



International Evidence on Food Consumption Patterns

An Update Using 2005 International Comparison Program Data

Andrew Muhammad, James L. Seale, Jr., Birgit Meade,
and Anita Regmi

Table 4
Income elasticities for aggregate consumption categories, 144 countries, 2005

| Country | Food, beverages, & tobacco | Clothing & footwear | Housing | House furnishings | Medical & health | Transport & communications | Recreation | Education | Other |
|--------------------------|----------------------------|---------------------|---------|-------------------|--------------------|----------------------------|--------------------|-----------|--------------------|
| Low-income countries: | | | | | | | | | |
| Congo, Dem. Rep. | 0.854 | 0.970 | 1.088 | 1.061 | 1.573 ^a | 1.381 | 3.876 ^a | 0.939 | 2.161 ^a |
| Burundi | 0.839 | 0.969 | 1.084 | 1.059 | 1.573 ^a | 1.306 | 1.868 ^a | 0.937 | 1.640 ^a |
| Liberia | 0.836 | 0.969 | 1.082 | 1.058 | 4.285 | 1.295 | 2.325 ^a | 0.935 | 4.15 ^a |
| Zimbabwe | 0.831 | 0.968 | 1.081 | 1.058 | 3.275 | 1.270 | 2.050 ^a | 0.936 | 4.696 |
| Ethiopia | 0.827 | 0.968 | 1.081 | 1.058 | 3.219 | 1.269 | 5.406 ^a | 0.935 | 3.464 |
| Guinea-Bissau | 0.827 | 0.968 | 1.080 | 1.057 | 3.174 | 1.269 | 1.485 ^a | 0.935 | 3.399 |
| Niger | 0.822 | 0.968 | 1.079 | 1.057 | 2.665 | 1.259 | 2.163 ^a | 0.934 | 3.346 |
| Mozambique | 0.819 | 0.968 | 1.078 | 1.056 | 2.424 | 1.250 | 1.325 ^a | 0.934 | 2.764 |
| Malawi | 0.818 | 0.968 | 1.078 | 1.056 | 2.182 | 1.244 | 3.074 ^a | 0.933 | 2.496 |
| Rwanda | 0.814 | 0.968 | 1.078 | 1.056 | 2.160 | 1.243 | 11.097 | 0.933 | 2.419 |
| Chad | 0.814 | 0.968 | 1.078 | 1.056 | 2.134 | 1.241 | 9.380 | 0.933 | 2.231 |
| Angola | 0.813 | 0.968 | 1.078 | 1.056 | 2.120 | 1.241 | 3.074 ^a | 0.933 | 2.208 |
| Gambia, The | 0.813 | 0.968 | 1.078 | 1.056 | 2.120 | 1.241 | 13.053 | 0.933 | 2.179 |
| Central African Republic | 0.813 | 0.968 | 1.078 | 1.056 | 2.120 | 1.241 | 8.708 | 0.933 | 2.164 |
| Mali | 0.812 | 0.968 | 1.077 | 1.056 | 2.118 | 1.239 | 7.524 | 0.933 | 2.162 |
| Tanzania | 0.810 | 0.968 | 1.077 | 1.056 | 2.092 | 1.236 | 8.614 | 0.933 | 2.163 |
| Sierra Leone | 0.810 | 0.968 | 1.077 | 1.056 | 2.031 | 1.236 | 8.708 | 0.933 | 2.069 |
| Guinea | 0.808 | 0.968 | 1.077 | 1.056 | 2.021 | 1.236 | 7.524 | 0.933 | 2.058 |
| Burkina Faso | 0.806 | 0.968 | 1.077 | 1.056 | 1.987 | 1.234 | 8.614 | 0.933 | 2.021 |
| Zambia | 0.805 | 0.968 | 1.076 | 1.055 | 1.917 | 1.230 | 8.614 | 0.933 | 1.946 |
| Madagascar | 0.805 | 0.968 | 1.076 | 1.055 | 1.909 | 1.229 | 7.524 | 0.933 | 1.942 |
| Uganda | 0.804 | 0.968 | 1.076 | 1.055 | 1.886 | 1.228 | 5.624 | 0.932 | 1.937 |
| Togo | 0.803 | 0.968 | 1.076 | 1.055 | 1.870 | 1.227 | 4.987 | 0.932 | 1.913 |
| Congo, Rep. | 0.801 | 0.968 | 1.075 | 1.055 | 1.820 | 1.223 | 4.052 | 0.932 | 1.937 |
| Nepal | 0.797 | 0.968 | 1.075 | 1.055 | 1.795 | 1.221 | 4.052 | 0.932 | 1.946 |
| Ghana | 0.796 | 0.968 | 1.075 | 1.055 | 1.761 | 1.219 | 4.052 | 0.932 | 1.942 |
| Mauritania | 0.795 | 0.968 | 1.075 | 1.055 | 1.756 | 1.218 | 4.052 | 0.932 | 1.942 |
| Bangladesh | 0.795 | 0.968 | 1.075 | 1.055 | 1.740 | 1.217 | 4.052 | 0.932 | 1.942 |

www.ers.usda.gov

Visit Our Website To Learn More!

www.ers.usda.gov

Recommended citation format for this publication:

Muhammad, Andrew, James L. Seale, Jr., Birgit Meade, and Anita Regmi. *International Evidence on Food Consumption Patterns: An Update Using 2005 International Comparison Program Data*. TB-1929. U.S. Dept. of Agriculture, Econ. Res. Serv. March 2011. Revised February 2013.

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 1929

March 2011



A Report from the Economic Research Service

www.ers.usda.gov

International Evidence on Food Consumption Patterns

An Update Using 2005 International Comparison Program Data

Andrew Muhammad, amuhammad@ers.usda.gov

James L. Seale, Jr.

Birgit Meade, bmeade@ers.usda.gov

Anita Regmi, aregmi@ers.usda.gov

Abstract

In a 2003 report, *International Evidence on Food Consumption Patterns*, ERS economists estimated income and price elasticities of demand for broad consumption categories and food categories across 114 countries using 1996 International Comparison Program (ICP) data. This report updates that analysis with an estimated two-stage demand system across 144 countries using 2005 ICP data. Advances in ICP data collection since 1996 led to better results and more accurate income and price elasticity estimates. Low-income countries spend a greater portion of their budget on necessities, such as food, while richer countries spend a greater proportion of their income on luxuries, such as recreation. Low-value staples, such as cereals, account for a larger share of the food budget in poorer countries, while high-value food items are a larger share of the food budget in richer countries. Overall, low-income countries are more responsive to changes in income and food prices and, therefore, make larger adjustments to their food consumption pattern when incomes and prices change. However, adjustments to price and income changes are not uniform across all food categories. Staple food consumption changes the least, while consumption of higher-value food items changes the most.

This report, originally released in March 2011, was revised in February 2013 to correct the ordering of country names in the appendix tables. Additional clarifications to the data and estimation methods used were added to pages 1, 11, and 18.

Contents

Summary iii

Introduction 1

International Comparison Program Data 2

Two-Stage Cross-Country Demand Model 6

Estimation Procedure and Results 11

Conclusion 19

References 20

Summary

In a 2003 report, *International Evidence on Food Consumption Patterns*, ERS and collaborating economists estimated income and price elasticities of demand for broad consumption categories—such as food, clothing, education, and other goods—and for food categories such as cereals, meats, and dairy across 114 countries using 1996 International Comparison Program (ICP) data. These elasticities measure the degree to which consumption changes when prices or incomes change. The estimates have been widely used in economic models such as the USDA’s Baseline model, the Global Trade Analysis Project (GTAP) model, and the International Food Policy Research Institute’s IMPACT model. This report updates that analysis with a similar two-stage demand system using 2005 ICP data.

What Is the Issue?

An understanding of food demand and food trends across countries, and the ability to predict potential shifts in demand for different food products, are invaluable tools. The most prominent measures of food consumption behavior are income and price elasticities. A number of studies have estimated income and price elasticities using 1996 ICP data and data from years prior. However, advances in ICP data collection since 1996 should lead to better results and more accurate income and price elasticity estimates. Furthermore, the most recent ICP data round (2005) includes a greater number of countries, like developing countries in Sub-Saharan Africa, as well as China and India.

What Did the Study Find?

- Low-income countries allocate a greater portion of additional income to food. As countries become more affluent, more is allocated to luxury categories like recreation. For instance, a dollar increase in income would cause food expenditures in the Democratic Republic of Congo to increase by 63 cents, but only by 6 cents in the United States. In contrast, recreation expenditures in the Democratic Republic of Congo would not increase at all, while in the United States recreation expenditures would increase by 13 cents.
- The share of total budget allocated to housing is lowest in low-income countries and fairly similar in middle- and high-income countries, while the budget share on house furnishings is fairly similar across all income groups. Spending on health clearly rises with income, from 4.5 percent of the average household budget in low-income countries to 8.9 percent in high-income countries.
- The income elasticity of demand for food varies greatly among countries and is highest among low-income countries, where it varies from 0.85 for the Democratic Republic of Congo to 0.71 for Armenia. It ranges between 0.71 and 0.57 for middle-income countries, and from 0.56 to 0.35 for high-income countries. The average income elasticity for low-income countries is 0.78, over 1.5 times the average for high-income countries.

- With affluence, the portion of additional food expenditures allocated to cereals and other staples decreases. For instance, a dollar increase in food expenditures results in cereal expenditures in the Democratic Republic of Congo increasing by 31 cents. By contrast, cereal expenditures in the United States would actually decrease by 2 cents, indicating the lower status afforded this food category by most consumers in rich countries.
- The own-price elasticities (holding marginal utility of income constant) for the food subcategories vary by affluence according to economic theory; low-income countries are more responsive to price changes compared with higher-income countries. For instance, the own-price elasticity value for breads and cereals ranges from -0.50 for the Democratic Republic of Congo to near zero for the United States.
- Overall, low-income countries are more responsive to changes in income and food prices and, therefore, make larger adjustments to their food consumption pattern when incomes and prices change.
- Unlike previous ICP data, restaurant and catering expenditures are included among food in the 2005 data. Consequently, our estimates of the income elasticity of demand for food in high-income countries are larger than the estimates in Seale et al. (2003, derived using 1996 ICP data). We find that the average income elasticity for high-income countries is 0.50, while Seale et al. found it to be 0.34.

How Was the Study Conducted?

We estimate a two-stage demand system using 2005 ICP data. We analyze demand across 144 countries. The first stage involves estimating an aggregate demand system using the Florida-Preference Independence model across nine broad consumption categories: food—which includes food prepared and consumed at home, food away from home, and beverages and tobacco—clothing and footwear, education, housing, house furnishings and operations, medical care, transportation and communications, recreation, and other expenditures. The second stage of the analysis involves a second demand system using the Florida-Slutsky model to estimate demand across eight food subcategories: bread and cereals, meat, fish, dairy products, fruits and vegetables, oils and fats, beverages and tobacco, and other food products. Estimates are used to derive income and price elasticities of demand for broad consumption categories and food categories by country.

Introduction

An understanding of food demand and food trends across countries and the ability to predict potential shifts in demand for different food products is an invaluable tool for all individuals involved in the agricultural sector. In an earlier ERS report, *International Evidence on Food Consumption Patterns*, Seale, Regmi, and Bernstein (2003) fit a two-stage demand system to 1996 International Comparison Program (ICP) data across 114 countries. In that report, Seale and his colleagues estimated income and own-price elasticities of demand for broad consumption categories—such as food, clothing, education, and other goods—and for food categories such as cereals, meats, dairy, and other food groups.

This report updates that analysis with a similar two-stage demand system using 2005 ICP data. In this study, we analyze demand across 144 countries and present income and price elasticities that can be used as inputs in future work to forecast food demand, as well as the need for housing, clothing, transportation, medical care, and other broad consumption categories. Consumers make food purchase decisions based on a budget that must also cover expenses for other goods and services. The budget available for food is dependent on the amount of income spent on these other goods and services. Therefore, an indepth study of food demand requires an understanding of the complete demand patterns of consumers. In this study, we present such a complete demand analysis where household decisionmaking is examined in two stages. In the first stage, a consumer is assumed to make budgetary decisions across broad consumption categories (food, housing, clothing, education, and other goods). In the second stage, the total food budget is further allocated to different food items. In conducting such a complete analysis, we provide demand estimates and income and own-price elasticities for nine broad consumption categories and eight food subcategories. These estimates are provided for countries ranging from low-income and developing, such as Zimbabwe, to high-income developed countries like Canada and the United States.

