	-0.010	-0.010	-0.012	-0.010	-0.013	-0.011
Ecuador	-0.006	-0.007	-0.010	-0.010	-0.012	-0.010	-0.013	-0.011
Armenia	-0.006	-0.007	-0.010	-0.010	-0.012	-0.010	-0.013	-0.011
Sri Lanka	-0.006	-0.007	-0.010	-0.010	-0.012	-0.010	-0.013	-0.011
Jordan	-0.006	-0.007	-0.010	-0.010	-0.012	-0.010	-0.013	-0.011
Albania	-0.006	-0.007	-0.010	-0.010	-0.012	-0.010	-0.013	-0.011
Indonesia	-0.006	-0.007	-0.010	-0.010	-0.012	-0.010	-0.013	-0.011
Jamaica	-0.006	-0.007	-0.010	-0.010	-0.012	-0.010	-0.013	-0.011
Zimbabwe	-0.006	-0.007	-0.010	-0.010	-0.012	-0.010	-0.013	-0.011
Guinea	-0.006	-0.007	-0.010	-0.010	-0.012	-0.010	-0.013	-0.011
Syria	-0.006	-0.008	-0.010	-0.010	-0.012	-0.010	-0.013	-0.011
Georgia	-0.006	-0.008	-0.010	-0.010	-0.012	-0.010	-0.013	-0.011
<i>Middle-income countries:</i>								
Ukraine	-0.006	-0.008	-0.010	-0.010	-0.012	-0.010	-0.013	-0.011
Philippines	-0.006	-0.008	-0.010	-0.010	-0.012	-0.010	-0.013	-0.011
Peru	-0.006	-0.008	-0.010	-0.010	-0.012	-0.010	-0.013	-0.011
Botswana	-0.006	-0.008	-0.010	-0.010	-0.012	-0.010	-0.013	-0.011
Thailand	-0.006	-0.008	-0.010	-0.010	-0.012	-0.010	-0.013	-0.011
Morocco	-0.005	-0.008	-0.010	-0.010	-0.012	-0.010	-0.013	-0.011
Venezuela	-0.005	-0.008	-0.010	-0.010	-0.012	-0.010	-0.013	-0.011
Macedonia	-0.005	-0.008	-0.010	-0.010	-0.012	-0.010	-0.013	-0.012
Belize	-0.005	-0.008	-0.010	-0.010	-0.012	-0.010	-0.013	-0.012

—Continued

**Cournot cross-price elasticity with price change for education, 114 countries in 1996<sup>1</sup>—Continued**

	Food, beverage, & tobacco	Clothing & footwear	Gross rent, fuel, & power	House operations	Medical care	Transport & communica- tion	Recreation <sup>2</sup>	Other
<i>Middle-income countries—Continued</i>								
Egypt	-0.005	-0.008	-0.010	-0.010	-0.012	-0.010	-0.013	-0.012
St. Vincent & Grenadines	-0.005	-0.008	-0.010	-0.010	-0.012	-0.010	-0.013	-0.012
Swaziland	-0.005	-0.008	-0.010	-0.010	-0.012	-0.010	-0.013	-0.012
Lebanon	-0.005	-0.008	-0.010	-0.010	-0.012	-0.010	-0.013	-0.012
Belarus	-0.005	-0.008	-0.010	-0.010	-0.012	-0.010	-0.013	-0.012
Kazakhstan	-0.005	-0.008	-0.010	-0.010	-0.012	-0.010	-0.013	-0.012
Dominica	-0.005	-0.008	-0.010	-0.010	-0.012	-0.010	-0.013	-0.012
Latvia	-0.005	-0.008	-0.010	-0.010	-0.012	-0.010	-0.013	-0.012
St. Lucia	-0.005	-0.008	-0.010	-0.010	-0.012	-0.010	-0.013	-0.012
Brazil	-0.005	-0.008	-0.010	-0.010	-0.012	-0.010	-0.013	-0.012
Bulgaria	-0.005	-0.008	-0.010	-0.010	-0.012	-0.010	-0.013	-0.012
Russia	-0.005	-0.008	-0.010	-0.010	-0.012	-0.010	-0.013	-0.012
Fiji	-0.005	-0.008	-0.010	-0.010	-0.012	-0.011	-0.013	-0.012
Grenada	-0.005	-0.008	-0.010	-0.010	-0.012	-0.011	-0.013	-0.012
Turkey	-0.005	-0.008	-0.010	-0.010	-0.012	-0.011	-0.013	-0.012
Lithuania	-0.005	-0.008	-0.010	-0.010	-0.012	-0.011	-0.013	-0.012
Romania	-0.005	-0.008	-0.010	-0.010	-0.012	-0.011	-0.013	-0.012
Iran	-0.005	-0.008	-0.010	-0.010	-0.012	-0.011	-0.013	-0.012
Mexico	-0.005	-0.008	-0.011	-0.010	-0.012	-0.011	-0.013	-0.012
Bahrain	-0.005	-0.008	-0.011	-0.010	-0.012	-0.011	-0.013	-0.012
Chile	-0.005	-0.008	-0.011	-0.011	-0.012	-0.011	-0.013	-0.012
Antigua & Barbuda	-0.005	-0.008	-0.011	-0.011	-0.012	-0.011	-0.013	-0.012
Poland	-0.005	-0.008	-0.011	-0.011	-0.012	-0.011	-0.013	-0.012
Trinidad & Tobago	-0.005	-0.008	-0.011	-0.011	-0.012	-0.011	-0.013	-0.012
Estonia	-0.005	-0.008	-0.011	-0.011	-0.012	-0.011	-0.013	-0.012
Gabon	-0.005	-0.008	-0.011	-0.011	-0.012	-0.011	-0.013	-0.012
Tunisia	-0.005	-0.008	-0.011	-0.011	-0.012	-0.011	-0.013	-0.012
St. Kitts & Nevis	-0.005	-0.008	-0.011	-0.011	-0.012	-0.011	-0.012	-0.012
Uruguay	-0.005	-0.008	-0.011	-0.011	-0.012	-0.011	-0.012	-0.012
Slovakia	-0.005	-0.008	-0.011	-0.011	-0.012	-0.011	-0.012	-0.012
Hungary	-0.005	-0.008	-0.011	-0.011	-0.012	-0.011	-0.012	-0.012
Argentina	-0.005	-0.008	-0.011	-0.011	-0.012	-0.011	-0.013	-0.012
Oman	-0.005	-0.008	-0.011	-0.011	-0.012	-0.011	-0.013	-0.012
Qatar	-0.005	-0.008	-0.011	-0.011	-0.012	-0.011	-0.013	-0.012
Slovenia	-0.005	-0.008	-0.011	-0.011	-0.012	-0.011	-0.013	-0.012
<i>High-income countries:</i>								
Czech Republic	-0.004	-0.008	-0.011	-0.011	-0.012	-0.011	-0.013	-0.012
Greece	-0.004	-0.009	-0.011	-0.011	-0.012	-0.011	-0.013	-0.012
Korea	-0.004	-0.009	-0.011	-0.011	-0.012	-0.011	-0.013	-0.012
Portugal	-0.004	-0.009	-0.011	-0.011	-0.012	-0.011	-0.013	-0.012
Spain	-0.004	-0.009	-0.011	-0.011	-0.012	-0.011	-0.013	-0.012
Ireland	-0.004	-0.009	-0.011	-0.011	-0.012	-0.011	-0.013	-0.012
Singapore	-0.004	-0.009	-0.011	-0.011	-0.012	-0.011	-0.013	-0.012
Mauritius	-0.004	-0.009	-0.011	-0.011	-0.012	-0.011	-0.013	-0.012
Israel	-0.004	-0.009	-0.011	-0.011	-0.012	-0.011	-0.013	-0.012
New Zealand	-0.004	-0.009	-0.011	-0.011	-0.012	-0.011	-0.013	-0.012

—Continued

**Cournot cross-price elasticity with price change for education, 114 countries in 1996<sup>1</sup>—Continued**

	Food, beverage, & tobacco	Clothing & footwear	Gross rent, fuel, & power	House operations	Medical care	Transport & communica- tion	Recreation <sup>2</sup>	Other
<i>High-income countries—Continued</i>								
Finland	-0.004	-0.009	-0.011	-0.011	-0.012	-0.011	-0.013	-0.012
Bahamas	-0.004	-0.009	-0.011	-0.011	-0.012	-0.011	-0.013	-0.012
Sweden	-0.003	-0.009	-0.011	-0.011	-0.012	-0.011	-0.013	-0.012
Netherlands	-0.003	-0.009	-0.011	-0.011	-0.012	-0.011	-0.013	-0.012
France	-0.003	-0.009	-0.011	-0.011	-0.012	-0.011	-0.013	-0.012
United Kingdom	-0.003	-0.009	-0.011	-0.011	-0.012	-0.011	-0.013	-0.012
Belgium	-0.003	-0.009	-0.011	-0.011	-0.012	-0.011	-0.013	-0.012
Norway	-0.003	-0.009	-0.011	-0.011	-0.012	-0.011	-0.013	-0.012
Italy	-0.003	-0.009	-0.011	-0.011	-0.012	-0.011	-0.013	-0.012
Austria	-0.003	-0.009	-0.011	-0.011	-0.012	-0.011	-0.013	-0.012
Germany	-0.003	-0.009	-0.011	-0.011	-0.012	-0.011	-0.013	-0.012
Australia	-0.003	-0.009	-0.011	-0.011	-0.012	-0.011	-0.013	-0.012
Japan	-0.003	-0.009	-0.011	-0.011	-0.012	-0.011	-0.013	-0.012
Canada	-0.003	-0.009	-0.011	-0.011	-0.012	-0.011	-0.013	-0.012
Bermuda	-0.003	-0.009	-0.011	-0.011	-0.012	-0.011	-0.013	-0.012
Switzerland	-0.003	-0.009	-0.011	-0.011	-0.012	-0.012	-0.013	-0.012
Barbados	-0.003	-0.009	-0.011	-0.011	-0.012	-0.012	-0.013	-0.012
Hong Kong	-0.003	-0.009	-0.011	-0.011	-0.012	-0.012	-0.013	-0.012
Iceland	-0.002	-0.009	-0.011	-0.011	-0.012	-0.012	-0.013	-0.012
Denmark	-0.002	-0.009	-0.011	-0.011	-0.012	-0.012	-0.013	-0.012
Luxembourg	-0.001	-0.009	-0.012	-0.012	-0.012	-0.012	-0.013	-0.012
United States	-0.001	-0.009	-0.012	-0.012	-0.012	-0.012	-0.013	-0.012
<i>Low-income average</i>	-0.006	-0.007	-0.010	-0.009	-0.012	-0.010	-0.017	-0.012
<i>Middle-income average</i>	-0.005	-0.008	-0.010	-0.010	-0.012	-0.011	-0.013	-0.012
<i>High-income average</i>	-0.003	-0.009	-0.011	-0.011	-0.012	-0.011	-0.013	-0.012

<sup>1</sup>Countries are reported based on ascending per capita real income levels.

<sup>2</sup>As the estimated budget share was negative for Tanzania we do not report the elasticity for this country.

Source: Authors' calculation using the 1996 ICP data.

**Slutsky cross-price elasticity with price change for transport and communication, 114 countries in 1996<sup>1</sup>**

	Food, beverage, & tobacco	Clothing & footwear	Gross rent, fuel, & power	House operations	Medical care	Education	Recreation <sup>2</sup>	Other
<i>Low-income countries:</i>								
Tanzania	0.047	0.054	0.080	0.079	0.172	0.064		0.152
Nigeria	0.050	0.059	0.085	0.085	0.139	0.070	0.419	0.131
Tajikistan	0.052	0.062	0.088	0.087	0.133	0.073	0.265	0.126
Zambia	0.052	0.062	0.088	0.088	0.132	0.073	0.252	0.126
Yemen	0.052	0.062	0.088	0.088	0.132	0.073	0.251	0.126
Malawi	0.053	0.064	0.090	0.089	0.129	0.075	0.219	0.124
Madagascar	0.053	0.064	0.090	0.089	0.129	0.075	0.218	0.124
Mali	0.053	0.064	0.090	0.090	0.129	0.075	0.212	0.124
Mongolia	0.054	0.064	0.090	0.090	0.129	0.075	0.210	0.124
Benin	0.055	0.068	0.094	0.093	0.126	0.079	0.176	0.122
Kenya	0.056	0.069	0.095	0.095	0.125	0.081	0.168	0.122
Sierra Leone	0.057	0.070	0.096	0.096	0.125	0.082	0.162	0.122
Nepal	0.057	0.070	0.096	0.096	0.125	0.082	0.162	0.122
Turkmenistan	0.057	0.071	0.097	0.097	0.125	0.083	0.160	0.122
Congo	0.058	0.072	0.098	0.098	0.125	0.085	0.156	0.122
Senegal	0.058	0.073	0.099	0.099	0.125	0.086	0.154	0.122
Vietnam	0.058	0.073	0.100	0.099	0.125	0.086	0.153	0.122
Bangladesh	0.058	0.074	0.100	0.099	0.125	0.086	0.153	0.122
Pakistan	0.059	0.076	0.102	0.102	0.125	0.089	0.149	0.123
Azerbaijan	0.060	0.077	0.103	0.103	0.125	0.090	0.147	0.123
Côte d'Ivoire	0.060	0.077	0.104	0.103	0.125	0.090	0.147	0.123
Paraguay	0.060	0.077	0.104	0.103	0.126	0.091	0.147	0.123
Uzbekistan	0.060	0.078	0.105	0.104	0.126	0.091	0.146	0.124
Kyrgyzstan	0.060	0.078	0.105	0.104	0.126	0.091	0.146	0.124
Cameroon	0.060	0.078	0.105	0.104	0.126	0.092	0.146	0.124
Moldova	0.060	0.078	0.105	0.104	0.126	0.092	0.146	0.124
Bolivia	0.060	0.079	0.105	0.105	0.126	0.092	0.145	0.124
Ecuador	0.061	0.079	0.106	0.105	0.126	0.093	0.145	0.124
Armenia	0.061	0.080	0.106	0.106	0.126	0.094	0.144	0.125
Sri Lanka	0.061	0.080	0.107	0.106	0.127	0.094	0.144	0.125
Jordan	0.061	0.081	0.107	0.107	0.127	0.095	0.144	0.125
Albania	0.061	0.082	0.109	0.108	0.127	0.096	0.143	0.126
Indonesia	0.061	0.082	0.109	0.109	0.128	0.096	0.143	0.126
Jamaica	0.061	0.082	0.109	0.109	0.128	0.096	0.143	0.126
Zimbabwe	0.061	0.082	0.109	0.109	0.128	0.097	0.143	0.126
Guinea	0.061	0.083	0.110	0.109	0.128	0.097	0.143	0.126
Syria	0.062	0.083	0.111	0.110	0.128	0.098	0.143	0.127
Georgia	0.062	0.084	0.111	0.110	0.128	0.098	0.143	0.127
<i>Middle-income countries:</i>								
Ukraine	0.062	0.085	0.112	0.112	0.129	0.100	0.143	0.128
Philippines	0.062	0.086	0.113	0.113	0.130	0.101	0.143	0.129
Peru	0.062	0.086	0.114	0.113	0.130	0.101	0.143	0.129
Botswana	0.062	0.086	0.114	0.114	0.130	0.102	0.143	0.129
Thailand	0.062	0.087	0.114	0.114	0.130	0.102	0.143	0.129
Morocco	0.062	0.087	0.115	0.114	0.131	0.102	0.143	0.129
Venezuela	0.062	0.087	0.115	0.114	0.131	0.102	0.143	0.129
Macedonia	0.062	0.088	0.115	0.115	0.131	0.103	0.143	0.130
Belize	0.062	0.088	0.116	0.115	0.131	0.103	0.143	0.130

—Continued

**Slutsky cross-price elasticity with price change for transport and communication, 114 countries in 1996<sup>1</sup>—Continued**

	Food, beverage, & tobacco	Clothing & footwear	Gross rent, fuel, & power	House operations	Medical care	Education	Recreation <sup>2</sup>	Other
<i>Middle-income countries—Continued</i>								
Egypt	0.062	0.088	0.116	0.115	0.131	0.103	0.143	0.130
St. Vincent & Grenadines	0.062	0.088	0.116	0.115	0.131	0.103	0.143	0.130
Swaziland	0.062	0.089	0.116	0.116	0.132	0.104	0.143	0.131
Lebanon	0.062	0.089	0.117	0.116	0.132	0.105	0.143	0.131
Belarus	0.062	0.089	0.117	0.117	0.132	0.105	0.143	0.131
Kazakhstan	0.062	0.089	0.117	0.117	0.132	0.105	0.143	0.131
Dominica	0.062	0.089	0.117	0.117	0.132	0.105	0.143	0.131
Latvia	0.061	0.090	0.118	0.118	0.133	0.106	0.143	0.132
St. Lucia	0.061	0.090	0.118	0.118	0.133	0.106	0.143	0.132
Brazil	0.061	0.090	0.118	0.118	0.133	0.106	0.143	0.132
Bulgaria	0.061	0.090	0.118	0.118	0.133	0.106	0.144	0.132
Russia	0.061	0.091	0.119	0.118	0.133	0.107	0.144	0.132
Fiji	0.061	0.091	0.119	0.119	0.134	0.107	0.144	0.133
Grenada	0.061	0.091	0.119	0.119	0.134	0.107	0.144	0.133
Turkey	0.061	0.092	0.120	0.119	0.134	0.108	0.144	0.133
Lithuania	0.061	0.092	0.120	0.120	0.134	0.108	0.144	0.133
Romania	0.061	0.092	0.120	0.120	0.134	0.108	0.144	0.133
Iran	0.060	0.093	0.121	0.121	0.135	0.109	0.144	0.134
Mexico	0.060	0.093	0.121	0.121	0.135	0.109	0.145	0.134
Bahrain	0.060	0.093	0.122	0.121	0.135	0.110	0.145	0.134
Chile	0.060	0.094	0.122	0.122	0.136	0.110	0.145	0.134
Antigua & Barbuda	0.060	0.094	0.122	0.122	0.136	0.110	0.145	0.135
Poland	0.060	0.094	0.123	0.122	0.136	0.111	0.145	0.135
Trinidad & Tobago	0.060	0.095	0.123	0.123	0.136	0.111	0.145	0.135
Estonia	0.059	0.095	0.123	0.123	0.137	0.112	0.145	0.136
Gabon	0.059	0.095	0.124	0.123	0.137	0.112	0.145	0.136
Tunisia	0.059	0.095	0.124	0.124	0.137	0.112	0.146	0.136
St. Kitts & Nevis	0.059	0.096	0.124	0.124	0.137	0.112	0.146	0.136
Uruguay	0.059	0.096	0.124	0.124	0.137	0.113	0.146	0.136
Slovakia	0.059	0.096	0.125	0.124	0.137	0.113	0.146	0.136
Hungary	0.058	0.097	0.126	0.126	0.138	0.114	0.147	0.138
Argentina	0.056	0.099	0.128	0.127	0.140	0.116	0.148	0.139
Oman	0.055	0.099	0.128	0.128	0.140	0.117	0.148	0.140
Qatar	0.054	0.100	0.129	0.129	0.141	0.118	0.148	0.140
Slovenia	0.054	0.101	0.130	0.129	0.142	0.118	0.149	0.141
<i>High-income countries:</i>								
Czech Republic	0.053	0.101	0.130	0.130	0.142	0.119	0.149	0.141
Greece	0.051	0.102	0.132	0.131	0.143	0.120	0.150	0.142
Korea	0.051	0.102	0.132	0.132	0.143	0.121	0.150	0.142
Portugal	0.050	0.103	0.132	0.132	0.143	0.121	0.150	0.143
Spain	0.050	0.103	0.132	0.132	0.144	0.121	0.150	0.143
Ireland	0.049	0.103	0.133	0.132	0.144	0.122	0.151	0.143
Singapore	0.048	0.104	0.133	0.133	0.144	0.122	0.151	0.143
Mauritius	0.047	0.104	0.134	0.134	0.145	0.123	0.151	0.144
Israel	0.046	0.105	0.134	0.134	0.145	0.123	0.152	0.144
New Zealand	0.046	0.105	0.135	0.134	0.145	0.124	0.152	0.145

—Continued

**Slutsky cross-price elasticity with price change for transport and communication, 114 countries in 1996<sup>1</sup>—Continued**