Advances in ICP data collection since the 1996 round should lead to better results and more accurate income and price elasticity estimates. The International Comparison Project started as a joint venture between the United Nations and the University of Pennsylvania, with the overall purpose of providing comparable Gross Domestic Product (GDP) data for a large number of consumption items across countries (World Bank, 2008; Kravis et al., 1975). The latest ICP round (2005) covers 146 countries; corrects for the scaling problem common to past ICP data as reported by Seale et al. (2003); and employs a new methodology to ensure data accuracy and consistency across the selected countries (Diewert, 2010). The elasticity estimates derived by Seale, Regmi, and Bernstein (2003) using 1996 ICP data have been widely used as input in economic models such as the USDA's Baseline model, the Global Trade Analysis Project (GTAP) model (Reimer and Hertel (2003, 2004), 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 et al. (2007)). Additionally, Cox and Alm (2007) used the parameter estimates from Seale et al. (2003) to derive elasticities based on 2006 expenditure data. The updated results in this report should prove equally valuable.¹

¹The ICP data published by the World Bank are non-additive, i.e., the sub-category expenditures do not add up to the category totals. However, the data used in this report were extracted before the World Bank's final aggregation and do not suffer from this problem.

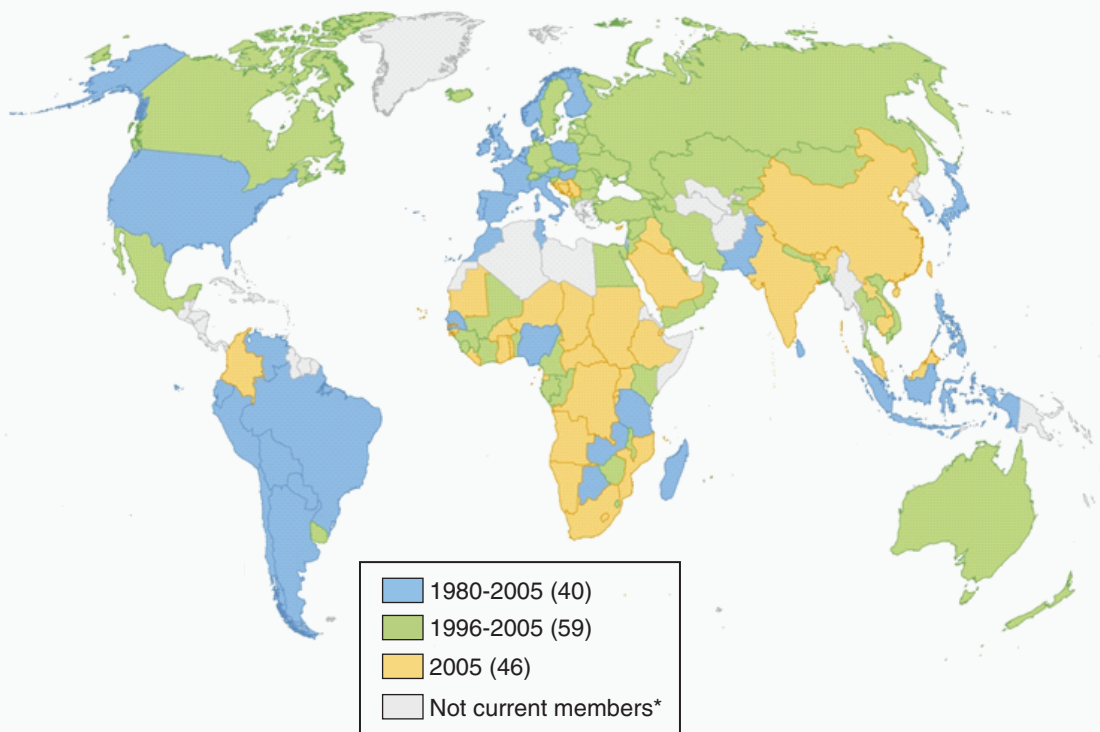
International Comparison Program Data

Expenditure and price data for the two-stage cross-country demand model were again obtained from the International Comparison Project, initiated in 1975 by researchers at the University of Pennsylvania (Kravis et al., 1978) and maintained by the ICP Development Data Group of the World Bank. Over the years, data collected by the ICP have increased from 10 countries in Phase I (1970) to 146 countries in 2005 (table 1). The elasticities presented in this report are based on modeling work that began with Theil, Chung, and Seale (1989) using the data from the first four phases, covering a total of 60 countries. Seale, Regmi, and Bernstein (2003) provided updates for existing countries and additional coverage based on 1996 data that included 65 more countries. However, 10 countries included in the earlier 3 phases were excluded in the 1996 data, resulting in a total of 115 countries, 114 of which were covered by Seale et al. (2003).

The current analysis is based on the latest ICP data (2005), which cover 146 countries. These 146 economies account for more than 95 percent of the world's population and 98 percent of the world's nominal GDP (World Bank, 2008). Figure 1 shows a world map highlighting the countries that were covered in the 2005 ICP, and a list of all countries is provided in table 1. Most of the countries included for the first time in this round are low-income countries in Africa. The number of African countries included more than doubled from 22 in 1996 to 48 in 2005. Several new Asian coun-

Figure 1

Countries covered by the 2005 International Comparison Program (ICP)



*ICP countries from 1996 missing in 2005 are: Greece, Turkmenistan, Uzbekistan, and 12 countries from the Caribbean.

Table 1

Countries in the 2005 ICP Round

| Latin America | Asia | Africa | West Asia | CIS | Europe/OECD |
|---------------|-------------------|-----------------------|--------------|--------------|----------------------|
| Argentina** | Bangladesh* | Angola | Bahrain* | Armenia* | Belgium** |
| Bolivia** | Bhutan | Burundi | Iraq | Azerbaijan* | Denmark** |
| Brazil** | Brunei Darussalam | Benin* | Jordan* | Belarus* | Germany* |
| Chile** | Cambodia | Burkina Faso | Kuwait | Georgia* | Spain** |
| Colombia | China | Botswana** | Lebanon* | Kazakhstan* | France** |
| Ecuador** | Fiji* | Central African Rep. | Oman* | Kyrgyz Rep.* | Ireland** |
| Peru** | Hong Kong** | Côte d'Ivoire* | Qatar* | Moldova* | Italy** |
| Paraguay** | India | Cameroon* | Saudi Arabia | Tajikistan* | Luxembourg** |
| Uruguay* | Indonesia** | Congo, Rep.* | Syria* | Ukraine* | Netherlands** |
| Venezuela** | Iran* | Comoros | Yemen* | Russia* | Austria** |
| | Lao PDR | Cape Verde | | | Portugal** |
| | Macao | Djibouti | | | Finland** |
| | Malaysia | Egypt* | | | Sweden* |
| | Maldives | Ethiopia | | | United Kingdom** |
| | Mongolia* | Gabon* | | | Cyprus |
| | Nepal* | Ghana | | | Czech Republic* |
| | Pakistan** | Gambia, The | | | Estonia* |
| | Philippines** | Guinea-Bissau | | | Hungary** |
| | Singapore* | Equatorial Guinea | | | Latvia* |
| | Sri Lanka** | Guinea* | | | Lithuania* |
| | Taiwan | Kenya* | | | Malta |
| | Thailand* | Liberia | | | Poland** |
| | Vietnam* | Lesotho | | | Slovakia* |
| | | Morocco** | | | Slovenia* |
| | | Madagascar** | | | Bulgaria* |
| | | Mali* | | | Romania* |
| | | Mozambique | | | Turkey* |
| | | Mauritania | | | Iceland* |
| | | Mauritius* | | | Norway** |
| | | Malawi* | | | Switzerland* |
| | | Namibia | | | Croatia |
| | | Niger | | | Macedonia* |
| | | Nigeria** | | | Albania* |
| | | Rwanda | | | Bosnia & Herzegovina |
| | | Sudan | | | Montenegro |
| | | Senegal** | | | Serbia |
| | | Sierra Leone* | | | Australia* |
| | | São Tomé and Príncipe | | | New Zealand* |
| | | Swaziland* | | | Japan** |
| | | Chad | | | Korea** |
| | | Togo | | | Canada* |
| | | Tunisia** | | | Mexico* |
| | | Tanzania** | | | United States** |
| | | Uganda | | | Israel** |
| | | South Africa | | | |
| | | Congo, Dem. Rep. | | | |
| | | Zambia** | | | |
| | | Zimbabwe* | | | |

* Denotes countries (59) present in the 1996 International Comparison Program (ICP) and not in the 1980 ICP. ** Denotes countries (40) present both in the 1996 and the 1980 ICP.

Countries from 1996 missing in 2005 are Greece, Turkmenistan, Uzbekistan, and 12 countries from the Caribbean. Greece is not available at the basic heading but is included at the aggregate level by the World Bank.

OECD = Organisation for Economic Co-operation and Development.

Yellow: included for the first time in the 2005 ICP.

tries have been included, most notably China and India. In Latin America, Colombia has been added, while 12 Caribbean countries were excluded. The Commonwealth of Independent States no longer covers Turkmenistan and Uzbekistan. In West Asia, Iraq and Kuwait were added, while the countries added to the Eurostat/Organisation for Economic Co-operation and Development (OECD) group include Cyprus and Malta in addition to Croatia, Bosnia and Herzegovina, Montenegro, and Serbia.²

Problems in comparing expenditures across countries occur due to differences in currency. Using exchange rates to convert expenditures to a single currency may not always be desirable since exchange rates fail to account for the fact that services are cheaper in developing countries. The 2005 ICP uses a new methodology to compare relative price levels and GDP levels across the 146 countries included in this round.³ This time, the world was divided into 6 regions: 5 geographic regions—Africa (48 countries included), Asia Pacific (23 countries), West Asia (11 countries), South America (10 countries), and the Commonwealth of Independent States (CIS) (10 countries)—and the OECD and other European countries, plus Israel and Russia (46 countries). In earlier rounds, one product list was used for all countries covered, and prices for these products needed to be collected. However, consumption varies sufficiently across regions, making such a common product list impractical. For the 2005 round, each of the regions was able to develop its own product lists and determine its purchasing power parity (PPP) and volume shares independently. Later, the regional results were linked into a global world comparison model, which left the regional relative parities intact. The linking was accomplished by a methodology using 19 ring countries, thus providing representatives from each region.⁴

To facilitate the analysis, the 144 countries covered by the 2005 ICP are divided into low-, middle-, and high-income countries, based on their income relative to that of the United States.⁵ Low-income countries represent those with real per capita income less than 15 percent of the U.S. level, middle-income countries are those with income between 15 and 45 percent of the U.S. level, and high-income countries have per capita income equal to or greater than 45 percent of the U.S. level. This criterion for grouping indicates that the majority of Sub-Saharan African countries, poor transition economies such as Mongolia and Turkmenistan, and low-income Middle Eastern and Asian countries such as Yemen and Nepal fall within the first group. High-income countries include most Western European countries, Australia, New Zealand, Canada, and the United States; while the middle-income countries include better-off transition economies such as Estonia, Hungary, Slovenia, North African countries, and many Latin American countries.

Budget Shares and Volume of Consumption⁶

The average budget shares for the aggregate consumption categories and each of the three country groups are presented in table 2. In the past, the food grouping included food prepared and consumed at home, plus beverages and tobacco. In the 2005 ICP round, food for the first time includes food consumed away from home, captured under the “other food” category. As expected, the budget shares for food tend to decrease as incomes rise, ranging from over 73 percent of the total budget in Tanzania to about 14 percent in the United States. These shares are very close to those of the 1996 round, an

²India and Colombia were in ICP Phases I, II, III, and IV. They were not included in the 1996 ICP data.

³Regional total sums to 148 countries, but Egypt appears in both the African and West Asia regions and Russia appears in both the OECD and CIS regions. This discussion draws heavily on Diewert (2010), who provides detailed methodological information on the 2005 ICP.

⁴Ring countries serve as a small sample of countries stratified by regions that are both representative of their region and have available a wide range of goods and services found in countries outside of their region.

⁵This classification facilitates analysis in this publication 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. Although the 2005 ICP covers 146 countries, Greece is not available at the basic heading level and Comoros was excluded from the analysis.

⁶For detailed data on volume of consumption, nominal expenditures, and budget shares for each country, see World Bank (2008).

indication that income levels and corresponding budget shares do not tend to change dramatically over relatively short periods of time. Although the range of budget shares for clothing and footwear is not as large as for food, the average budget shares are also higher for low-income countries compared with the other two groups. Interestingly, even the budget share for education is slightly lower for high-income countries than for middle-income and low-income countries, a result that differs from the 1996 ICP data. However, comparisons between the two rounds have to be treated with caution given the differences in how the data were collected. The proportion of the total budget spent on housing is lowest in low-income countries and fairly similar in middle- and high-income countries, while the budget share on house furnishings is fairly similar across all income groups. Health spending budget shares clearly rise with income (from 4.5 percent in low-income countries to 8.9 percent in high-income countries). This is also true for spending on recreation, a luxury good for which budget shares vary between 3.1 and 9.5 percent. Transportation and communications budget shares are highest in middle-income countries at 15.5 percent, followed by high-income countries at 14.9 percent.