	Food, beverage, & tobacco	Clothing & footwear	Gross rent, fuel, & power	House operations	Medical care	Education	Recreation <sup>2</sup>	Other
<i>High-income countries—Continued</i>								
Finland	0.045	0.105	0.135	0.134	0.146	0.124	0.152	0.145
Bahamas	0.045	0.105	0.135	0.135	0.146	0.124	0.152	0.145
Sweden	0.042	0.106	0.136	0.136	0.147	0.125	0.153	0.146
Netherlands	0.042	0.106	0.136	0.136	0.147	0.125	0.153	0.146
France	0.039	0.107	0.137	0.137	0.148	0.126	0.154	0.147
United Kingdom	0.039	0.107	0.137	0.137	0.148	0.126	0.154	0.147
Belgium	0.039	0.107	0.138	0.137	0.148	0.127	0.154	0.147
Norway	0.038	0.107	0.138	0.137	0.148	0.127	0.154	0.147
Italy	0.038	0.107	0.138	0.137	0.148	0.127	0.154	0.147
Austria	0.037	0.108	0.138	0.138	0.148	0.127	0.154	0.148
Germany	0.037	0.108	0.138	0.138	0.148	0.127	0.154	0.148
Australia	0.036	0.108	0.138	0.138	0.149	0.128	0.154	0.148
Japan	0.035	0.108	0.139	0.138	0.149	0.128	0.155	0.148
Canada	0.034	0.109	0.139	0.139	0.149	0.128	0.155	0.148
Bermuda	0.032	0.109	0.140	0.139	0.150	0.129	0.155	0.149
Switzerland	0.031	0.109	0.140	0.140	0.150	0.129	0.155	0.149
Barbados	0.031	0.109	0.140	0.140	0.150	0.129	0.155	0.149
Hong Kong	0.031	0.109	0.140	0.140	0.150	0.129	0.155	0.149
Iceland	0.030	0.109	0.140	0.140	0.150	0.129	0.155	0.149
Denmark	0.030	0.110	0.140	0.140	0.150	0.129	0.156	0.149
Luxembourg	0.016	0.112	0.143	0.143	0.153	0.133	0.158	0.152
United States	0.013	0.113	0.144	0.143	0.153	0.133	0.158	0.152
<i>Low-income average</i>	0.058	0.073	0.100	0.099	0.128	0.086	0.173	0.125
<i>Middle-income average</i>	0.060	0.092	0.120	0.119	0.134	0.108	0.144	0.133
<i>High-income average</i>	0.039	0.107	0.137	0.136	0.147	0.126	0.153	0.146

<sup>1</sup>Countries are reported based on ascending per capita real income levels.

<sup>2</sup>As the estimated budget share was negative for Tanzania we do not report the elasticity for this country.

Source: Authors' calculation using the 1996 ICP data.

**Cournot cross-price elasticity with price change for transport/communication, 114 countries in 1996<sup>1</sup>**

	Food, beverage, & tobacco	Clothing & footwear	Gross rent, fuel, & power	House operations	Medical care	Education	Recreation <sup>2</sup>	Other
<i>Low-income countries:</i>								
Tanzania	0.006	0.007	0.010	0.010	0.022	0.008		0.019
Nigeria	0.005	0.006	0.008	0.008	0.013	0.006	0.039	0.012
Tajikistan	0.004	0.005	0.007	0.007	0.011	0.006	0.021	0.010
Zambia	0.004	0.005	0.007	0.007	0.010	0.006	0.020	0.010
Yemen	0.004	0.005	0.007	0.007	0.010	0.006	0.019	0.010
Malawi	0.004	0.004	0.006	0.006	0.009	0.005	0.015	0.009
Madagascar	0.004	0.004	0.006	0.006	0.009	0.005	0.015	0.009
Mali	0.004	0.004	0.006	0.006	0.009	0.005	0.014	0.008
Mongolia	0.004	0.004	0.006	0.006	0.009	0.005	0.014	0.008
Benin	0.003	0.004	0.005	0.005	0.007	0.004	0.009	0.006
Kenya	0.003	0.003	0.004	0.004	0.006	0.004	0.008	0.006
Sierra Leone	0.002	0.003	0.004	0.004	0.005	0.003	0.007	0.005
Nepal	0.002	0.003	0.004	0.004	0.005	0.003	0.007	0.005
Turkmenistan	0.002	0.003	0.004	0.004	0.005	0.003	0.006	0.005
Congo	0.002	0.002	0.003	0.003	0.004	0.003	0.005	0.004
Senegal	0.002	0.002	0.003	0.003	0.004	0.003	0.005	0.004
Vietnam	0.002	0.002	0.003	0.003	0.004	0.002	0.004	0.004
Bangladesh	0.002	0.002	0.003	0.003	0.004	0.002	0.004	0.003
Pakistan	0.001	0.002	0.002	0.002	0.003	0.002	0.003	0.003
Azerbaijan	0.001	0.001	0.002	0.002	0.002	0.002	0.003	0.002
Côte d'Ivoire	0.001	0.001	0.002	0.002	0.002	0.001	0.002	0.002
Paraguay	0.001	0.001	0.002	0.002	0.002	0.001	0.002	0.002
Uzbekistan	0.001	0.001	0.001	0.001	0.002	0.001	0.002	0.002
Kyrgyzstan	0.001	0.001	0.001	0.001	0.002	0.001	0.002	0.002
Cameroon	0.001	0.001	0.001	0.001	0.002	0.001	0.002	0.002
Moldova	0.001	0.001	0.001	0.001	0.002	0.001	0.002	0.002
Bolivia	0.001	0.001	0.001	0.001	0.001	0.001	0.002	0.001
Ecuador	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Armenia	0.000	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Sri Lanka	0.000	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Jordan	0.000	0.000	0.000	0.000	0.001	0.000	0.001	0.001
Albania	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Indonesia	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Jamaica	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Zimbabwe	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Guinea	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Syria	0.000	0.000	0.000	0.000	-0.001	0.000	-0.001	-0.001
Georgia	0.000	0.000	0.000	0.000	-0.001	0.000	-0.001	-0.001
<i>Middle-income countries:</i>								
Ukraine	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001
Philippines	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.002	-0.001
Peru	-0.001	-0.001	-0.001	-0.001	-0.002	-0.001	-0.002	-0.002
Botswana	-0.001	-0.001	-0.001	-0.001	-0.002	-0.001	-0.002	-0.002
Thailand	-0.001	-0.001	-0.001	-0.001	-0.002	-0.001	-0.002	-0.002
Morocco	-0.001	-0.001	-0.002	-0.002	-0.002	-0.001	-0.002	-0.002
Venezuela	-0.001	-0.001	-0.002	-0.002	-0.002	-0.001	-0.002	-0.002
Macedonia	-0.001	-0.001	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002
Belize	-0.001	-0.001	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002

—Continued



**Cournot cross-price elasticity with price change for transport/communication, 114 countries  
in 1996<sup>1</sup>—Continued**

	Food, beverage, & tobacco	Clothing & footwear	Gross rent, fuel, & power	House operations	Medical care	Education	Recreation <sup>2</sup>	Other
<i>Middle-income countries—Continued</i>								
Egypt	-0.001	-0.001	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002
St. Vincent & Grenadines	-0.001	-0.001	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002
Swaziland	-0.001	-0.002	-0.002	-0.002	-0.002	-0.002	-0.003	-0.002
Lebanon	-0.001	-0.002	-0.002	-0.002	-0.003	-0.002	-0.003	-0.003
Belarus	-0.001	-0.002	-0.002	-0.002	-0.003	-0.002	-0.003	-0.003
Kazakhstan	-0.001	-0.002	-0.002	-0.002	-0.003	-0.002	-0.003	-0.003
Dominica	-0.001	-0.002	-0.002	-0.002	-0.003	-0.002	-0.003	-0.003
Latvia	-0.001	-0.002	-0.003	-0.003	-0.003	-0.002	-0.003	-0.003
St. Lucia	-0.001	-0.002	-0.003	-0.003	-0.003	-0.002	-0.003	-0.003
Brazil	-0.001	-0.002	-0.003	-0.003	-0.003	-0.002	-0.003	-0.003
Bulgaria	-0.001	-0.002	-0.003	-0.003	-0.003	-0.002	-0.003	-0.003
Russia	-0.001	-0.002	-0.003	-0.003	-0.003	-0.003	-0.003	-0.003
Fiji	-0.002	-0.002	-0.003	-0.003	-0.003	-0.003	-0.004	-0.003
Grenada	-0.002	-0.002	-0.003	-0.003	-0.003	-0.003	-0.004	-0.003
Turkey	-0.002	-0.002	-0.003	-0.003	-0.003	-0.003	-0.004	-0.003
Lithuania	-0.002	-0.002	-0.003	-0.003	-0.004	-0.003	-0.004	-0.004
Romania	-0.002	-0.003	-0.003	-0.003	-0.004	-0.003	-0.004	-0.004
Iran	-0.002	-0.003	-0.003	-0.003	-0.004	-0.003	-0.004	-0.004
Mexico	-0.002	-0.003	-0.004	-0.004	-0.004	-0.003	-0.004	-0.004
Bahrain	-0.002	-0.003	-0.004	-0.004	-0.004	-0.003	-0.004	-0.004
Chile	-0.002	-0.003	-0.004	-0.004	-0.004	-0.003	-0.004	-0.004
Antigua & Barbuda	-0.002	-0.003	-0.004	-0.004	-0.004	-0.003	-0.004	-0.004
Poland	-0.002	-0.003	-0.004	-0.004	-0.004	-0.004	-0.005	-0.004
Trinidad & Tobago	-0.002	-0.003	-0.004	-0.004	-0.004	-0.004	-0.005	-0.004
Estonia	-0.002	-0.003	-0.004	-0.004	-0.005	-0.004	-0.005	-0.005
Gabon	-0.002	-0.003	-0.004	-0.004	-0.005	-0.004	-0.005	-0.005
Tunisia	-0.002	-0.003	-0.004	-0.004	-0.005	-0.004	-0.005	-0.005
St. Kitts & Nevis	-0.002	-0.003	-0.004	-0.004	-0.005	-0.004	-0.005	-0.005
Uruguay	-0.002	-0.003	-0.004	-0.004	-0.005	-0.004	-0.005	-0.005
Slovakia	-0.002	-0.003	-0.004	-0.004	-0.005	-0.004	-0.005	-0.005
Hungary	-0.002	-0.004	-0.005	-0.005	-0.005	-0.004	-0.006	-0.005
Argentina	-0.002	-0.004	-0.005	-0.005	-0.006	-0.005	-0.006	-0.006
Oman	-0.002	-0.004	-0.006	-0.006	-0.006	-0.005	-0.006	-0.006
Qatar	-0.002	-0.004	-0.006	-0.006	-0.006	-0.005	-0.007	-0.006
Slovenia	-0.002	-0.005	-0.006	-0.006	-0.006	-0.005	-0.007	-0.006
<i>High-income countries:</i>								
Czech Republic	-0.002	-0.005	-0.006	-0.006	-0.007	-0.006	-0.007	-0.007
Greece	-0.002	-0.005	-0.006	-0.006	-0.007	-0.006	-0.007	-0.007
Korea	-0.002	-0.005	-0.006	-0.006	-0.007	-0.006	-0.007	-0.007
Portugal	-0.002	-0.005	-0.007	-0.007	-0.007	-0.006	-0.007	-0.007
Spain	-0.002	-0.005	-0.007	-0.007	-0.007	-0.006	-0.007	-0.007
Ireland	-0.002	-0.005	-0.007	-0.007	-0.007	-0.006	-0.008	-0.007
Singapore	-0.002	-0.005	-0.007	-0.007	-0.007	-0.006	-0.008	-0.007
Mauritius	-0.002	-0.005	-0.007	-0.007	-0.008	-0.006	-0.008	-0.008
Israel	-0.002	-0.006	-0.007	-0.007	-0.008	-0.007	-0.008	-0.008
New Zealand	-0.002	-0.006	-0.007	-0.007	-0.008	-0.007	-0.008	-0.008

—Continued

**Cournot cross-price elasticity with price change for transport/communication, 114 countries in 1996<sup>1</sup>—Continued**

	Food, beverage, & tobacco	Clothing & footwear	Gross rent, fuel, & power	House operations	Medical care	Education	Recreation <sup>2</sup>	Other
<i>High-income countries—Continued</i>								
Finland	-0.002	-0.006	-0.007	-0.007	-0.008	-0.007	-0.008	-0.008
Bahamas	-0.002	-0.006	-0.007	-0.007	-0.008	-0.007	-0.008	-0.008
Sweden	-0.002	-0.006	-0.008	-0.008	-0.008	-0.007	-0.009	-0.008
Netherlands	-0.002	-0.006	-0.008	-0.008	-0.008	-0.007	-0.009	-0.008
France	-0.002	-0.006	-0.008	-0.008	-0.009	-0.007	-0.009	-0.008
United Kingdom	-0.002	-0.006	-0.008	-0.008	-0.009	-0.007	-0.009	-0.009
Belgium	-0.002	-0.006	-0.008	-0.008	-0.009	-0.007	-0.009	-0.009
Norway	-0.002	-0.006	-0.008	-0.008	-0.009	-0.007	-0.009	-0.009
Italy	-0.002	-0.006	-0.008	-0.008	-0.009	-0.007	-0.009	-0.009
Austria	-0.002	-0.006	-0.008	-0.008	-0.009	-0.008	-0.009	-0.009
Germany	-0.002	-0.006	-0.008	-0.008	-0.009	-0.008	-0.009	-0.009
Australia	-0.002	-0.006	-0.008	-0.008	-0.009	-0.008	-0.009	-0.009
Japan	-0.002	-0.006	-0.008	-0.008	-0.009	-0.008	-0.009	-0.009
Canada	-0.002	-0.007	-0.008	-0.008	-0.009	-0.008	-0.009	-0.009
Bermuda	-0.002	-0.007	-0.009	-0.009	-0.009	-0.008	-0.010	-0.009
Switzerland	-0.002	-0.007	-0.009	-0.009	-0.009	-0.008	-0.010	-0.009
Barbados	-0.002	-0.007	-0.009	-0.009	-0.009	-0.008	-0.010	-0.009
Hong Kong	-0.002	-0.007	-0.009	-0.009	-0.009	-0.008	-0.010	-0.009
Iceland	-0.002	-0.007	-0.009	-0.009	-0.009	-0.008	-0.010	-0.009
Denmark	-0.002	-0.007	-0.009	-0.009	-0.009	-0.008	-0.010	-0.009
Luxembourg	-0.001	-0.007	-0.010	-0.010	-0.010	-0.009	-0.010	-0.010
United States	-0.001	-0.008	-0.010	-0.010	-0.010	-0.009	-0.011	-0.010
<i>Low-income average</i>	0.002	0.002	0.003	0.003	0.004	0.002	0.006	0.004
<i>Middle-income average</i>	-0.002	-0.002	-0.003	-0.003	-0.003	-0.003	-0.004	-0.003
<i>High-income average</i>	-0.002	-0.006	-0.008	-0.008	-0.008	-0.007	-0.009	-0.008

<sup>1</sup>Countries are reported based on ascending per capita real income levels.

<sup>2</sup>As the estimated budget share was negative for Tanzania we do not report the elasticity for this country.

Source: Authors' calculation using the 1996 ICP data.

**Slutsky cross-price elasticity with price change for recreation, 114 countries in 1996<sup>1</sup>**

	Food, beverage, & tobacco	Clothing & footwear	Gross rent, fuel, & power	House operations	Medical care	Education	Transport & communica- tion	Other
<i>Low-income countries:</i>								
Tanzania	0.011	0.013	0.018	0.018	0.040	0.015	0.019	0.035
Nigeria	0.015	0.018	0.025	0.025	0.041	0.021	0.026	0.039
Tajikistan	0.017	0.020	0.028	0.028	0.043	0.023	0.029	0.041
Zambia	0.017	0.020	0.029	0.029	0.043	0.024	0.029	0.041
Yemen	0.017	0.020	0.029	0.029	0.043	0.024	0.029	0.041
Malawi	0.018	0.022	0.031	0.030	0.044	0.026	0.031	0.042
Madagascar	0.018	0.022	0.031	0.030	0.044	0.026	0.031	0.042
Mali	0.018	0.022	0.031	0.031	0.045	0.026	0.032	0.043
Mongolia	0.019	0.022	0.031	0.031	0.045	0.026	0.032	0.043
Benin	0.021	0.025	0.035	0.035	0.047	0.030	0.036	0.046
Kenya	0.022	0.027	0.037	0.037	0.049	0.031	0.038	0.047
Sierra Leone	0.023	0.028	0.038	0.038	0.050	0.033	0.039	0.049
Nepal	0.023	0.028	0.038	0.038	0.050	0.033	0.039	0.049
Turkmenistan	0.023	0.029	0.039	0.039	0.050	0.034	0.040	0.049
Congo	0.024	0.030	0.040	0.040	0.051	0.035	0.041	0.050
Senegal	0.024	0.031	0.042	0.041	0.052	0.036	0.042	0.051
Vietnam	0.025	0.031	0.042	0.042	0.053	0.036	0.043	0.052
Bangladesh	0.025	0.031	0.042	0.042	0.053	0.036	0.043	0.052
Pakistan	0.026	0.033	0.045	0.044	0.055	0.039	0.045	0.054
Azerbaijan	0.027	0.034	0.046	0.046	0.056	0.040	0.046	0.055
Côte d'Ivoire	0.027	0.034	0.046	0.046	0.056	0.040	0.047	0.055
Paraguay	0.027	0.035	0.047	0.046	0.056	0.041	0.047	0.055
Uzbekistan	0.027	0.035	0.047	0.047	0.057	0.041	0.048	0.056
Kyrgyzstan	0.027	0.035	0.047	0.047	0.057	0.041	0.048	0.056
Cameroon	0.027	0.035	0.048	0.047	0.057	0.042	0.048	0.056
Moldova	0.027	0.035	0.048	0.047	0.057	0.042	0.048	0.056
Bolivia	0.028	0.036	0.048	0.048	0.058	0.042	0.049	0.057
Ecuador	0.028	0.036	0.049	0.048	0.058	0.043	0.049	0.057
Armenia	0.028	0.037	0.049	0.049	0.059	0.043	0.050	0.058
Sri Lanka	0.028	0.037	0.050	0.049	0.059	0.043	0.050	0.058
Jordan	0.029	0.038	0.050	0.050	0.060	0.044	0.051	0.059
Albania	0.029	0.039	0.052	0.052	0.061	0.046	0.052	0.060
Indonesia	0.029	0.039	0.052	0.052	0.061	0.046	0.053	0.060
Jamaica	0.029	0.039	0.052	0.052	0.061	0.046	0.053	0.060
Zimbabwe	0.029	0.039	0.052	0.052	0.061	0.046	0.053	0.060
Guinea	0.030	0.040	0.053	0.053	0.062	0.047	0.053	0.061
Syria	0.030	0.041	0.054	0.054	0.062	0.048	0.054	0.062
Georgia	0.030	0.041	0.054	0.054	0.063	0.048	0.055	0.062
<i>Middle-income countries:</i>								
Ukraine	0.031	0.042	0.056	0.055	0.064	0.049	0.056	0.063
Philippines	0.031	0.043	0.057	0.057	0.065	0.051	0.057	0.064
Peru	0.031	0.043	0.057	0.057	0.065	0.051	0.058	0.065
Botswana	0.031	0.043	0.057	0.057	0.066	0.051	0.058	0.065
Thailand	0.031	0.044	0.057	0.057	0.066	0.051	0.058	0.065
Morocco	0.031	0.044	0.058	0.058	0.066	0.052	0.059	0.065
Venezuela	0.031	0.044	0.058	0.058	0.066	0.052	0.059	0.066
Macedonia	0.031	0.045	0.059	0.059	0.067	0.053	0.060	0.066
Belize	0.032	0.045	0.059	0.059	0.067	0.053	0.060	0.066