The conditional budget shares for the eight food subcategories are also presented in table 2. Cereals, fats and oils, and fruits and vegetables account for almost three times as much of the total food budget in low-income countries as in high-income countries.⁷ The fruits and vegetable category includes roots and tubers, a cheap source of calories in many poor countries. Therefore, a large portion of the food budget in Sub-Saharan countries—for example, 50 percent in Rwanda and 46 percent in Côte d’Ivoire, where more than one-third of daily per capita calorie consumption is derived from roots and tubers—is spent on fruits and vegetables. On the other hand, the budget shares for meat and dairy are highest in middle-income countries, and the budget share for beverages/tobacco is highest in high-income countries. Similarly, the budget share for the other food category—which includes away-from-home food purchases—is highest in high-income countries (37 percent), over 2.5 times the budget share in low-income countries.

⁷Including roots and tubers in the vegetable category is somewhat misleading as roots and tubers constitute the major staple crop in some low-income African countries, similar to basic grains in other countries. In most other countries, the fruits and vegetables group consists of higher-value food products.

Table 2

Budget shares for broad aggregates and conditional budget shares for food categories

| | Food, beverages, & tobacco | Clothing & footwear | Housing | House furnishings | Medical & health | Transport & communications | Recreation | Education | Other |
|---------------|----------------------------------|------------------------|---------|----------------------|---------------------|-------------------------------|------------|------------------------|-------|
| Low-income | 0.485 | 0.061 | 0.135 | 0.052 | 0.045 | 0.102 | 0.031 | 0.034 | 0.054 |
| Middle-income | 0.311 | 0.055 | 0.183 | 0.056 | 0.059 | 0.155 | 0.061 | 0.033 | 0.087 |
| High-income | 0.204 | 0.051 | 0.187 | 0.060 | 0.089 | 0.149 | 0.095 | 0.031 | 0.134 |
| | Cereals | Meats | Fish | Dairy | Oils & fats | Fruits & vegetables | Food other | Beverages & tobacco | |
| Low-income | 0.233 | 0.134 | 0.063 | 0.078 | 0.049 | 0.181 | 0.146 | 0.116 | |
| Middle-income | 0.124 | 0.172 | 0.035 | 0.099 | 0.030 | 0.145 | 0.208 | 0.187 | |
| High-income | 0.086 | 0.118 | 0.041 | 0.066 | 0.014 | 0.098 | 0.369 | 0.208 | |

Source: 2005 International Comparison Program (ICP) data, World Bank.

Two-Stage Cross-Country Demand Model

Our analysis of international food consumption patterns is conducted in two steps. The first step involves estimating an aggregate demand system using the Florida-Preference Independence (PI) model across nine broad consumption categories: food—which includes food prepared and consumed at home, food away from home, and beverages and tobacco—clothing and footwear, education, housing, house furnishings and operations, medical care, transport and communications, recreation, and other expenditures. The second step of the analysis involves a second demand system using the Florida-Slutsky model across eight food subcategories: bread and cereals, meat, fish, dairy products, fruits and vegetables, oils and fats, beverages and tobacco, and other food products. Both the Florida-PI model and the Florida-Slutsky model are discussed in more detail later in this section.

Stepwise demand analysis, which assumes that consumers spend their income in stages, requires assumptions about the separability of consumer preferences. Consumer preferences are independent or strongly separable if the preference ordering among goods is not dependent on the quantities consumed of any other goods. This concept can be applied to broad product groups or categories and is referred to as block independence. Block independence or strong group separability implies that the preference ordering among items within one broad consumption group is not dependent on the quantities of items consumed in other groups. This assumption enables stepwise demand analysis, where in the first stage consumers allocate their incomes across broad categories of goods, like food, shelter, and entertainment. In the second stage, consumers spend the amount budgeted to a particular product group on goods within the group.

While it is reasonable to assume that expenditures among broad consumption categories in the first stage of the budgeting process might be independent, demand for goods within the food product group may not be independent. For example, many food products are substitutes or complements and have cross-price effects. Therefore, when estimating the second stage of the model, preference independence is generally replaced by weak separability, which suggests that food categories are groupwise-dependent. In our analysis of the food categories, the Florida-Slutsky model assuming weak separability is used instead of the Florida-PI model.

Florida-Preference Independence (PI) Model

The Florida-PI model—also known as the Working-Preference Independence model—is an extension of the model developed by Working (1943). In its general form, Working’s model expresses budget shares as a linear function of real aggregate expenditures and is specified as follows:

$$w_i = \frac{E_i}{E} = \alpha_i + \beta_i \log E + \varepsilon_i. \quad (1)$$

$w_i = \frac{E_i}{E}$ is the budget share for good i , E_i represents the expenditure on good i , and $E = \sum_{i=1}^n E_i$ is real aggregate expenditures. ε_i is a residual term and α_i and β_i are parameters to be estimated. Since the budget shares across

all consumption categories sum to 1, α and β are subject to the following adding-up conditions:

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

From equation 1 we can derive the marginal share (θ_i), which is a measure of how an additional unit of expenditure is allocated to the i th good:

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

Note that the marginal share is not constant but varies with affluence, and it exceeds the budget share (w_i) by β_i . Accordingly, when income changes, w_i changes as does the marginal share.

Using the differential approach to consumer demand, Theil, Chung, and Seale (1989) incorporated prices into Working's model to derive the Florida-PI model. The resulting specification can be divided into linear, quadratic, and cubic components, as indicated below:

$$w_{ic} = \text{LINEAR} + \text{QUADRATIC} + \text{CUBIC} + \varepsilon_{ic}. \quad (4a)$$

LINEAR = Real-income term

$$= \alpha_i + \beta_i q_c. \quad (4b)$$

QUADRATIC = Pure-price term

$$= (\alpha_i + \beta_i q_c) \left[\log \frac{p_{ic}}{\bar{p}_i} - \sum_{j=1}^n (\alpha_j + \beta_j q_c) \log \frac{p_{jc}}{\bar{p}_j} \right]. \quad (4c)$$

CUBIC = Substitution term

$$= \phi (\alpha_i + \beta_i q_c^*) \left[\log \frac{p_{ic}}{\bar{p}_i} - \sum_{j=1}^n (\alpha_j + \beta_j q_c^*) \log \frac{p_{jc}}{\bar{p}_j} \right]. \quad (4d)$$

The c subscript denotes the country. q_c is the natural logarithm of Q_c , which is a measure of real per capita income, and $q_c^* = (1+q_c)$.

$\log \bar{p}_i = \frac{1}{N} \sum_{c=1}^N \log p_{ic}$, which is the geometric mean of the price of i (p_i) over all countries, and ϕ is the income flexibility coefficient—the inverse of the income elasticity of the marginal utility of income—which is assumed constant in the model.

The linear term in the model represents the effect of a change in real income—that is, the volume of total expenditures—on the budget share. Since the quadratic and cubic terms vanish at geometric mean prices, the linear term is also the budget share at geometric mean prices. The quadratic term—quadratic because it contains products of α and β —is the pure-price term, showing how an increase in price results in a higher budget share on good i , even if the volume of expenditures goes down or stays the same. The cubic term—cubic because it involves ϕ —is a substitution term reflecting how higher prices cause a lower budget share for good i due to the substitution of good i for other goods.

The expenditure elasticity for the Florida-PI model is calculated by the ratio of the marginal share to the budget share as follows (see Theil et al., 1989, pp. 110-111 for derivation):

$$\eta_{ic} = \frac{d \log E_{ic}}{d \log E_c} = \frac{\theta_{ic}}{\bar{w}_{ic}} = 1 + \frac{\beta_i}{\bar{w}_{ic}}, \quad (5)$$

where, in this case, \bar{w}_{ic} represents the budget share of good i at geometric mean prices, c represents the country, θ_{ic} is the marginal share of good i in country c , and β_i is the estimated coefficient on q_c in the i th good equation.⁸

Three types of own-price elasticities of demand can be calculated from the parameter estimates in the Florida-PI model. The first of these, the Frisch-deflated own-price elasticity of good i , is the own-price elasticity when price changes and income is compensated to keep the marginal utility of income constant. It is given by:

$$F = \phi \frac{\bar{w}_{ic} + \beta_i}{\bar{w}_{ic}}. \quad (6)$$

The Slutsky (compensated) own-price elasticity measures the change in demand for good i when the price of i changes, while real income remains unchanged. It is calculated as follows:

$$S = \phi \frac{(\bar{w}_{ic} + \beta_i)(1 - \bar{w}_{ic} - \beta_i)}{\bar{w}_{ic}} = F(1 - \bar{w}_{ic} - \beta_i). \quad (7)$$

The Cournot (uncompensated) own-price elasticity refers to the situation when own-price changes while nominal income remains constant but real income changes, and is given by:

$$C = \phi \frac{(\bar{w}_{ic} + \beta_i)(1 - \bar{w}_{ic} - \beta_i)}{\bar{w}_{ic}} - (\bar{w}_{ic} + \beta_i) = S - (\bar{w}_{ic} + \beta_i). \quad (8)$$

How each elasticity measure is applied depends on the needs of the researcher. For instance, the Slutsky elasticity is more suitable if the concern is the substitution effect of a change in price, while the Cournot elasticity encompasses both the substitution and real income effect. Consequently, the Slutsky elasticity will be smaller than the Cournot elasticity (in absolute value) for a normal good because the real income effect reinforces the substitution effect. However, the difference between these two measures declines with affluence since the real income effect decreases with rising income. The (absolute) value of the Frisch elasticity is between the Slutsky and Cournot elasticity. The three elasticities can be significantly different for low-income countries, but are relatively close for high-income countries.

⁸Because expenditures in this instance are spending on all product categories, equation (5) is also referred to as the income elasticity.

Florida-Slutsky Model

The Florida-Slutsky model is used to estimate the second stage of the model, the food subcategories. Like the Florida-PI model, the Florida-Slutsky model has three components: a linear real-income term, a quadratic pure-price term, and a linear substitution term replacing the cubic term in the former model, that is:

$$\begin{aligned}
 w_{ic} &= (\alpha_i + \beta_i q_c) \\
 &+ (\alpha_i + \beta_i q_c) \left[\log \frac{p_{ic}}{\bar{p}_i} - \sum_{j=1}^n (\alpha_j + \beta_j q_c) \log \frac{p_{jc}}{\bar{p}_j} \right] \\
 &+ \sum_{j=1}^n \pi_{ij} \left[\log \frac{p_{jc}}{\bar{p}_j} \right].
 \end{aligned} \tag{9}$$

The π_{ij} 's represent the Slutsky price coefficients, a matrix of compensated price responses. The compensated (Slutsky) price elasticities may be estimated by the ratio π_{ij} / \bar{w}_{ic} , while the uncompensated (Cournot) own-price elasticity is given by the difference between the compensated elasticity and the income effect, that is $\pi_{ij} / \bar{w}_{ic} - (\bar{w}_{ic} + \beta_i)$. Similar to the Florida-PI model, the expenditure elasticity for the Florida-Slutsky model can be calculated at geometric mean prices using the formula given by equation 5.

Conditional Florida-Slutsky Model

The Florida Slutsky model can be written in terms of a conditional demand system—that is, the demand for good i contained in group S_g conditional on group expenditures. The conditional Florida-Slutsky model is:

$$\begin{aligned}
 \bar{w}_{ic}^* &= \alpha_i^* + \beta_i^* q_{gc} \\
 &+ (\alpha_i^* + \beta_i^* q_{gc}) \left[\log \frac{p_{i \in S_g, c}}{\bar{p}_{i \in S_g}} - \sum_{j \in S_g} (\alpha_j^* + \beta_j^* q_{gc}) \log \frac{p_{jc}}{\bar{p}_j} \right] \\
 &+ \sum_{j \in S_g} \pi_{ij}^* \log \frac{p_{jc}}{\bar{p}_j},
 \end{aligned} \tag{10}$$

where $w_{ic}^* = w_{ic} / W_{gc}$, the conditional budget share of good $i \in S_g$, w_{ic} is the unconditional budget share of good $i \in S_g$, W_{gc} is the budget share of group S_g in country c , \bar{p}_i is the geometric mean price of good $i \in S_g$, q_{gc} is the log of real expenditures on group S_g , and α_i^* , β_i^* and π_{ij}^* are conditional parameters to be estimated where π_{ij}^* is the conditional Slutsky (compensated) price parameter.

Expenditure and price elasticities estimated from the conditional Florida-Slutsky model are conditional on total food expenditures. The unconditional demand elasticities can be obtained using the parameters estimated in the first step of the analysis. For example, the unconditional expenditure elasticity (η_{ic}^U) is simply the conditional expenditure elasticity ($\eta_{ic}^* = 1 + \beta_i^* / \bar{w}_{ic}^*$) multiplied by the income elasticity of demand for food as a group (η_{Fc}) obtained from the Florida-PI model (equation 5):⁹

$$\eta_{ic}^U = \eta_{Fc} \eta_{ic}^* \quad \forall i \in S_g. \tag{11}$$

⁹The subscript Fc is used instead of ic since we are referring to the food group.