—Continued

**Slutsky cross-price elasticity with price change for recreation, 114 countries in 1996<sup>1</sup>—Continued**

	Food, beverage, & tobacco	Clothing & footwear	Gross rent, fuel, & power	House operations	Medical care	Education	Transport & communica- tion	Other
<i>Middle-income countries—Continued</i>								
Egypt	0.032	0.045	0.059	0.059	0.067	0.053	0.060	0.066
St. Vincent & Grenadines	0.032	0.045	0.059	0.059	0.067	0.053	0.060	0.066
Swaziland	0.032	0.046	0.060	0.060	0.068	0.054	0.061	0.067
Lebanon	0.032	0.046	0.060	0.060	0.068	0.054	0.061	0.068
Belarus	0.032	0.046	0.061	0.060	0.068	0.054	0.061	0.068
Kazakhstan	0.032	0.046	0.061	0.060	0.068	0.054	0.061	0.068
Dominica	0.032	0.046	0.061	0.060	0.068	0.054	0.061	0.068
Latvia	0.032	0.047	0.061	0.061	0.069	0.055	0.062	0.069
St. Lucia	0.032	0.047	0.062	0.061	0.069	0.055	0.062	0.069
Brazil	0.032	0.047	0.062	0.062	0.069	0.055	0.062	0.069
Bulgaria	0.032	0.047	0.062	0.062	0.070	0.055	0.062	0.069
Russia	0.032	0.048	0.062	0.062	0.070	0.056	0.063	0.069
Fiji	0.032	0.048	0.063	0.063	0.071	0.057	0.064	0.070
Grenada	0.032	0.048	0.063	0.063	0.071	0.057	0.064	0.070
Turkey	0.032	0.048	0.063	0.063	0.071	0.057	0.064	0.070
Lithuania	0.032	0.049	0.064	0.063	0.071	0.057	0.064	0.071
Romania	0.032	0.049	0.064	0.064	0.072	0.058	0.065	0.071
Iran	0.032	0.050	0.065	0.065	0.072	0.058	0.065	0.072
Mexico	0.032	0.050	0.065	0.065	0.072	0.059	0.066	0.072
Bahrain	0.032	0.050	0.065	0.065	0.073	0.059	0.066	0.072
Chile	0.032	0.050	0.066	0.065	0.073	0.059	0.066	0.072
Antigua & Barbuda	0.032	0.050	0.066	0.066	0.073	0.059	0.066	0.072
Poland	0.032	0.051	0.066	0.066	0.074	0.060	0.067	0.073
Trinidad & Tobago	0.032	0.051	0.067	0.067	0.074	0.060	0.067	0.073
Estonia	0.032	0.052	0.067	0.067	0.074	0.061	0.068	0.074
Gabon	0.032	0.052	0.067	0.067	0.075	0.061	0.068	0.074
Tunisia	0.032	0.052	0.068	0.068	0.075	0.061	0.068	0.074
St. Kitts & Nevis	0.032	0.052	0.068	0.068	0.075	0.062	0.069	0.074
Uruguay	0.032	0.052	0.068	0.068	0.075	0.062	0.069	0.075
Slovakia	0.032	0.053	0.068	0.068	0.075	0.062	0.069	0.075
Hungary	0.032	0.054	0.070	0.070	0.077	0.063	0.070	0.076
Argentina	0.031	0.055	0.072	0.071	0.078	0.065	0.072	0.078
Oman	0.031	0.056	0.072	0.072	0.079	0.066	0.073	0.079
Qatar	0.031	0.057	0.073	0.073	0.080	0.067	0.074	0.079
Slovenia	0.030	0.057	0.074	0.074	0.080	0.067	0.074	0.080
<i>High-income countries:</i>								
Czech Republic	0.030	0.058	0.074	0.074	0.081	0.068	0.075	0.080
Greece	0.029	0.059	0.075	0.075	0.082	0.069	0.076	0.082
Korea	0.029	0.059	0.076	0.076	0.082	0.069	0.076	0.082
Portugal	0.029	0.059	0.076	0.076	0.083	0.070	0.077	0.082
Spain	0.029	0.059	0.076	0.076	0.083	0.070	0.077	0.082
Ireland	0.028	0.060	0.077	0.077	0.083	0.070	0.077	0.083
Singapore	0.028	0.060	0.077	0.077	0.084	0.071	0.078	0.083
Mauritius	0.027	0.061	0.078	0.078	0.084	0.071	0.078	0.084
Israel	0.027	0.061	0.078	0.078	0.085	0.072	0.079	0.084
New Zealand	0.027	0.061	0.079	0.078	0.085	0.072	0.079	0.084

—Continued

**Slutsky cross-price elasticity with price change for recreation, 114 countries in 1996<sup>1</sup>—Continued**

	Food, beverage, & tobacco	Clothing & footwear	Gross rent, fuel, & power	House operations	Medical care	Education	Transport & communica- tion	Other
<i>High-income countries:—Continued</i>								
Finland	0.027	0.061	0.079	0.079	0.085	0.072	0.079	0.085
Bahamas	0.026	0.061	0.079	0.079	0.085	0.072	0.079	0.085
Sweden	0.025	0.062	0.080	0.080	0.086	0.074	0.081	0.086
Netherlands	0.025	0.063	0.080	0.080	0.087	0.074	0.081	0.086
France	0.023	0.063	0.081	0.081	0.087	0.075	0.082	0.087
United Kingdom	0.023	0.063	0.081	0.081	0.087	0.075	0.082	0.087
Belgium	0.023	0.064	0.082	0.081	0.088	0.075	0.082	0.087
Norway	0.023	0.064	0.082	0.081	0.088	0.075	0.082	0.087
Italy	0.023	0.064	0.082	0.082	0.088	0.075	0.082	0.087
Austria	0.022	0.064	0.082	0.082	0.088	0.076	0.083	0.088
Germany	0.022	0.064	0.082	0.082	0.088	0.076	0.083	0.088
Australia	0.021	0.064	0.082	0.082	0.088	0.076	0.083	0.088
Japan	0.021	0.065	0.083	0.082	0.089	0.076	0.083	0.088
Canada	0.020	0.065	0.083	0.083	0.089	0.076	0.083	0.089
Bermuda	0.019	0.065	0.084	0.083	0.090	0.077	0.084	0.089
Switzerland	0.019	0.065	0.084	0.084	0.090	0.077	0.084	0.089
Barbados	0.019	0.066	0.084	0.084	0.090	0.077	0.084	0.089
Hong Kong	0.018	0.066	0.084	0.084	0.090	0.077	0.084	0.089
Iceland	0.018	0.066	0.084	0.084	0.090	0.078	0.084	0.089
Denmark	0.018	0.066	0.084	0.084	0.090	0.078	0.085	0.090
Luxembourg	0.010	0.068	0.087	0.087	0.093	0.081	0.088	0.093
United States	0.008	0.069	0.088	0.088	0.093	0.081	0.088	0.093
<i>Low-income average</i>	0.024	0.031	0.042	0.042	0.053	0.036	0.043	0.052
<i>Middle-income average</i>	0.032	0.049	0.063	0.063	0.071	0.057	0.064	0.070
<i>High-income average</i>	0.023	0.063	0.081	0.081	0.087	0.074	0.081	0.086

<sup>1</sup>Countries are reported based on ascending per capita real income levels.

Source: Authors' calculation using the 1996 ICP data.

**Cournot cross-price elasticity with price change for recreation, 114 countries in 1996<sup>1</sup>**

	Food, beverage, & tobacco	Clothing & footwear	Gross rent, fuel, & power	House operations	Medical care	Education	Transport & communica- tion	Other
<i>Low-income countries:</i>								
Tanzania	0.013	0.016	0.023	0.023	0.049	0.018	0.024	0.044
Nigeria	0.012	0.014	0.020	0.020	0.033	0.017	0.021	0.031
Tajikistan	0.012	0.014	0.019	0.019	0.029	0.016	0.020	0.028
Zambia	0.011	0.014	0.019	0.019	0.029	0.016	0.020	0.028
Yemen	0.011	0.014	0.019	0.019	0.029	0.016	0.020	0.028
Malawi	0.011	0.013	0.019	0.019	0.027	0.016	0.019	0.026
Madagascar	0.011	0.013	0.019	0.019	0.027	0.016	0.019	0.026
Mali	0.011	0.013	0.018	0.018	0.026	0.015	0.019	0.025
Mongolia	0.011	0.013	0.018	0.018	0.026	0.015	0.019	0.025
Benin	0.010	0.012	0.017	0.017	0.023	0.015	0.017	0.022
Kenya	0.010	0.012	0.017	0.017	0.022	0.014	0.017	0.021
Sierra Leone	0.010	0.012	0.016	0.016	0.021	0.014	0.016	0.020
Nepal	0.010	0.012	0.016	0.016	0.021	0.014	0.016	0.020
Turkmenistan	0.009	0.012	0.016	0.016	0.020	0.014	0.016	0.020
Congo	0.009	0.011	0.015	0.015	0.020	0.013	0.016	0.019
Senegal	0.009	0.011	0.015	0.015	0.019	0.013	0.015	0.019
Vietnam	0.009	0.011	0.015	0.015	0.019	0.013	0.015	0.018
Bangladesh	0.009	0.011	0.015	0.015	0.019	0.013	0.015	0.018
Pakistan	0.008	0.011	0.014	0.014	0.017	0.012	0.014	0.017
Azerbaijan	0.008	0.010	0.014	0.014	0.017	0.012	0.014	0.017
Côte d'Ivoire	0.008	0.010	0.014	0.014	0.017	0.012	0.014	0.016
Paraguay	0.008	0.010	0.014	0.014	0.016	0.012	0.014	0.016
Uzbekistan	0.008	0.010	0.013	0.013	0.016	0.012	0.014	0.016
Kyrgyzstan	0.008	0.010	0.013	0.013	0.016	0.012	0.014	0.016
Cameroon	0.008	0.010	0.013	0.013	0.016	0.012	0.014	0.016
Moldova	0.008	0.010	0.013	0.013	0.016	0.012	0.014	0.016
Bolivia	0.008	0.010	0.013	0.013	0.016	0.011	0.013	0.015
Ecuador	0.007	0.010	0.013	0.013	0.016	0.011	0.013	0.015
Armenia	0.007	0.010	0.013	0.013	0.015	0.011	0.013	0.015
Sri Lanka	0.007	0.010	0.013	0.013	0.015	0.011	0.013	0.015
Jordan	0.007	0.009	0.012	0.012	0.015	0.011	0.013	0.015
Albania	0.007	0.009	0.012	0.012	0.014	0.011	0.012	0.014
Indonesia	0.007	0.009	0.012	0.012	0.014	0.011	0.012	0.014
Jamaica	0.007	0.009	0.012	0.012	0.014	0.011	0.012	0.014
Zimbabwe	0.007	0.009	0.012	0.012	0.014	0.011	0.012	0.014
Guinea	0.007	0.009	0.012	0.012	0.014	0.010	0.012	0.014
Syria	0.006	0.009	0.011	0.011	0.013	0.010	0.012	0.013
Georgia	0.006	0.009	0.011	0.011	0.013	0.010	0.012	0.013
<i>Middle-income countries:</i>								
Ukraine	0.006	0.008	0.011	0.011	0.013	0.010	0.011	0.012
Philippines	0.006	0.008	0.011	0.011	0.012	0.009	0.011	0.012
Peru	0.006	0.008	0.011	0.010	0.012	0.009	0.011	0.012
Botswana	0.006	0.008	0.010	0.010	0.012	0.009	0.011	0.012
Thailand	0.006	0.008	0.010	0.010	0.012	0.009	0.011	0.012
Morocco	0.006	0.008	0.010	0.010	0.012	0.009	0.010	0.012
Venezuela	0.006	0.008	0.010	0.010	0.012	0.009	0.010	0.012
Macedonia	0.005	0.008	0.010	0.010	0.011	0.009	0.010	0.011
Belize	0.005	0.008	0.010	0.010	0.011	0.009	0.010	0.011