The unconditional Frisch own-price elasticity is given by:

$$F_i^u = \frac{\phi \Theta_{gc}}{\bar{W}_{gc}} \frac{\theta_{ic}^*}{\bar{w}_{ic}^*} = \phi \eta_{gc} \eta_{ic}^* \quad (12)$$

where Θ_{gc} is the marginal share for group S_g in country c , $\theta_{ic}^* = \theta_{ic} / \Theta_{gc}$ is the conditional marginal share of good $i \in S_g$, θ_{ic} is the unconditional marginal share of good i , and ϕ is the income flexibility parameter estimated in stage one using the Florida-PI model.¹⁰

The unconditional Slutsky price elasticity is given by:

$$\varepsilon_{ijc} = \varepsilon_{ijc}^* + \Phi_{gc} \eta_{ic}^* \eta_{jc}^* w_{ic}^* (1 - \bar{W}_{gc} \eta_{gc}), \quad (13)$$

where $\varepsilon_{ijc}^* = \pi_{ij}^* / \bar{w}_{ic}^*$ is the conditional Slutsky price elasticity for good i in country c with respect to changes in the price of good j . $\Phi_{gc} = \phi \Theta_{gc} / \bar{W}_{gc}$; η_{ic}^* and η_{jc}^* are the conditional expenditure elasticities for i and j , respectively, in country c ; and η_{gc} is the unconditional expenditure elasticity for the group (food, in our case) in country c .

The unconditional Cournot price elasticity can be estimated using the unconditional Slutsky elasticity, as given by equation 13:

$$C_{ijc} = \varepsilon_{ijc} - \eta_{ic}^* w_{jc}^* \eta_{gc} \bar{W}_{gc}. \quad (14)$$

¹⁰The unconditional and conditional Frisch own-price elasticities of good $i \in S_g$ are equal.

Estimation Procedure and Results

The parameters in the Florida-PI and the Florida-Slutsky model were estimated by maximum likelihood (ML) using the scoring method (Harvey, 1990, pp. 133-135) and the GAUSS software. Similar to Seale et al. (2003), groups of countries had variances of differing magnitudes resulting in heteroskedasticity that was country/group-specific. Consequently, the ML estimator used in this analysis explicitly takes heteroskedasticity into account. According to Theil et al. (1989), the covariance matrix for the group of countries in the original ICP data rounds differs from that of the newly added countries in latter data phases. Following Seale et al. (2003, p. 23), three country groups are considered: group 1 is all countries included in the first three phases of ICP data collection, group 2 includes the countries added in phase 4, and group 3 includes all newly added countries since the 1996 data round. For more details on the ML procedure when the covariance matrix is heteroskedastic by country groups, see Seale et al. (2003, pp. 20-23).

Seale and Regmi (2006) note that poor quality data for some countries, particularly low-income countries and newly added countries, are a continuing problem with ICP data. While the possibility of data outliers could be ignored, this could lead to model estimates being unreliable.

To identify the outliers, we follow Theil et al. (1989) and calculate the information inaccuracy measure from statistical information theory. The model estimates reported here account for the identified outlier countries. The details of this procedure are in Seale et al. (2003, pp. 50-51). This procedure resulted in 19 outlier countries. The models were reestimated with the remaining 125 countries and the resulting parameters were used in estimating elasticities for all 144 countries.¹¹

Aggregate Model Estimates

Table 3 presents the estimated parameters for the first stage (aggregate categories) from equations 4a-4d. The ML estimation procedure resulted in two measures of heteroskedasticity (K2 and K3). Since the heteroskedasticity measure for country group 1 is normalized to equal one, K2 and K3 measure the heteroskedasticity of groups 2 and 3 relative to group 1. The estimates for the K's both exceed 1, confirming the presence of heteroskedasticity. The negative beta (β) estimates for food, beverages, and tobacco; clothing and footwear; and education indicate that these consumption categories are necessities. All other consumption categories are luxuries. The following categories have near-zero β estimates: clothing and footwear; housing and utilities; furnishing, household equipment, and maintenance; and education. Thus, the income elasticity for these categories is close to unity. The β estimate for food, beverages, and tobacco is by far the largest in absolute value at -0.108. Our estimate is smaller than that obtained by Theil et al. (-0.134) (1989, table 5-4, p. 105), and by Seale et al. (0.135) (2003, table 5, p. 24). Both studies used ICP data from previous years. The smaller value in this analysis could be due to an increase in global affluence, resulting in a smaller share of additional income being allocated to food, or due to the relative affluence of newly added countries—such as China, India, and Taiwan—to the 2005 ICP data series. As with previous estimates, our estimate retains the property of the strong version of Engel's law: when income doubles, the budget share of food declines by approximately 10 percent (Theil et al., 1989, p. 44).

¹¹Outlier countries include Angola, Armenia, Burundi, Chad, Democratic Republic of Congo, Ethiopia, Gambia, Guinea, Guinea-Bissau, Kuwait, Liberia, Malawi, Mozambique, Niger, Rwanda, Sierra Leone, Syria, Zambia and Zimbabwe.

Table 3

Maximum likelihood estimates of the aggregate model, 2005¹

| | Parameter | Standard error |
|--|-----------|----------------|
| Income flexibility ϕ | -0.732 | 0.034* |
| Beta β | | |
| Food, beverage, and tobacco | -0.108 | 0.005* |
| Clothing and footwear | -0.002 | 0.002* |
| Housing and utilities | 0.011 | 0.004* |
| Furnishing, household equipment, and maintenance | 0.003 | 0.001* |
| Medical and health | 0.020 | 0.002* |
| Transportation and communication | 0.022 | 0.003* |
| Recreation and culture | 0.026 | 0.002* |
| Education | -0.002 | 0.002* |
| Other | 0.030 | 0.002* |
| Alpha α | | |
| Food, beverage, and tobacco | 0.165 | 0.010* |
| Clothing and footwear | 0.052 | 0.004* |
| Housing and utilities | 0.183 | 0.007* |
| Furnishing, household equipment, and maintenance | 0.060 | 0.003* |
| Medical and health | 0.096 | 0.005* |
| Transportation and communication | 0.173 | 0.006* |
| Recreation and culture | 0.103 | 0.003* |
| Education | 0.027 | 0.004* |
| Other | 0.141 | 0.005* |
| Heteroskedasticity measures | | |
| K2 | 0.989 | 0.111* |
| K3 | 1.474 | 0.081* |

¹Comoros is excluded from the analysis. Egypt and Russia were reported twice and were averaged for estimation. Three country groups are considered for heteroskedasticity.

* denotes that the estimate is significant at the 0.01 level. Alpha and beta estimates are based on equations 4a-4d.

Source: Authors' calculation using 2005 International Comparison Program (ICP) data.

Marginal Shares for Consumption Aggregates

Marginal shares measure how an additional dollar of income in a particular country is allocated across the nine broad consumption categories. The marginal share estimates for the 144 countries are plotted in figure 2, which illustrates how the marginal share for a consumption category varies by country based on the level of affluence. These estimates are derived using equation 3 and the beta estimate from equations 4a-4d, and reported for each country in appendix table 7. Low-income countries allocate a greater portion of an additional unit of income to food. As countries become more affluent, the portion of additional income allocated to food decreases and a greater portion is allocated to other expenditures such as recreation and health. For instance, a dollar increase in income would cause food expenditures in the Democratic Republic of Congo to increase by 63 cents, but only by 6 cents in the United States. In contrast, expenditures on health would increase by less than 1 cent in the Democratic Republic of Congo, while recreation expenditures would not increase at all. In the United States, health expenditures would increase by 12 cents and recreation expenditures by 13 cents with an additional dollar of income.

Income and Price Elasticities

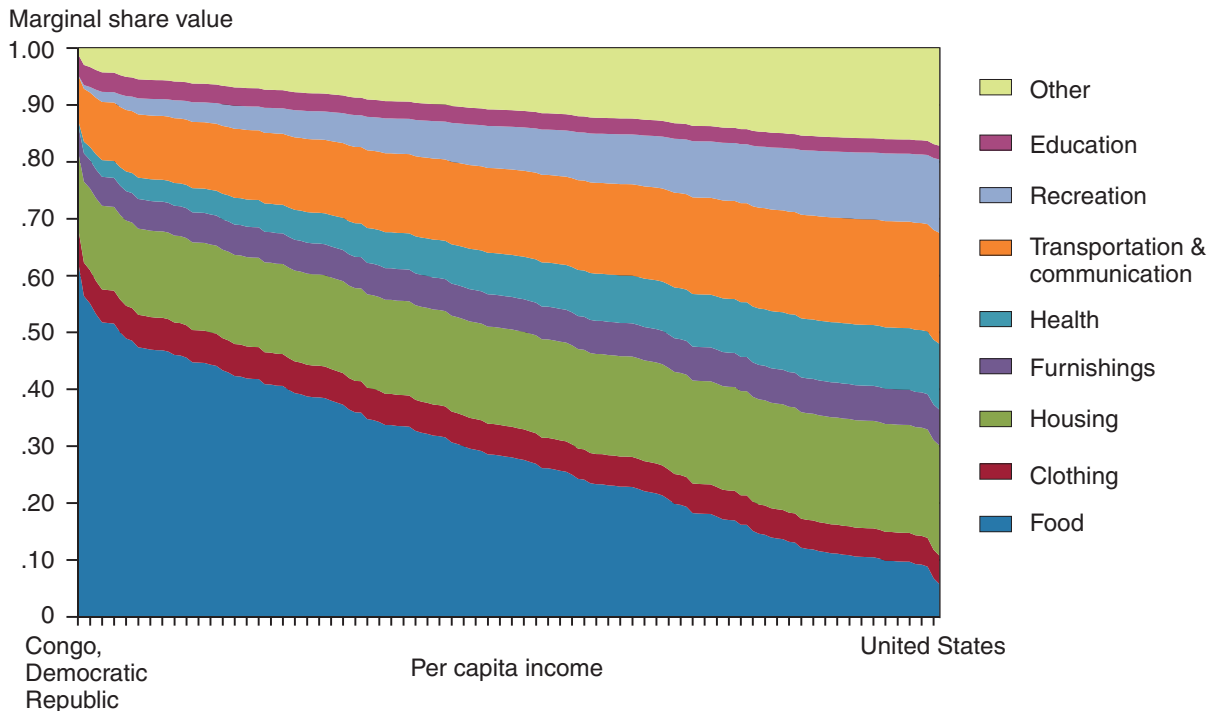
The most prominent measures of income and price sensitivity for a good are income and own-price elasticities. These measures are not constant but should vary with different levels of affluence. For example, the income elasticity of demand for a necessity such as food should be larger for a low-income country than for a high-income country. Own-price elasticities of demand should also be larger in absolute value for low-income countries than for high-income countries (Timmer, 1981). The expenditure and own-price elasticities derived from the aggregate Florida-PI model are reported in appendix tables 1-4 and have the desired properties.

Appendix table 1 presents the income elasticities (equation 5) calculated at geometric mean prices for the 144 countries. The income elasticity value measures the estimated percentage change in demand for a particular consumption category if total expenditures on all categories increase by 1 percent. From equation 5, we note that a luxury good (income elasticity greater than 1) is associated with positive values of β_i , while a necessity (income elasticity less than 1 but greater than 0) is associated with negative values of β_i . If β_i equals zero, the good is unitary elastic. The estimated budget shares for medical/health in the Democratic Republic of Congo, and recreation in the Democratic Republic of Congo, Burundi, Liberia, Zimbabwe, Ethiopia, Guinea-Bissau, Niger, Mozambique, Malawi and Rwanda were negative. The income elasticities for these countries and consumption categories are estimated using actual budget shares.

The income elasticity of demand for food, beverages, and tobacco varies greatly among countries and is highest among low-income countries, where it

Figure 2

Distribution of an additional \$1 of income across 144 countries, broad categories¹



¹Countries are arranged in ascending order of affluence.

Source: Author's calculations using the 2005 International Comparison Program (ICP) data.

varies from 0.85 for the Democratic Republic of Congo to 0.71 for Armenia. It ranges between 0.71 and 0.57 for middle-income countries, and from 0.56 to 0.35 for high-income countries. The average income elasticity for low-income countries is 0.78, over 1.5 times the average for high-income countries (0.50). The average food-income elasticity for high-income countries derived using 1996 ICP data (Seale et al., 2003, table 7, pp. 26-28) is smaller (0.34) than our estimate. Unlike the prior analysis, restaurant and catering expenditures are included among food in the 2005 ICP data, raising the income elasticity for food in high-income countries.