—Continued

**Cournot cross-price elasticity with price change for recreation, 114 countries in 1996<sup>1</sup>—Continued**

	Food, beverage, & tobacco	Clothing & footwear	Gross rent, fuel, & power	House operations	Medical care	Education	Transport & communica- tion	Other
<i>Middle-income countries—Continued</i>								
Egypt	0.005	0.008	0.010	0.010	0.011	0.009	0.010	0.011
St. Vincent & Grenadines	0.005	0.008	0.010	0.010	0.011	0.009	0.010	0.011
Swaziland	0.005	0.007	0.010	0.010	0.011	0.009	0.010	0.011
Lebanon	0.005	0.007	0.010	0.010	0.011	0.009	0.010	0.011
Belarus	0.005	0.007	0.010	0.010	0.011	0.009	0.010	0.011
Kazakhstan	0.005	0.007	0.010	0.010	0.011	0.009	0.010	0.011
Dominica	0.005	0.007	0.010	0.010	0.011	0.009	0.010	0.011
Latvia	0.005	0.007	0.009	0.009	0.010	0.008	0.009	0.010
St. Lucia	0.005	0.007	0.009	0.009	0.010	0.008	0.009	0.010
Brazil	0.005	0.007	0.009	0.009	0.010	0.008	0.009	0.010
Bulgaria	0.005	0.007	0.009	0.009	0.010	0.008	0.009	0.010
Russia	0.005	0.007	0.009	0.009	0.010	0.008	0.009	0.010
Fiji	0.005	0.007	0.009	0.009	0.010	0.008	0.009	0.010
Grenada	0.005	0.007	0.009	0.009	0.010	0.008	0.009	0.010
Turkey	0.005	0.007	0.009	0.009	0.010	0.008	0.009	0.010
Lithuania	0.004	0.007	0.009	0.009	0.010	0.008	0.009	0.010
Romania	0.004	0.007	0.009	0.009	0.010	0.008	0.009	0.010
Iran	0.004	0.006	0.008	0.008	0.009	0.008	0.008	0.009
Mexico	0.004	0.006	0.008	0.008	0.009	0.008	0.008	0.009
Bahrain	0.004	0.006	0.008	0.008	0.009	0.007	0.008	0.009
Chile	0.004	0.006	0.008	0.008	0.009	0.007	0.008	0.009
Antigua & Barbuda	0.004	0.006	0.008	0.008	0.009	0.007	0.008	0.009
Poland	0.004	0.006	0.008	0.008	0.009	0.007	0.008	0.009
Trinidad & Tobago	0.004	0.006	0.008	0.008	0.009	0.007	0.008	0.009
Estonia	0.004	0.006	0.008	0.008	0.009	0.007	0.008	0.008
Gabon	0.004	0.006	0.008	0.008	0.008	0.007	0.008	0.008
Tunisia	0.004	0.006	0.008	0.008	0.008	0.007	0.008	0.008
St. Kitts & Nevis	0.004	0.006	0.008	0.007	0.008	0.007	0.008	0.008
Uruguay	0.004	0.006	0.007	0.007	0.008	0.007	0.008	0.008
Slovakia	0.003	0.006	0.007	0.007	0.008	0.007	0.007	0.008
Hungary	0.003	0.005	0.007	0.007	0.008	0.006	0.007	0.008
Argentina	0.003	0.005	0.007	0.007	0.007	0.006	0.007	0.007
Oman	0.003	0.005	0.006	0.006	0.007	0.006	0.006	0.007
Qatar	0.003	0.005	0.006	0.006	0.007	0.006	0.006	0.007
Slovenia	0.002	0.005	0.006	0.006	0.006	0.005	0.006	0.006
<i>High-income countries:</i>								
Czech Republic	0.002	0.004	0.006	0.006	0.006	0.005	0.006	0.006
Greece	0.002	0.004	0.005	0.005	0.006	0.005	0.005	0.006
Korea	0.002	0.004	0.005	0.005	0.006	0.005	0.005	0.006
Portugal	0.002	0.004	0.005	0.005	0.006	0.005	0.005	0.006
Spain	0.002	0.004	0.005	0.005	0.006	0.005	0.005	0.006
Ireland	0.002	0.004	0.005	0.005	0.006	0.005	0.005	0.006
Singapore	0.002	0.004	0.005	0.005	0.005	0.005	0.005	0.005
Mauritius	0.002	0.004	0.005	0.005	0.005	0.004	0.005	0.005
Israel	0.002	0.004	0.005	0.005	0.005	0.004	0.005	0.005
New Zealand	0.002	0.004	0.005	0.005	0.005	0.004	0.005	0.005

—Continued

**Cournot cross-price elasticity with price change for recreation, 114 countries in 1996<sup>1</sup>—Continued**

	Food, beverage, & tobacco	Clothing & footwear	Gross rent, fuel, & power	House operations	Medical care	Education	Transport & communica- tion	Other
<i>High-income countries—Continued</i>								
Finland	0.002	0.004	0.005	0.005	0.005	0.004	0.005	0.005
Bahamas	0.002	0.004	0.005	0.005	0.005	0.004	0.005	0.005
Sweden	0.001	0.003	0.004	0.004	0.005	0.004	0.004	0.004
Netherlands	0.001	0.003	0.004	0.004	0.004	0.004	0.004	0.004
France	0.001	0.003	0.004	0.004	0.004	0.004	0.004	0.004
United Kingdom	0.001	0.003	0.004	0.004	0.004	0.004	0.004	0.004
Belgium	0.001	0.003	0.004	0.004	0.004	0.004	0.004	0.004
Norway	0.001	0.003	0.004	0.004	0.004	0.004	0.004	0.004
Italy	0.001	0.003	0.004	0.004	0.004	0.003	0.004	0.004
Austria	0.001	0.003	0.004	0.004	0.004	0.003	0.004	0.004
Germany	0.001	0.003	0.004	0.004	0.004	0.003	0.004	0.004
Australia	0.001	0.003	0.004	0.004	0.004	0.003	0.004	0.004
Japan	0.001	0.003	0.004	0.004	0.004	0.003	0.004	0.004
Canada	0.001	0.003	0.003	0.003	0.004	0.003	0.003	0.004
Bermuda	0.001	0.003	0.003	0.003	0.004	0.003	0.003	0.004
Switzerland	0.001	0.003	0.003	0.003	0.003	0.003	0.003	0.003
Barbados	0.001	0.003	0.003	0.003	0.003	0.003	0.003	0.003
Hong Kong	0.001	0.002	0.003	0.003	0.003	0.003	0.003	0.003
Iceland	0.001	0.002	0.003	0.003	0.003	0.003	0.003	0.003
Denmark	0.001	0.002	0.003	0.003	0.003	0.003	0.003	0.003
Luxembourg	0.000	0.002	0.002	0.002	0.002	0.002	0.002	0.002
United States	0.000	0.002	0.002	0.002	0.002	0.002	0.002	0.002
<i>Low-income average</i>	0.009	0.011	0.015	0.015	0.020	0.013	0.015	0.019
<i>Middle-income average</i>	0.004	0.007	0.009	0.009	0.010	0.008	0.009	0.010
<i>High-income average</i>	0.001	0.003	0.004	0.004	0.004	0.004	0.004	0.004

<sup>1</sup>Countries are reported based on ascending per capita real income levels.

Source: Authors' calculation using the 1996 ICP data.



**Slutsky cross-price elasticity with price change for other products, 114 countries in 1996<sup>1</sup>**

	Food, beverage, & tobacco	Clothing & footwear	Gross rent, fuel, & power	House operations	Medical care	Education	Transport & communica- tion	Recreation <sup>2</sup>
<i>Low-income countries:</i>								
Tanzania	0.034	0.039	0.058	0.058	0.125	0.046	0.060	
Nigeria	0.041	0.048	0.068	0.068	0.112	0.056	0.070	0.337
Tajikistan	0.043	0.052	0.073	0.073	0.111	0.061	0.075	0.221
Zambia	0.044	0.052	0.074	0.073	0.111	0.061	0.076	0.211
Yemen	0.044	0.052	0.074	0.073	0.111	0.061	0.076	0.211
Malawi	0.045	0.055	0.077	0.076	0.111	0.064	0.078	0.187
Madagascar	0.045	0.055	0.077	0.076	0.111	0.064	0.078	0.187
Mali	0.046	0.055	0.077	0.077	0.111	0.065	0.079	0.182
Mongolia	0.046	0.055	0.078	0.077	0.111	0.065	0.079	0.181
Benin	0.050	0.060	0.084	0.083	0.113	0.071	0.085	0.158
Kenya	0.051	0.063	0.086	0.086	0.114	0.074	0.088	0.153
Sierra Leone	0.052	0.065	0.089	0.088	0.115	0.076	0.090	0.149
Nepal	0.052	0.065	0.089	0.088	0.115	0.076	0.090	0.149
Turkmenistan	0.053	0.066	0.090	0.089	0.115	0.077	0.091	0.148
Congo	0.054	0.067	0.092	0.091	0.117	0.079	0.093	0.146
Senegal	0.055	0.069	0.094	0.093	0.118	0.081	0.095	0.145
Vietnam	0.055	0.069	0.094	0.094	0.118	0.081	0.096	0.145
Bangladesh	0.055	0.070	0.095	0.094	0.118	0.082	0.096	0.145
Pakistan	0.057	0.073	0.098	0.098	0.121	0.086	0.100	0.143
Azerbaijan	0.058	0.074	0.100	0.100	0.122	0.087	0.102	0.143
Côte d'Ivoire	0.058	0.075	0.101	0.101	0.122	0.088	0.102	0.143
Paraguay	0.059	0.075	0.101	0.101	0.123	0.088	0.103	0.143
Uzbekistan	0.059	0.076	0.103	0.102	0.123	0.090	0.104	0.143
Kyrgyzstan	0.059	0.076	0.103	0.102	0.123	0.090	0.104	0.143
Cameroon	0.059	0.077	0.103	0.102	0.124	0.090	0.104	0.143
Moldova	0.059	0.077	0.103	0.102	0.124	0.090	0.104	0.143
Bolivia	0.060	0.078	0.104	0.104	0.125	0.091	0.106	0.143
Ecuador	0.060	0.078	0.105	0.104	0.125	0.092	0.106	0.143
Armenia	0.060	0.079	0.106	0.105	0.126	0.093	0.107	0.144
Sri Lanka	0.060	0.079	0.106	0.106	0.126	0.093	0.107	0.144
Jordan	0.061	0.081	0.107	0.107	0.127	0.095	0.109	0.144
Albania	0.062	0.082	0.110	0.109	0.128	0.097	0.111	0.145
Indonesia	0.062	0.083	0.110	0.110	0.129	0.097	0.112	0.145
Jamaica	0.062	0.083	0.110	0.110	0.129	0.097	0.112	0.145
Zimbabwe	0.062	0.083	0.111	0.110	0.129	0.098	0.112	0.145
Guinea	0.062	0.084	0.111	0.111	0.130	0.098	0.113	0.145
Syria	0.063	0.085	0.113	0.112	0.131	0.100	0.114	0.146
Georgia	0.063	0.085	0.113	0.113	0.131	0.100	0.114	0.146
<i>Middle-income countries:</i>								
Ukraine	0.064	0.088	0.116	0.115	0.133	0.103	0.117	0.147
Philippines	0.064	0.089	0.117	0.117	0.135	0.105	0.119	0.148
Peru	0.064	0.090	0.118	0.118	0.135	0.105	0.120	0.148
Botswana	0.064	0.090	0.118	0.118	0.135	0.105	0.120	0.148
Thailand	0.064	0.090	0.119	0.118	0.136	0.106	0.120	0.148
Morocco	0.064	0.091	0.119	0.119	0.136	0.107	0.121	0.149
Venezuela	0.064	0.091	0.120	0.119	0.136	0.107	0.121	0.149
Macedonia	0.065	0.092	0.121	0.121	0.137	0.108	0.122	0.150
Belize	0.065	0.092	0.121	0.121	0.137	0.108	0.122	0.150