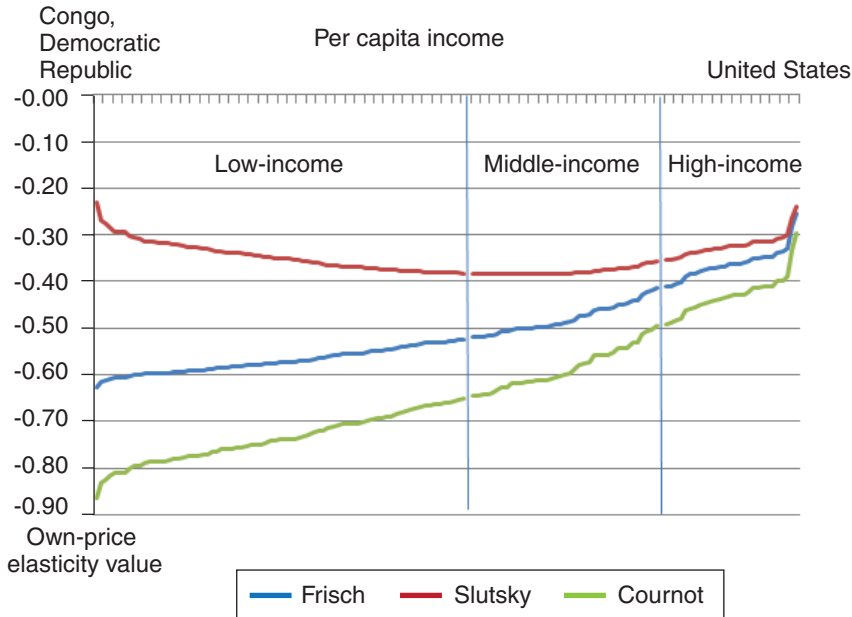
The income elasticity for clothing and footwear, another necessity, also decreases in value with income. However, given that the estimated value of β_i is close to zero, the income elasticity values are close to unity for all countries. Like clothing and footwear, education is also a necessity, and given the small value of β_i , the income elasticity for education is also close to unity for all countries. The average value ranges from 0.93 for low-income countries to 0.91 for high-income countries. Using 1996 ICP data, Seale, Regmi and Bernstein (2003, table 7, pp. 26-28) found that education was a luxury category with an income elasticity ranging from 1.08 for low-income countries to 1.07 for high-income countries. Although the two estimates are close and are likely not statistically different, the fact that the more current estimate is smaller may indicate growing global affluence.

All other consumption categories are luxuries, with income elasticities greater than 1. The elasticity values are higher for less affluent countries and span a wide range. Recreation is by far the most luxurious good, with an income elasticity of demand ranging from 13.1 for Angola to 1.25 for the United States. The categories medical/health and “other” are the next most luxurious goods, followed by transportation/communication, housing, and house furnishings. The income elasticity for medical and health also spans a wide range, from 8.6 for Liberia to 1.21 for the United States.

Using equations 6-8, three types of own-price elasticities of demand for a good can be calculated from the parameter estimates of the Florida-PI model. Appendix tables 2-4 present the estimated Frisch, Slutsky, and Cournot own-price elasticities for the 9 aggregate commodity groups, across 144 countries. In the tables, the countries are listed in ascending order of affluence. The elasticity measures perform in accordance with Timmer’s proposition: own-price elasticities of demand are larger in absolute value for low-income countries than for high-income countries. The Cournot and Frisch own-price elasticities decline monotonically in absolute value from poor to rich countries. The Cournot and Frisch own-price elasticities for food are all larger than the corresponding Slutsky elasticity. However, with rising affluence the real income effect of a food-price change becomes increasingly smaller and the three elasticities converge (fig. 3). The discussion that follows is limited to the Slutsky own-price elasticity for food since it is the only measure that did not fully perform in accordance with Timmer’s proposition.

In appendix table 3, the Slutsky own-price elasticity (equation 7) of demand for food, beverages, and tobacco begins at -0.23 for the Democratic Republic of Congo, increases (in absolute value) to -0.384 (Ukraine to Argentina), and declines thereafter (absolutely) to -0.24 for the United States. To clarify the

Figure 3
Own-price elasticity for food by per capita income¹



¹Countries are arranged in ascending order of affluence.

Source: Author's calculations using the 2005 International Comparison Program (ICP) data.

reason for this, take the logarithmic derivative of equation 7, using equation 1 and suppressing the error term:

$$\frac{d \log(S/\phi)}{Q_c} = \frac{-\beta_i [\bar{w}_{ic}^2 + \beta_i (1 - \beta_i)]}{\bar{w}_{ic} (\bar{w}_{ic} + \beta_i) (1 - \bar{w}_{ic} - \beta_i)} \quad (15)$$

If good i is a luxury, $\beta_i > 0$, and the derivative is negative, as real per capita income increases, the Slutsky own-price elasticity of the good decreases. If good i is a necessity, $\beta_i < 0$ so that $-\beta_i > 0$. If the term in brackets on the right side of equation 15 is positive, then both the numerator and the derivative are positive. This is the case for food, beverages, and tobacco. When \bar{w}_{ic} is sufficiently large—that is, when Q_c is sufficiently small—the derivative for this good is positive for the poorest countries. Eventually, however, \bar{w}_{ic} becomes sufficiently small so that the derivative becomes negative. In this case, the Slutsky own-price elasticity becomes smaller in absolute value. The turning point, when the Slutsky own-price elasticity starts declining with increasing per capita income, is at the per capita income level of Argentina—or at 22 percent of the per capita income level of the United States.

Food Subgroups—Estimates and Elasticities

Table 4 presents the estimated parameters for the second-stage model (equation 10), the food subgroups. The estimate for K3 exceeds 1, confirming the presence of heteroskedasticity in country group 3. The beta (β) estimates for cereals, meat, fish, oils and fat, and fruits and vegetables are negative, indicating that these food-product categories are (conditionally) expenditure-inelastic, while the remaining categories are conditionally expenditure-elastic.¹² The negative beta estimates for cereals and fruits/vegetables are larger (in absolute value) than for the other food categories. These categories include expenditures on grains, roots, and tubers, and both categories are particularly sensitive to the level of affluence. Table 4 also includes the diagonal elements

¹² The parameter estimates in table 4 are conditional on total per capita food expenditures, not total per capita expenditures.

of the Slutsky matrix, which are the compensated own-price effects for each food subgroup. These effects are all negative, satisfying the law of demand.

Marginal share estimates for each food subgroup, conditional on total food expenditures, are plotted in figure 4 and reported in appendix table 8 by country. These estimates measure how an additional unit of food expenditures is allocated across the eight food subgroups. Figure 4 illustrates how the marginal share for a food category varies by country based on the level of affluence. With low-income countries, a greater portion of an additional unit of food expenditures is allocated to cereals and fruits/vegetables, which include staples such as corn meal and rice. As countries become more affluent, the portion of additional food expenditures allocated to cereals and fruits/vegetables decreases, and a greater portion is allocated to “other” food expenditures, which includes restaurant expenditures and high-end purchases, and beverages/tobacco. For instance, a dollar increase in food

Table 4
Maximum-likelihood estimates of the food subgroups model, 2005^a

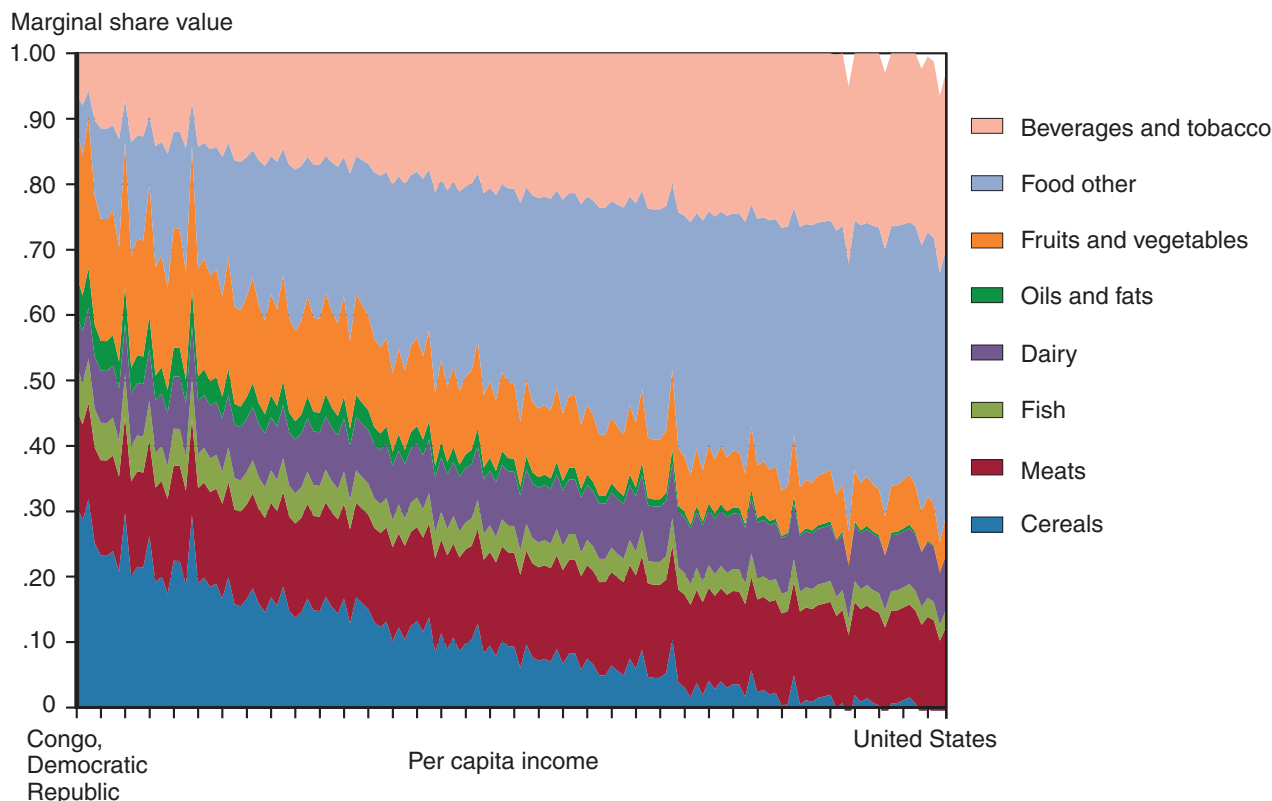
| | Parameter | Standard error |
|--|-----------|----------------|
| Beta β * | | |
| Cereals | -0.077 | 0.008* |
| Meat | -0.001 | 0.007 |
| Fish | -0.009 | 0.004** |
| Dairy and eggs | 0.002 | 0.004 |
| Oils and fat | -0.014 | 0.003* |
| Fruit and vegetables | -0.039 | 0.007* |
| Food other | 0.088 | 0.010* |
| Beverages and tobacco | 0.051 | 0.008* |
| Alpha α * | | |
| Cereals | 0.062 | 0.011* |
| Meat | 0.143 | 0.010* |
| Fish | 0.037 | 0.006* |
| Dairy and eggs | 0.084 | 0.007* |
| Oils and fat | 0.014 | 0.004* |
| Fruit and vegetables | 0.100 | 0.010* |
| Food other | 0.333 | 0.014* |
| Beverages and tobacco | 0.228 | 0.011* |
| Slutsky own-price effects π_{ii}^* | | |
| Cereals | -0.205 | 0.033* |
| Meat | -0.136 | 0.023* |
| Fish | -0.102 | 0.012* |
| Dairy and eggs | -0.100 | 0.015* |
| Oils and fat | -0.036 | 0.006* |
| Fruit and vegetables | -0.210 | 0.022* |
| Food other | -0.231 | 0.051* |
| Beverages and tobacco | -0.127 | 0.027 |
| Heteroskedasticity measures | | |
| K2 | 0.851 | 0.019* |
| K3 | 1.090 | 0.013* |

^aComoros is excluded from the analysis. Egypt and Russia were reported twice and were averaged for estimation. Three country groups are considered for heteroskedasticity. * and ** denote significance at the 0.01 and 0.05 level, respectively. Alpha, beta, and pi estimates are based on equations 10a–10c.

Source: Authors' calculation using 2005 International Comparison Program (ICP) data.

Figure 4

Distribution of an additional \$1 of income across 144 countries, food subcategories¹



¹Countries are arranged in ascending order of affluence.

Source: Author's calculations using the 2005 International Comparison Program (ICP) data.

expenditures results in cereal expenditures in the Democratic Republic of Congo increasing by 31 cents (appendix table 8). However, cereal expenditures in the United States decrease by 1.5 cents, indicating the lower status afforded this category by most consumers in rich countries. In contrast, expenditures on “other” food increase by only 5 cents in the Democratic Republic of Congo, but by 42 cents in the United States.

The expenditure and price elasticities calculated using the Florida-Slutsky model are conditional on a given food budget. In other words, the expenditure elasticity measures the percentage change in demand given a percentage change in total food expenditures, while the price elasticity measures the percentage response given a percentage change in price assuming a given food budget. However, the conditional elasticities can be converted to unconditional elasticities using the parameters estimated from the Florida-PI model in the first stage, as specified by equations 11-14.

The unconditional expenditure elasticity (equation 11) measures the percentage change in demand from a percentage change in overall income (or total spending). The unconditional income elasticities are all less than 1, except for “other” food and beverages/tobacco in low-income countries (appendix table 5). This is consistent with conventional theory that food is a necessity and not a luxury item in household expenditures. Given the relatively low food budget share of beverages/tobacco in many low-income

countries, this category can be considered a luxury item among consumers in some poorer countries.

Similar to the estimated income elasticity for aggregate consumption categories, the income elasticity for the food subcategories is largest in the poorer countries and declines in magnitude with affluence. Across each country, staple food items (with negative β_i) have smaller elasticities than the more conditionally elastic food items such as beverages/tobacco, meat, and dairy. For example, the income elasticity for cereals ranges from 0.69 in the Democratic Republic of Congo to -0.09 in the United States. In contrast, the elasticity for beverages and tobacco is higher across all countries, ranging from 7.1 in Liberia to 0.42 in the United States.

The conditional Slutsky elasticity is given by $\varepsilon_{ijc}^* = \pi_{ij}^* / \bar{w}_{ic}^*$, where π_{ij}^* is the conditional Slutsky price parameter in country c for good i with respect to good j , and \bar{w}_{ic}^* is the conditional fitted budget share (at geometric mean prices) of food group $i \in S_g$ in country c . Since for a given food subgroup i , π_{ij}^* is invariant across countries, the conditional Slutsky elasticity for food subgroup i will be greater for smaller budget shares. Poorer countries typically have larger budget shares for staple items such as breads and cereals, which form a smaller share of food budget among wealthier countries. Therefore, contrary to theory, the estimated conditional Slutsky own-price elasticities for cereals may be larger for wealthier countries. This problem of a constant π_{ij}^* continues if one calculates unconditional Slutsky price elasticities from the conditional one using equation 13.

The unconditional Frisch own-price elasticities are not a function of π_{ij} and do not suffer the problem encountered in calculating the unconditional Slutsky elasticities. Using the estimated parameters from stage one and two and using equation 12, Frisch own-price elasticities are calculated. These unconditional own-price elasticities (appendix table 6) represent elasticities estimated at a point when the marginal utility of income is held constant. The values of the Frisch own-price elasticities lie between the values of the Slutsky own-price elasticities—when real income is held constant—and the Cournot own-price elasticities—when nominal income is held constant—and can be considered a reasonable estimate of the average own-price elasticities for the food subcategories. The Slutsky and Cournot elasticities are not estimated for these products, as their calculation using equations 13 and 14 requires the assumption of preference independence.¹³

The Frisch own-price elasticities for the food subcategories vary by affluence according to economic theory; consumers in low-income countries are more responsive to price changes than are those in higher-income countries. For instance, the value for breads and cereals ranges from 0.50 in the Democratic Republic of Congo to 0.06 in the United States. The absolute values of the own-price elasticities are smaller for food groups such as breads/cereals, oils/fats, and fruits/vegetables, and particularly large for “other” foods and beverages/tobacco. Also, low-income countries are particularly sensitive to changes in the price of “other” food and beverages/tobacco, relative to middle- and high-income countries. Given a 1-percent increase in the price of “other” food, consumption in this category declines on average by more than 1 percent in low-income countries but by less than 0.5 percent in high-income countries.

¹³Note that the Frisch own-price elasticity is the product of the income flexibility, unconditional expenditure elasticity for food as a group, and conditional expenditure elasticity for the food subgroup resulting in a positive estimate when the subgroup is inferior (negative conditional expenditure elasticity). This was the case for the cereals and oils categories in the U.S. and a few other rich countries, which is counter intuitive. Although positive, these estimates were small and replaced with zero. See Appendix table 6.

Conclusion

This report provides income and price elasticities across 144 countries for 9 aggregate consumption categories and 8 food subcategories. No empirical work to date has been conducted across as many countries and consumption categories. The results of this research confirm many of the results obtained and established by earlier studies. Low-income countries spend a greater portion of their budget on necessities, such as food, while richer countries spend a greater proportion of their income on luxuries, such as recreation. Low-value staples, such as cereals, account for a larger share of the food budget in poorer countries, while high-value food items are a larger share of the food budget in richer countries. Low-income countries are also more responsive to changes in income and food prices and, therefore, make larger adjustments to their food consumption patterns when incomes and prices change. However, our study illustrates that adjustments to price and income changes are not made uniformly across all food categories. Staple food consumption changes the least, while consumption of higher-value food items changes the most.

The income and price elasticities estimated here can be used as inputs in future work designed to forecast future food demand and supply, and in projects designed to simulate the effects of different government policy options. In addition to the actual elasticity estimates, parameters estimated from our models can be used (with more recent expenditure data) to estimate new elasticities for more recent years for the countries included in our analysis, as well as for other countries (Cox and Alm, 2007).

References

- Cox, W.M., and R. Alm. 2007. "Opportunity Knocks: Selling Our Services to the World," *Federal Reserve Bank of Dallas 2007 Annual Report*. Dallas, TX.
- Diewert, Erwin, 2010. "New Methodological Developments for the International Comparison Program," *The Review of Income and Wealth*. June.
- Harvey, A. 1990. *The Econometric Analysis of Time Series*. 2nd edition, MIT Press, Cambridge, MA.
- Hertel, T.W., and L.A. Winters, 2006. *Poverty and the WTO: Impacts of the Doha Development Agenda*. Washington, DC: World Bank Publications.
- Kravis, I.B., F. Kennessey, A.W. Heston, and R. Summers. 1975. *A System of International Comparisons of Gross Product and Purchasing Power*. Johns Hopkins University Press, Baltimore, MD.
- Kravis, I.B., A.W. Heston, and R. Summers. 1978. *International Comparisons of Real Product and Purchasing Power*, Johns Hopkins University Press (for the World Bank), , Baltimore, MD.
- 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.
- Seale, James L., and Anita Regmi. 2006. "Modeling International Consumption Patterns," *Review of Income and Wealth*, Vol. 52(4), pp. 603-24.
- 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.
- Timmer, C.P. 1981. "Is There Curvature in the Slutsky Matrix?" *Review of Economics and Statistics*, Vol. 63, pp. 395-402.
- Theil, H., C.F. Chung, and J.L. Seale, Jr. 1989. *International Evidence on Consumption Patterns*. Greenwich, CT: JAI Press, Inc.
- 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.A. 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.
- World Bank, 2008. "Global Purchasing Power Parities and Real Expenditures, 2005 International Comparison Program." Washington, DC.

Appendix table 1

Income elasticities for aggregate consumption categories, 144 countries, 2005

| Country | Food, beverages, & tobacco | Clothing & footwear | Housing | House furnishings | Medical & health | Transport & communi- cations | Recreation | Education | Other |
|-----------------------------|----------------------------------|------------------------|---------|----------------------|---------------------|---------------------------------------|--------------------|-----------|--------------------|
| Low-income countries: | | | | | | | | | |
| Congo, Dem. Rep. | 0.854 | 0.970 | 1.088 | 1.061 | 1.573 ^a | 1.381 | 3.876 ^a | 0.939 | 2.161 ^a |
| Burundi | 0.839 | 0.969 | 1.084 | 1.059 | 1.573 ^a | 1.306 | 1.868 ^a | 0.937 | 1.640 ^a |
| Liberia | 0.836 | 0.969 | 1.083 | 1.059 | 8.620 | 1.295 | 2.525 ^a | 0.936 | 1.415 ^a |
| Zimbabwe | 0.831 | 0.969 | 1.082 | 1.058 | 4.286 | 1.281 | 2.050 ^a | 0.936 | 4.696 |
| Ethiopia | 0.827 | 0.968 | 1.081 | 1.058 | 3.275 | 1.270 | 5.406 ^a | 0.935 | 3.464 |
| Niger | 0.827 | 0.968 | 1.081 | 1.058 | 3.219 | 1.269 | 1.485 ^a | 0.935 | 3.399 |
| Guinea-Bissau | 0.827 | 0.968 | 1.081 | 1.058 | 3.174 | 1.269 | 1.659 ^a | 0.935 | 3.346 |
| Mozambique | 0.822 | 0.968 | 1.080 | 1.057 | 2.665 | 1.259 | 2.163 ^a | 0.934 | 2.764 |
| Malawi | 0.819 | 0.968 | 1.079 | 1.057 | 2.424 | 1.252 | 1.325 ^a | 0.934 | 2.496 |
| Rwanda | 0.818 | 0.968 | 1.079 | 1.057 | 2.355 | 1.250 | 3.074 ^a | 0.934 | 2.419 |
| Angola | 0.814 | 0.968 | 1.078 | 1.056 | 2.182 | 1.244 | 13.053 | 0.933 | 2.231 |
| Chad | 0.814 | 0.968 | 1.078 | 1.056 | 2.160 | 1.243 | 11.097 | 0.933 | 2.208 |
| Gambia, The | 0.813 | 0.968 | 1.078 | 1.056 | 2.134 | 1.241 | 9.380 | 0.933 | 2.179 |
| Central African Republic | 0.813 | 0.968 | 1.078 | 1.056 | 2.120 | 1.241 | 8.708 | 0.933 | 2.164 |
| Mali | 0.813 | 0.968 | 1.078 | 1.056 | 2.118 | 1.241 | 8.614 | 0.933 | 2.162 |
| Tanzania | 0.812 | 0.968 | 1.078 | 1.056 | 2.092 | 1.239 | 7.524 | 0.933 | 2.133 |
| Sierra Leone | 0.810 | 0.968 | 1.077 | 1.056 | 2.031 | 1.236 | 5.837 | 0.933 | 2.069 |
| Guinea | 0.810 | 0.968 | 1.077 | 1.056 | 2.021 | 1.236 | 5.624 | 0.933 | 2.058 |
| Burkina Faso | 0.808 | 0.968 | 1.077 | 1.056 | 1.987 | 1.234 | 4.987 | 0.933 | 2.021 |
| Uganda | 0.806 | 0.968 | 1.077 | 1.056 | 1.917 | 1.230 | 4.052 | 0.932 | 1.946 |
| Madagascar | 0.805 | 0.968 | 1.077 | 1.056 | 1.913 | 1.230 | 4.012 | 0.932 | 1.942 |
| Zambia | 0.805 | 0.968 | 1.077 | 1.056 | 1.909 | 1.229 | 3.961 | 0.932 | 1.937 |
| Congo, Rep. | 0.804 | 0.968 | 1.076 | 1.055 | 1.886 | 1.228 | 3.733 | 0.932 | 1.913 |
| Togo | 0.803 | 0.968 | 1.076 | 1.055 | 1.870 | 1.227 | 3.590 | 0.932 | 1.897 |
| Nepal | 0.801 | 0.968 | 1.076 | 1.055 | 1.820 | 1.223 | 3.189 | 0.932 | 1.843 |
| Ghana | 0.799 | 0.968 | 1.076 | 1.055 | 1.795 | 1.221 | 3.022 | 0.931 | 1.817 |
| Benin | 0.797 | 0.968 | 1.075 | 1.055 | 1.761 | 1.219 | 2.813 | 0.931 | 1.781 |
| Mauritania | 0.796 | 0.968 | 1.075 | 1.055 | 1.756 | 1.218 | 2.787 | 0.931 | 1.776 |
| Bangladesh | 0.795 | 0.968 | 1.075 | 1.055 | 1.740 | 1.217 | 2.696 | 0.931 | 1.758 |
| Côte d'Ivoire | 0.795 | 0.968 | 1.075 | 1.055 | 1.735 | 1.216 | 2.672 | 0.931 | 1.753 |
| Lao PDR | 0.795 | 0.968 | 1.075 | 1.055 | 1.733 | 1.216 | 2.665 | 0.931 | 1.752 |
| Kenya | 0.791 | 0.967 | 1.075 | 1.055 | 1.691 | 1.212 | 2.463 | 0.931 | 1.708 |
| Djibouti | 0.791 | 0.967 | 1.075 | 1.055 | 1.689 | 1.212 | 2.451 | 0.931 | 1.705 |
| Nigeria | 0.790 | 0.967 | 1.075 | 1.054 | 1.680 | 1.211 | 2.413 | 0.930 | 1.696 |
| Senegal | 0.790 | 0.967 | 1.075 | 1.054 | 1.678 | 1.211 | 2.405 | 0.930 | 1.694 |
| Cambodia | 0.787 | 0.967 | 1.074 | 1.054 | 1.650 | 1.208 | 2.288 | 0.930 | 1.664 |
| Cameroon | 0.785 | 0.967 | 1.074 | 1.054 | 1.628 | 1.206 | 2.206 | 0.930 | 1.642 |
| São Tomé and Príncipe | 0.784 | 0.967 | 1.074 | 1.054 | 1.621 | 1.205 | 2.179 | 0.930 | 1.634 |