—Continued

**Slutsky cross-price elasticity with price change for other products, 114 countries in 1996<sup>1</sup>—Continued**

	Food, beverage, & tobacco	Clothing & footwear	Gross rent, fuel, & power	House operations	Medical care	Education	Transport & communica- tion	Recreation <sup>2</sup>
<i>Middle-income countries—Continued</i>								
Egypt	0.065	0.092	0.121	0.121	0.137	0.108	0.122	0.150
St. Vincent & Grenadines	0.065	0.092	0.121	0.121	0.138	0.108	0.122	0.150
Swaziland	0.065	0.093	0.123	0.122	0.139	0.110	0.124	0.151
Lebanon	0.065	0.094	0.123	0.123	0.139	0.110	0.124	0.151
Belarus	0.065	0.094	0.123	0.123	0.139	0.111	0.125	0.151
Kazakhstan	0.065	0.094	0.123	0.123	0.139	0.111	0.125	0.151
Dominica	0.065	0.094	0.123	0.123	0.139	0.111	0.125	0.151
Latvia	0.065	0.095	0.125	0.125	0.141	0.112	0.126	0.152
St. Lucia	0.065	0.096	0.125	0.125	0.141	0.112	0.126	0.152
Brazil	0.065	0.096	0.125	0.125	0.141	0.112	0.127	0.152
Bulgaria	0.065	0.096	0.125	0.125	0.141	0.113	0.127	0.152
Russia	0.065	0.097	0.126	0.126	0.142	0.113	0.127	0.153
Fiji	0.065	0.097	0.127	0.127	0.143	0.114	0.128	0.153
Grenada	0.065	0.097	0.127	0.127	0.143	0.114	0.128	0.153
Turkey	0.065	0.098	0.128	0.127	0.143	0.115	0.129	0.154
Lithuania	0.065	0.098	0.128	0.128	0.144	0.116	0.130	0.154
Romania	0.065	0.099	0.129	0.129	0.144	0.116	0.130	0.154
Iran	0.065	0.100	0.130	0.130	0.145	0.117	0.131	0.155
Mexico	0.065	0.100	0.131	0.130	0.145	0.118	0.132	0.156
Bahrain	0.065	0.101	0.131	0.131	0.146	0.118	0.132	0.156
Chile	0.065	0.101	0.131	0.131	0.146	0.119	0.133	0.156
Antigua & Barbuda	0.065	0.101	0.132	0.131	0.146	0.119	0.133	0.156
Poland	0.065	0.102	0.132	0.132	0.147	0.120	0.134	0.157
Trinidad & Tobago	0.065	0.102	0.133	0.133	0.148	0.121	0.134	0.157
Estonia	0.064	0.103	0.134	0.134	0.148	0.121	0.135	0.158
Gabon	0.064	0.103	0.134	0.134	0.149	0.121	0.135	0.158
Tunisia	0.064	0.104	0.135	0.134	0.149	0.122	0.136	0.158
St. Kitts & Nevis	0.064	0.104	0.135	0.135	0.149	0.122	0.136	0.159
Uruguay	0.064	0.104	0.135	0.135	0.150	0.123	0.137	0.159
Slovakia	0.064	0.105	0.136	0.135	0.150	0.123	0.137	0.159
Hungary	0.063	0.106	0.138	0.138	0.152	0.125	0.139	0.161
Argentina	0.062	0.109	0.141	0.141	0.154	0.128	0.142	0.163
Oman	0.061	0.110	0.142	0.142	0.155	0.130	0.143	0.164
Qatar	0.060	0.111	0.144	0.143	0.157	0.131	0.145	0.165
Slovenia	0.060	0.112	0.144	0.144	0.157	0.132	0.145	0.165
<i>High-income countries:</i>								
Czech Republic	0.059	0.113	0.145	0.145	0.158	0.133	0.146	0.166
Greece	0.057	0.114	0.147	0.147	0.160	0.135	0.148	0.168
Korea	0.057	0.115	0.148	0.147	0.160	0.135	0.149	0.168
Portugal	0.056	0.115	0.148	0.148	0.161	0.136	0.149	0.168
Spain	0.056	0.115	0.148	0.148	0.161	0.136	0.150	0.169
Ireland	0.055	0.116	0.149	0.149	0.162	0.137	0.150	0.169
Singapore	0.055	0.117	0.150	0.150	0.162	0.137	0.151	0.170
Mauritius	0.053	0.117	0.151	0.151	0.163	0.138	0.152	0.171
Israel	0.052	0.118	0.152	0.152	0.164	0.139	0.153	0.171
New Zealand	0.052	0.119	0.152	0.152	0.164	0.140	0.153	0.172

—Continued

Appendix table 18

**Slutsky cross-price elasticity with price change for other products, 114 countries in 1996<sup>1</sup>—Continued**

	Food, beverage, & tobacco	Clothing & footwear	Gross rent, fuel, & power	House operations	Medical care	Education	Transport & communica- tion	Recreation <sup>2</sup>
<i>High-income countries—Continued</i>								
Finland	0.051	0.119	0.152	0.152	0.165	0.140	0.153	0.172
Bahamas	0.051	0.119	0.153	0.152	0.165	0.140	0.154	0.172
Sweden	0.048	0.121	0.155	0.154	0.167	0.142	0.156	0.173
Netherlands	0.047	0.121	0.155	0.155	0.167	0.143	0.156	0.174
France	0.045	0.122	0.156	0.156	0.168	0.144	0.157	0.175
United Kingdom	0.045	0.122	0.157	0.156	0.168	0.144	0.158	0.175
Belgium	0.044	0.122	0.157	0.157	0.169	0.144	0.158	0.175
Norway	0.044	0.122	0.157	0.157	0.169	0.145	0.158	0.175
Italy	0.043	0.123	0.157	0.157	0.169	0.145	0.158	0.176
Austria	0.042	0.123	0.158	0.157	0.169	0.145	0.159	0.176
Germany	0.042	0.123	0.158	0.157	0.169	0.145	0.159	0.176
Australia	0.041	0.124	0.158	0.158	0.170	0.146	0.159	0.177
Japan	0.040	0.124	0.159	0.158	0.170	0.146	0.160	0.177
Canada	0.039	0.124	0.159	0.159	0.171	0.147	0.160	0.177
Bermuda	0.037	0.125	0.160	0.160	0.172	0.148	0.161	0.178
Switzerland	0.036	0.125	0.160	0.160	0.172	0.148	0.162	0.178
Barbados	0.036	0.125	0.161	0.160	0.172	0.148	0.162	0.178
Hong Kong	0.035	0.126	0.161	0.160	0.172	0.148	0.162	0.178
Iceland	0.035	0.126	0.161	0.160	0.172	0.148	0.162	0.179
Denmark	0.034	0.126	0.161	0.161	0.172	0.149	0.162	0.179
Luxembourg	0.018	0.130	0.166	0.166	0.177	0.154	0.167	0.183
United States	0.015	0.131	0.167	0.166	0.178	0.154	0.168	0.184
<i>Low-income average</i>	0.055	0.070	0.094	0.094	0.120	0.082	0.096	0.160
<i>Middle-income average</i>	0.064	0.098	0.128	0.128	0.143	0.115	0.129	0.154
<i>High-income average</i>	0.044	0.121	0.155	0.155	0.167	0.143	0.157	0.174

<sup>1</sup>Countries are reported based on ascending per capita real income levels.

<sup>2</sup>As the estimated budget share was negative for Tanzania we do not report the elasticity for this country.

Source: Authors' calculation using the 1996 ICP data.

**Cournot cross-price elasticity with price change for other products, 114 countries in 1996<sup>1</sup>**

	Food, beverage, & tobacco	Clothing & footwear	Gross rent, fuel, & power	House operations	Medical care	Education	Transport & communica- tion	Recreation <sup>2</sup>
<i>Low-income countries:</i>								
Tanzania	0.018	0.021	0.031	0.030	0.066	0.024	0.032	
Nigeria	0.016	0.019	0.027	0.027	0.044	0.022	0.028	0.133
Tajikistan	0.015	0.018	0.025	0.025	0.038	0.021	0.026	0.077
Zambia	0.015	0.018	0.025	0.025	0.038	0.021	0.026	0.072
Yemen	0.015	0.018	0.025	0.025	0.037	0.021	0.026	0.071
Malawi	0.014	0.017	0.024	0.024	0.035	0.020	0.025	0.059
Madagascar	0.014	0.017	0.024	0.024	0.035	0.020	0.025	0.059
Mali	0.014	0.017	0.024	0.024	0.034	0.020	0.024	0.056
Mongolia	0.014	0.017	0.024	0.024	0.034	0.020	0.024	0.055
Benin	0.013	0.016	0.022	0.022	0.029	0.018	0.022	0.041
Kenya	0.012	0.015	0.021	0.021	0.028	0.018	0.021	0.037
Sierra Leone	0.012	0.015	0.020	0.020	0.026	0.017	0.021	0.034
Nepal	0.012	0.015	0.020	0.020	0.026	0.017	0.021	0.034
Turkmenistan	0.012	0.014	0.020	0.020	0.025	0.017	0.020	0.033
Congo	0.011	0.014	0.019	0.019	0.024	0.016	0.019	0.030
Senegal	0.011	0.014	0.019	0.018	0.023	0.016	0.019	0.029
Vietnam	0.011	0.014	0.018	0.018	0.023	0.016	0.019	0.028
Bangladesh	0.011	0.013	0.018	0.018	0.023	0.016	0.019	0.028
Pakistan	0.010	0.013	0.017	0.017	0.021	0.015	0.017	0.025
Azerbaijan	0.010	0.012	0.017	0.017	0.020	0.014	0.017	0.024
Côte d'Ivoire	0.009	0.012	0.016	0.016	0.020	0.014	0.017	0.023
Paraguay	0.009	0.012	0.016	0.016	0.020	0.014	0.016	0.023
Uzbekistan	0.009	0.012	0.016	0.016	0.019	0.014	0.016	0.022
Kyrgyzstan	0.009	0.012	0.016	0.016	0.019	0.014	0.016	0.022
Cameroon	0.009	0.012	0.016	0.016	0.019	0.014	0.016	0.022
Moldova	0.009	0.012	0.016	0.016	0.019	0.014	0.016	0.022
Bolivia	0.009	0.011	0.015	0.015	0.018	0.013	0.016	0.021
Ecuador	0.009	0.011	0.015	0.015	0.018	0.013	0.015	0.021
Armenia	0.008	0.011	0.015	0.015	0.018	0.013	0.015	0.020
Sri Lanka	0.008	0.011	0.015	0.015	0.018	0.013	0.015	0.020
Jordan	0.008	0.011	0.014	0.014	0.017	0.013	0.015	0.019
Albania	0.008	0.010	0.014	0.014	0.016	0.012	0.014	0.018
Indonesia	0.008	0.010	0.014	0.014	0.016	0.012	0.014	0.018
Jamaica	0.008	0.010	0.014	0.013	0.016	0.012	0.014	0.018
Zimbabwe	0.008	0.010	0.013	0.013	0.016	0.012	0.014	0.018
Guinea	0.007	0.010	0.013	0.013	0.016	0.012	0.013	0.017
Syria	0.007	0.010	0.013	0.013	0.015	0.011	0.013	0.017
Georgia	0.007	0.010	0.013	0.013	0.015	0.011	0.013	0.016
<i>Middle-income countries:</i>								
Ukraine	0.007	0.009	0.012	0.012	0.014	0.011	0.012	0.015
Philippines	0.006	0.009	0.011	0.011	0.013	0.010	0.012	0.014
Peru	0.006	0.009	0.011	0.011	0.013	0.010	0.011	0.014
Botswana	0.006	0.009	0.011	0.011	0.013	0.010	0.011	0.014
Thailand	0.006	0.008	0.011	0.011	0.013	0.010	0.011	0.014
Morocco	0.006	0.008	0.011	0.011	0.012	0.010	0.011	0.014
Venezuela	0.006	0.008	0.011	0.011	0.012	0.010	0.011	0.013
Macedonia	0.006	0.008	0.010	0.010	0.012	0.009	0.011	0.013
Belize	0.006	0.008	0.010	0.010	0.012	0.009	0.011	0.013

—Continued

**Cournot cross-price elasticity with price change for other products, 114 countries in 1996<sup>1</sup>—Continued**

	Food, beverage, & tobacco	Clothing & footwear	Gross rent, fuel, & power	House operations	Medical care	Education	Transport & communica- tion	Recreation <sup>2</sup>
<i>Middle-income countries—Continued</i>								
Egypt	0.006	0.008	0.010	0.010	0.012	0.009	0.011	0.013
St. Vincent & Grenadines	0.006	0.008	0.010	0.010	0.012	0.009	0.011	0.013
Swaziland	0.005	0.008	0.010	0.010	0.011	0.009	0.010	0.012
Lebanon	0.005	0.008	0.010	0.010	0.011	0.009	0.010	0.012
Belarus	0.005	0.007	0.010	0.010	0.011	0.009	0.010	0.012
Kazakhstan	0.005	0.007	0.010	0.010	0.011	0.009	0.010	0.012
Dominica	0.005	0.007	0.010	0.010	0.011	0.009	0.010	0.012
Latvia	0.005	0.007	0.009	0.009	0.011	0.008	0.009	0.011
St. Lucia	0.005	0.007	0.009	0.009	0.010	0.008	0.009	0.011
Brazil	0.005	0.007	0.009	0.009	0.010	0.008	0.009	0.011
Bulgaria	0.005	0.007	0.009	0.009	0.010	0.008	0.009	0.011
Russia	0.005	0.007	0.009	0.009	0.010	0.008	0.009	0.011
Fiji	0.004	0.007	0.009	0.009	0.010	0.008	0.009	0.011
Grenada	0.004	0.007	0.009	0.009	0.010	0.008	0.009	0.011
Turkey	0.004	0.007	0.009	0.009	0.010	0.008	0.009	0.010
Lithuania	0.004	0.006	0.008	0.008	0.009	0.008	0.008	0.010
Romania	0.004	0.006	0.008	0.008	0.009	0.007	0.008	0.010
Iran	0.004	0.006	0.008	0.008	0.009	0.007	0.008	0.009
Mexico	0.004	0.006	0.008	0.008	0.009	0.007	0.008	0.009
Bahrain	0.004	0.006	0.008	0.008	0.008	0.007	0.008	0.009
Chile	0.004	0.006	0.008	0.007	0.008	0.007	0.008	0.009
Antigua & Barbuda	0.004	0.006	0.007	0.007	0.008	0.007	0.008	0.009
Poland	0.004	0.006	0.007	0.007	0.008	0.007	0.007	0.009
Trinidad & Tobago	0.003	0.005	0.007	0.007	0.008	0.006	0.007	0.008
Estonia	0.003	0.005	0.007	0.007	0.008	0.006	0.007	0.008
Gabon	0.003	0.005	0.007	0.007	0.007	0.006	0.007	0.008
Tunisia	0.003	0.005	0.007	0.007	0.007	0.006	0.007	0.008
St. Kitts & Nevis	0.003	0.005	0.007	0.006	0.007	0.006	0.007	0.008
Uruguay	0.003	0.005	0.006	0.006	0.007	0.006	0.006	0.008
Slovakia	0.003	0.005	0.006	0.006	0.007	0.006	0.006	0.007
Hungary	0.003	0.004	0.006	0.006	0.006	0.005	0.006	0.007
Argentina	0.002	0.004	0.005	0.005	0.005	0.004	0.005	0.006
Oman	0.002	0.004	0.005	0.005	0.005	0.004	0.005	0.005
Qatar	0.002	0.003	0.004	0.004	0.005	0.004	0.004	0.005
Slovenia	0.002	0.003	0.004	0.004	0.004	0.004	0.004	0.005
<i>High-income countries:</i>								
Czech Republic	0.002	0.003	0.004	0.004	0.004	0.003	0.004	0.004
Greece	0.001	0.002	0.003	0.003	0.003	0.003	0.003	0.004
Korea	0.001	0.002	0.003	0.003	0.003	0.003	0.003	0.003
Portugal	0.001	0.002	0.003	0.003	0.003	0.003	0.003	0.003
Spain	0.001	0.002	0.003	0.003	0.003	0.003	0.003	0.003
Ireland	0.001	0.002	0.003	0.003	0.003	0.002	0.003	0.003
Singapore	0.001	0.002	0.002	0.002	0.003	0.002	0.002	0.003
Mauritius	0.001	0.002	0.002	0.002	0.002	0.002	0.002	0.002
Israel	0.001	0.001	0.002	0.002	0.002	0.002	0.002	0.002
New Zealand	0.001	0.001	0.002	0.002	0.002	0.002	0.002	0.002

—Continued

**Cournot cross-price elasticity with price change for other products, 114 countries in 1996<sup>1</sup>—Continued**

	Food, beverage, & tobacco	Clothing & footwear	Gross rent, fuel, & power	House operations	Medical care	Education	Transport & communica- tion	Recreation <sup>2</sup>
<i>High-income countries—Continued</i>								
Finland	0.001	0.001	0.002	0.002	0.002	0.002	0.002	0.002
Bahamas	0.001	0.001	0.002	0.002	0.002	0.002	0.002	0.002
Sweden	0.000	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Netherlands	0.000	0.001	0.001	0.001	0.001	0.001	0.001	0.001
France	0.000	0.001	0.001	0.001	0.001	0.001	0.001	0.001
United Kingdom	0.000	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Belgium	0.000	0.000	0.001	0.001	0.001	0.001	0.001	0.001
Norway	0.000	0.000	0.001	0.001	0.001	0.001	0.001	0.001
Italy	0.000	0.000	0.001	0.001	0.001	0.000	0.001	0.001
Austria	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Germany	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Australia	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Japan	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Canada	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Bermuda	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Switzerland	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Barbados	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Hong Kong	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Iceland	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Denmark	0.000	0.000	-0.001	-0.001	-0.001	0.000	-0.001	-0.001
Luxembourg	0.000	-0.001	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002
United States	0.000	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002
<i>Low-income average</i>	0.011	0.014	0.019	0.018	0.025	0.016	0.019	0.035
<i>Middle-income average</i>	0.004	0.006	0.009	0.008	0.010	0.008	0.009	0.010
<i>High-income average</i>	0.000	0.001	0.001	0.001	0.001	0.001	0.001	0.001

<sup>1</sup>Countries are reported based on ascending per capita real income levels.

<sup>2</sup>As the estimated budget share was negative for Tanzania we do not report the elasticity for this country.

Source: Authors' calculation using the 1996 ICP data.