---continued

Income elasticities for aggregate consumption categories, 144 countries, 2005, *continued*

| Country | Food, beverages, & tobacco | Clothing & footwear | Housing | House furnishings | Medical & health | Transport & communi- cations | Recreation | Education | Other |
|----------------------|----------------------------------|------------------------|---------|----------------------|---------------------|---------------------------------------|------------|-----------|-------|
| India | 0.782 | 0.967 | 1.074 | 1.054 | 1.608 | 1.204 | 2.133 | 0.930 | 1.621 |
| Yemen, Rep. | 0.781 | 0.967 | 1.073 | 1.054 | 1.603 | 1.203 | 2.116 | 0.930 | 1.615 |
| Vietnam | 0.781 | 0.967 | 1.073 | 1.054 | 1.602 | 1.203 | 2.114 | 0.930 | 1.615 |
| Mongolia | 0.781 | 0.967 | 1.073 | 1.054 | 1.597 | 1.203 | 2.097 | 0.929 | 1.610 |
| Iraq | 0.779 | 0.967 | 1.073 | 1.054 | 1.584 | 1.201 | 2.052 | 0.929 | 1.595 |
| Bhutan | 0.777 | 0.967 | 1.073 | 1.054 | 1.572 | 1.200 | 2.016 | 0.929 | 1.584 |
| China | 0.775 | 0.967 | 1.073 | 1.054 | 1.562 | 1.198 | 1.983 | 0.929 | 1.573 |
| Sudan | 0.771 | 0.967 | 1.072 | 1.053 | 1.538 | 1.195 | 1.912 | 0.929 | 1.548 |
| Lesotho | 0.769 | 0.967 | 1.072 | 1.053 | 1.525 | 1.194 | 1.876 | 0.928 | 1.535 |
| Tajikistan | 0.769 | 0.967 | 1.072 | 1.053 | 1.524 | 1.193 | 1.873 | 0.928 | 1.533 |
| Maldives | 0.763 | 0.967 | 1.072 | 1.053 | 1.497 | 1.190 | 1.800 | 0.928 | 1.505 |
| Morocco | 0.762 | 0.967 | 1.072 | 1.053 | 1.492 | 1.189 | 1.789 | 0.928 | 1.501 |
| Pakistan | 0.760 | 0.967 | 1.071 | 1.053 | 1.485 | 1.188 | 1.770 | 0.927 | 1.493 |
| Indonesia | 0.757 | 0.967 | 1.071 | 1.053 | 1.474 | 1.186 | 1.742 | 0.927 | 1.481 |
| Kyrgyz Republic | 0.757 | 0.967 | 1.071 | 1.053 | 1.473 | 1.186 | 1.741 | 0.927 | 1.481 |
| Philippines | 0.756 | 0.967 | 1.071 | 1.053 | 1.470 | 1.186 | 1.733 | 0.927 | 1.478 |
| Cape Verde | 0.756 | 0.967 | 1.071 | 1.053 | 1.469 | 1.185 | 1.731 | 0.927 | 1.477 |
| Bolivia | 0.756 | 0.967 | 1.071 | 1.053 | 1.468 | 1.185 | 1.727 | 0.927 | 1.475 |
| Namibia | 0.752 | 0.967 | 1.071 | 1.052 | 1.453 | 1.183 | 1.693 | 0.927 | 1.460 |
| Sri Lanka | 0.750 | 0.967 | 1.071 | 1.052 | 1.447 | 1.182 | 1.679 | 0.927 | 1.454 |
| Botswana | 0.749 | 0.967 | 1.070 | 1.052 | 1.443 | 1.181 | 1.670 | 0.926 | 1.450 |
| Gabon | 0.747 | 0.967 | 1.070 | 1.052 | 1.438 | 1.180 | 1.658 | 0.926 | 1.445 |
| Azerbaijan | 0.746 | 0.967 | 1.070 | 1.052 | 1.436 | 1.180 | 1.653 | 0.926 | 1.443 |
| Syrian Arab Republic | 0.745 | 0.966 | 1.070 | 1.052 | 1.432 | 1.179 | 1.645 | 0.926 | 1.439 |
| Equatorial Guinea | 0.740 | 0.966 | 1.070 | 1.052 | 1.418 | 1.177 | 1.613 | 0.926 | 1.424 |
| Paraguay | 0.738 | 0.966 | 1.070 | 1.052 | 1.413 | 1.176 | 1.603 | 0.926 | 1.419 |
| Fiji | 0.735 | 0.966 | 1.069 | 1.052 | 1.407 | 1.175 | 1.591 | 0.925 | 1.413 |
| Swaziland | 0.732 | 0.966 | 1.069 | 1.052 | 1.401 | 1.174 | 1.577 | 0.925 | 1.406 |
| Moldova | 0.731 | 0.966 | 1.069 | 1.052 | 1.398 | 1.173 | 1.571 | 0.925 | 1.403 |
| Egypt, Arab Rep. | 0.730 | 0.966 | 1.069 | 1.051 | 1.394 | 1.173 | 1.564 | 0.925 | 1.400 |
| Ecuador | 0.726 | 0.966 | 1.069 | 1.051 | 1.386 | 1.171 | 1.548 | 0.925 | 1.391 |
| Jordan | 0.725 | 0.966 | 1.069 | 1.051 | 1.385 | 1.171 | 1.546 | 0.925 | 1.390 |
| Georgia | 0.724 | 0.966 | 1.069 | 1.051 | 1.383 | 1.170 | 1.542 | 0.924 | 1.388 |
| Thailand | 0.723 | 0.966 | 1.069 | 1.051 | 1.381 | 1.170 | 1.537 | 0.924 | 1.386 |
| Colombia | 0.722 | 0.966 | 1.069 | 1.051 | 1.379 | 1.170 | 1.533 | 0.924 | 1.384 |
| Albania | 0.720 | 0.966 | 1.068 | 1.051 | 1.376 | 1.169 | 1.527 | 0.924 | 1.381 |
| Tunisia | 0.719 | 0.966 | 1.068 | 1.051 | 1.373 | 1.168 | 1.522 | 0.924 | 1.378 |
| Peru | 0.716 | 0.966 | 1.068 | 1.051 | 1.369 | 1.167 | 1.513 | 0.924 | 1.373 |
| Armenia | 0.714 | 0.966 | 1.068 | 1.051 | 1.365 | 1.167 | 1.505 | 0.924 | 1.369 |

---continued

Income elasticities for aggregate consumption categories, 144 countries, 2005, *continued*

| Country | Food, beverages, & tobacco | Clothing & footwear | Housing | House furnishings | Medical & health | Transport & communi- cations | Recreation | Education | Other |
|---------------------------|----------------------------------|------------------------|---------|----------------------|---------------------|---------------------------------------|------------|-----------|-------|
| Middle-income countries: | | | | | | | | | |
| Venezuela, RB | 0.708 | 0.966 | 1.068 | 1.051 | 1.356 | 1.165 | 1.488 | 0.923 | 1.360 |
| Malaysia | 0.707 | 0.966 | 1.068 | 1.051 | 1.355 | 1.165 | 1.487 | 0.923 | 1.359 |
| Ukraine | 0.706 | 0.966 | 1.068 | 1.051 | 1.353 | 1.164 | 1.483 | 0.923 | 1.357 |
| Brazil | 0.704 | 0.966 | 1.068 | 1.051 | 1.350 | 1.164 | 1.478 | 0.923 | 1.354 |
| Montenegro | 0.703 | 0.966 | 1.067 | 1.051 | 1.348 | 1.163 | 1.474 | 0.923 | 1.352 |
| South Africa | 0.698 | 0.966 | 1.067 | 1.050 | 1.342 | 1.162 | 1.464 | 0.923 | 1.346 |
| Macedonia, FYR | 0.692 | 0.966 | 1.067 | 1.050 | 1.335 | 1.160 | 1.450 | 0.922 | 1.339 |
| Turkey | 0.691 | 0.966 | 1.067 | 1.050 | 1.333 | 1.160 | 1.447 | 0.922 | 1.337 |
| Bosnia and Herzegovina | 0.685 | 0.966 | 1.067 | 1.050 | 1.327 | 1.158 | 1.436 | 0.922 | 1.331 |
| Serbia | 0.683 | 0.966 | 1.067 | 1.050 | 1.325 | 1.158 | 1.433 | 0.922 | 1.329 |
| Belarus | 0.683 | 0.966 | 1.067 | 1.050 | 1.325 | 1.158 | 1.432 | 0.922 | 1.329 |
| Romania | 0.682 | 0.966 | 1.066 | 1.050 | 1.323 | 1.157 | 1.429 | 0.922 | 1.327 |
| Saudi Arabia | 0.681 | 0.966 | 1.066 | 1.050 | 1.323 | 1.157 | 1.428 | 0.922 | 1.326 |
| Uruguay | 0.679 | 0.966 | 1.066 | 1.050 | 1.321 | 1.157 | 1.425 | 0.921 | 1.325 |
| Mauritius | 0.679 | 0.966 | 1.066 | 1.050 | 1.321 | 1.157 | 1.425 | 0.921 | 1.325 |
| Chile | 0.679 | 0.966 | 1.066 | 1.050 | 1.320 | 1.157 | 1.424 | 0.921 | 1.324 |
| Kazakhstan | 0.676 | 0.966 | 1.066 | 1.050 | 1.317 | 1.156 | 1.419 | 0.921 | 1.321 |
| Russian Federation | 0.672 | 0.965 | 1.066 | 1.050 | 1.314 | 1.155 | 1.412 | 0.921 | 1.317 |
| Argentina | 0.670 | 0.965 | 1.066 | 1.050 | 1.312 | 1.155 | 1.409 | 0.921 | 1.315 |
| Bulgaria | 0.667 | 0.965 | 1.066 | 1.050 | 1.310 | 1.154 | 1.406 | 0.921 | 1.313 |
| Oman | 0.664 | 0.965 | 1.066 | 1.050 | 1.307 | 1.153 | 1.401 | 0.921 | 1.310 |
| Iran, Islamic Rep. | 0.657 | 0.965 | 1.065 | 1.049 | 1.301 | 1.152 | 1.391 | 0.920 | 1.304 |
| Latvia | 0.648 | 0.965 | 1.065 | 1.049 | 1.295 | 1.150 | 1.380 | 0.920 | 1.298 |
| Mexico | 0.646 | 0.965 | 1.065 | 1.049 | 1.293 | 1.150 | 1.378 | 0.920 | 1.296 |
| Lebanon | 0.642 | 0.965 | 1.065 | 1.049 | 1.290 | 1.149 | 1.373 | 0.919 | 1.293 |
| Poland | 0.628 | 0.965 | 1.065 | 1.049 | 1.282 | 1.147 | 1.359 | 0.919 | 1.285 |
| Croatia | 0.627 | 0.965 | 1.065 | 1.049 | 1.281 | 1.147 | 1.358 | 0.919 | 1.284 |
| Macao, China | 0.626 | 0.965 | 1.064 | 1.049 | 1.281 | 1.147 | 1.358 | 0.919 | 1.284 |
| Lithuania | 0.626 | 0.965 | 1.064 | 1.049 | 1.281 | 1.147 | 1.358 | 0.919 | 1.284 |
| Estonia | 0.620 | 0.965 | 1.064 | 1.049 | 1.278 | 1.146 | 1.352 | 0.918 | 1.280 |
| Brunei Darussalam | 0.614 | 0.965 | 1.064 | 1.049 | 1.274 | 1.145 | 1.347 | 0.918 | 1.277 |
| Slovak Republic | 0.612 | 0.965 | 1.064 | 1.049 | 1.273 | 1.145 | 1.345 | 0.918 | 1.276 |
| Hungary | 0.611 | 0.965 | 1.064 | 1.049 | 1.273 | 1.144 | 1.345 | 0.918 | 1.276 |
| Korea, Rep. | 0.600 | 0.965 | 1.064 | 1.048 | 1.268 | 1.143 | 1.336 | 0.917 | 1.270 |
| Bahrain | 0.600 | 0.965 | 1.064 | 1.048 | 1.268 | 1.143 | 1.336 | 0.917 | 1.270 |
| Czech Republic | 0.583 | 0.965 | 1.063 | 1.048 | 1.261 | 1.141 | 1.325 | 0.917 | 1.263 |
| Slovenia | 0.575 | 0.965 | 1.063 | 1.048 | 1.258 | 1.140 | 1.321 | 0.916 | 1.260 |
| Israel | 0.572 | 0.965 | 1.063 | 1.048 | 1.257 | 1.140 | 1.319 | 0.916 | 1.259 |

---continued

Income elasticities for aggregate consumption categories, 144 countries, 2005, *continued*

| Country | Food, beverages, & tobacco | Clothing & footwear | Housing | House furnishings | Medical & health | Transport & communi- cations | Recreation | Education | Other |
|------------------------|----------------------------------|------------------------|---------|----------------------|---------------------|---------------------------------------|------------|-----------|-------|
| High-income countries: | | | | | | | | | |
| Portugal | 0.564 | 0.965 | 1.063 | 1.048 | 1.254 | 1.139 | 1.315 | 0.916 | 1.256 |
| Qatar | 0.561 | 0.965 | 1.063 | 1.048 | 1.253 | 1.139 | 1.313 | 0.916 | 1.255 |
| Singapore | 0.558 | 0.965 | 1.063 | 1.048 | 1.252 | 1.138 | 1.312 | 0.916 | 1.254 |
| Malta | 0.550 | 0.964 | 1.063 | 1.048 | 1.249 | 1.138 | 1.308 | 0.916 | 1.251 |
| Kuwait | 0.547 | 0.964 | 1.063 | 1.048 | 1.248 | 1.137 | 1.307 | 0.915 | 1.251 |
| New Zealand | 0.530 | 0.964 | 1.062 | 1.048 | 1.243 | 1.136 | 1.299 | 0.915 | 1.245 |
| Finland | 0.525 | 0.964 | 1.062 | 1.048 | 1.242 | 1.135 | 1.297 | 0.915 | 1.244 |
| Taiwan, China | 0.523 | 0.964 | 1.062 | 1.048 | 1.242 | 1.135 | 1.296 | 0.915 | 1.244 |
| Spain | 0.516 | 0.964 | 1.062 | 1.047 | 1.240 | 1.135 | 1.294 | 0.914 | 1.242 |
| Italy | 0.513 | 0.964 | 1.062 | 1.047 | 1.239 | 1.134 | 1.293 | 0.914 | 1.241 |
| Ireland | 0.508 | 0.964 | 1.062 | 1.047 | 1.238 | 1.134 | 1.291 | 0.914 | 1.240 |
| Denmark | 0.507 | 0.964 | 1.062 | 1.047 | 1.238 | 1.134 | 1.291 | 0.914 | 1.240 |
| Sweden | 0.503 | 0.964 | 1.062 | 1.047 | 1.237 | 1.134 | 1.289 | 0.914 | 1.239 |
| Hong Kong, China | 0.501 | 0.964 | 1.062 | 1.047 | 1.236 | 1.134 | 1.288 | 0.914 | 1.238 |
| Australia | 0.495 | 0.964 | 1.062 | 1.047 | 1.235 | 1.133 | 1.287 | 0.914 | 1.237 |
| Cyprus | 0.494 | 0.964 | 1.062 | 1.047 | 1.235 | 1.133 | 1.286 | 0.914 | 1.237 |
| Belgium | 0.493 | 0.964 | 1.062 | 1.047 | 1.235 | 1.133 | 1.286 | 0.914 | 1.237 |
| Japan | 0.492 | 0.964 | 1.062 | 1.047 | 1.235 | 1.133 | 1.286 | 0.914 | 1.236 |
| France | 0.487 | 0.964 | 1.062 | 1.047 | 1.233 | 1.133 | 1.284 | 0.914 | 1.235 |
| Germany | 0.477 | 0.964 | 1.061 | 1.047 | 1.232 | 1.132 | 1.281 | 0.913 | 1.233 |
| Canada | 0.477 | 0.964 | 1.061 | 1.047 | 1.231 | 1.132 | 1.281 | 0.913 | 1.233 |
| Iceland | 0.474 | 0.964 | 1.061 | 1.047 | 1.231 | 1.132 | 1.280 | 0.913 | 1.233 |
| Netherlands | 0.473 | 0.964 | 1.061 | 1.047 | 1.231 | 1.132 | 1.280 | 0.913 | 1.232 |
| Norway | 0.473 | 0.964 | 1.061 | 1.047 | 1.231 | 1.132 | 1.280 | 0.913 | 1.232 |
| United Kingdom | 0.462 | 0.964 | 1.061 | 1.047 | 1.229 | 1.131 | 1.277 | 0.913 | 1.230 |
| Switzerland | 0.460 | 0.964 | 1.061 | 1.047 | 1.228 | 1.131 | 1.276 | 0.913 | 1.230 |
| Austria | 0.450 | 0.964 | 1.061 | 1.047 | 1.226 | 1.130 | 1.274 | 0.913 | 1.228 |
| Luxembourg | 0.386 | 0.964 | 1.060 | 1.047 | 1.217 | 1.127 | 1.260 | 0.911 | 1.219 |
| United States | 0.346 | 0.964 | 1.060 | 1.046 | 1.213 | 1.126 | 1.254 | 0.910 | 1.214 |
| Low-Income average | 0.778 | 0.967 | 1.074 | 1.054 | 1.851 | 1.211 | 2.901 | 0.930 | 1.795 |
| Middle-Income average | 0.655 | 0.965 | 1.066 | 1.050 | 1.306 | 1.153 | 1.401 | 0.920 | 1.309 |
| High-Income average | 0.495 | 0.964 | 1.062 | 1.047 | 1.236 | 1.133 | 1.288 | 0.914 | 1.238 |

Countries are reported based on ascending per capita real income levels.

^aAs the estimated budget shares for medical and health, recreation, and "other" were negative, these values are calculated using the actual budget shares. Calculated using equation (5).

Source: Authors' calculation using 2005 International Comparison Program (ICP) data.

Frisch own-price elasticities for aggregate consumption categories, 144 countries, 2005

| Country | Food, beverages & tobacco | Clothing & footwear | Housing | House furnishings | Medical & health | Transport & communications | Recreation | Education | Other |
|--------------------------|---------------------------|---------------------|---------|-------------------|---------------------|----------------------------|---------------------|-----------|---------------------|
| Low-income countries: | | | | | | | | | |
| Congo, Dem. Rep. | -0.627 | -0.711 | -0.798 | -0.779 | -1.154 ^a | -1.013 | -2.843 ^a | -0.689 | -1.585 ^a |
| Burundi | -0.616 | -0.711 | -0.795 | -0.777 | -1.154 ^a | -0.958 | -1.371 ^a | -0.687 | -1.203 ^a |
| Liberia | -0.613 | -0.711 | -0.794 | -0.777 | -6.323 | -0.950 | -1.852 ^a | -0.687 | -8.254 |
| Zimbabwe | -0.610 | -0.711 | -0.793 | -0.776 | -3.144 | -0.939 | -1.504 ^a | -0.686 | -3.444 |
| Ethiopia | -0.607 | -0.710 | -0.793 | -0.776 | -2.403 | -0.932 | -3.966 ^a | -0.686 | -2.541 |
| Niger | -0.607 | -0.710 | -0.793 | -0.776 | -2.362 | -0.931 | -1.090 ^a | -0.686 | -2.493 |
| Guinea-Bissau | -0.607 | -0.710 | -0.793 | -0.776 | -2.329 | -0.931 | -1.217 ^a | -0.686 | -2.455 |
| Mozambique | -0.603 | -0.710 | -0.792 | -0.775 | -1.955 | -0.924 | -1.587 ^a | -0.685 | -2.027 |
| Malawi | -0.601 | -0.710 | -0.792 | -0.775 | -1.778 | -0.919 | -0.972 ^a | -0.685 | -1.831 |
| Rwanda | -0.600 | -0.710 | -0.791 | -0.775 | -1.727 | -0.917 | -2.255 ^a | -0.685 | -1.775 |
| Angola | -0.597 | -0.710 | -0.791 | -0.775 | -1.601 | -0.912 | -9.575 | -0.685 | -1.637 |
| Chad | -0.597 | -0.710 | -0.791 | -0.775 | -1.585 | -0.912 | -8.140 | -0.685 | -1.619 |
| Gambia, The | -0.596 | -0.710 | -0.791 | -0.775 | -1.565 | -0.911 | -6.881 | -0.685 | -1.598 |
| Central African Republic | -0.596 | -0.710 | -0.791 | -0.775 | -1.555 | -0.910 | -6.388 | -0.685 | -1.588 |
| Mali | -0.596 | -0.710 | -0.791 | -0.775 | -1.554 | -0.910 | -6.319 | -0.685 | -1.586 |
| Tanzania | -0.596 | -0.710 | -0.791 | -0.775 | -1.534 | -0.909 | -5.519 | -0.684 | -1.565 |
| Sierra Leone | -0.594 | -0.710 | -0.790 | -0.775 | -1.490 | -0.907 | -4.282 | -0.684 | -1.517 |
| Guinea | -0.594 | -0.710 | -0.790 | -0.775 | -1.483 | -0.907 | -4.125 | -0.684 | -1.510 |
| Burkina Faso | -0.593 | -0.710 | -0.790 | -0.775 | -1.457 | -0.905 | -3.658 | -0.684 | -1.482 |
| Uganda | -0.591 | -0.710 | -0.790 | -0.774 | -1.406 | -0.902 | -2.972 | -0.684 | -1.428 |
| Madagascar | -0.591 | -0.710 | -0.790 | -0.774 | -1.404 | -0.902 | -2.943 | -0.684 | -1.425 |
| Zambia | -0.591 | -0.710 | -0.790 | -0.774 | -1.400 | -0.902 | -2.905 | -0.684 | -1.421 |
| Congo, Rep. | -0.590 | -0.710 | -0.790 | -0.774 | -1.384 | -0.901 | -2.739 | -0.684 | -1.404 |
| Togo | -0.589 | -0.710 | -0.790 | -0.774 | -1.372 | -0.900 | -2.633 | -0.684 | -1.391 |
| Nepal | -0.587 | -0.710 | -0.789 | -0.774 | -1.335 | -0.897 | -2.339 | -0.683 | -1.352 |
| Ghana | -0.586 | -0.710 | -0.789 | -0.774 | -1.317 | -0.896 | -2.217 | -0.683 | -1.333 |
| Benin | -0.584 | -0.710 | -0.789 | -0.774 | -1.292 | -0.894 | -2.064 | -0.683 | -1.306 |
| Mauritania | -0.584 | -0.710 | -0.789 | -0.774 | -1.288 | -0.894 | -2.044 | -0.683 | -1.303 |
| Bangladesh | -0.583 | -0.710 | -0.789 | -0.774 | -1.276 | -0.893 | -1.978 | -0.683 | -1.290 |
| Côte d'Ivoire | -0.583 | -0.710 | -0.789 | -0.774 | -1.273 | -0.892 | -1.960 | -0.683 | -1.286 |
| Lao PDR | -0.583 | -0.710 | -0.789 | -0.774 | -1.272 | -0.892 | -1.955 | -0.683 | -1.285 |
| Kenya | -0.580 | -0.710 | -0.788 | -0.774 | -1.241 | -0.889 | -1.807 | -0.683 | -1.253 |
| Djibouti | -0.580 | -0.710 | -0.788 | -0.774 | -1.239 | -0.889 | -1.798 | -0.683 | -1.251 |
| Nigeria | -0.580 | -0.710 | -0.788 | -0.773 | -1.232 | -0.889 | -1.770 | -0.683 | -1.244 |
| Senegal | -0.579 | -0.710 | -0.788 | -0.773 | -1.231 | -0.888 | -1.764 | -0.683 | -1.243 |
| Cambodia | -0.577 | -0.710 | -0.788 | -0.773 | -1.210 | -0.886 | -1.678 | -0.682 | -1.221 |
| Cameroon | -0.576 | -0.710 | -0.788 | -0.773 | -1.194 | -0.885 | -1.618 | -0.682 | -1.204 |
| São Tomé and Príncipe | -0.575 | -0.710 | -0.788 | -0.773 | -1.189 | -0.884 | -1.598 | -0.682 | -1.199 |

---continued

Frisch own-price elasticities for aggregate consumption categories, 144 countries, 2005, *continued*

| Country | Food, beverages & tobacco | Clothing & footwear | Housing | House furnishings | Medical & health | Transport & communi- cations | Recreation | Education | Other |
|----------------------|---------------------------------|------------------------|---------|----------------------|---------------------|------------------------------------|------------|-----------|--------|
| India | -0.574 | -0.710 | -0.788 | -0.773 | -1.179 | -0.883 | -1.565 | -0.682 | -1.189 |
| Yemen, Rep. | -0.573 | -0.710 | -0.787 | -0.773 | -1.176 | -0.883 | -1.553 | -0.682 | -1.185 |
| Vietnam | -0.573 | -0.710 | -0.787 | -0.773 | -1.175 | -0.883 | -1.551 | -0.682 | -1.184 |
| Mongolia | -0.573 | -0.709 | -0.787 | -0.773 | -1.172 | -0.882 | -1.539 | -0.682 | -1.181 |
| Iraq | -0.571 | -0.709 | -0.787 | -0.773 | -1.162 | -0.881 | -1.505 | -0.682 | -1.170 |
| Bhutan | -0.570 | -0.709 | -0.787 | -0.773 | -1.153 | -0.880 | -1.479 | -0.682 | -1.162 |
| China | -0.569 | -0.709 | -0.787 | -0.773 | -1.146 | -0.879 | -1.455 | -0.681 | -1.154 |
| Sudan | -0.566 | -0.709 | -0.787 | -0.773 | -1.128 | -0.877 | -1.403 | -0.681 | -1.135 |
| Lesotho | -0.564 | -0.709 | -0.787 | -0.773 | -1.119 | -0.876 | -1.376 | -0.681 | -1.126 |
| Tajikistan | -0.564 | -0.709 | -0.786 | -0.773 | -1.118 | -0.875 | -1.374 | -0.681 | -1.125 |
| Maldives | -0.560 | -0.709 | -0.786 | -0.772 | -1.098 | -0.873 | -1.320 | -0.681 | -1.104 |
| Morocco | -0.559 | -0.709 | -0.786 | -0.772 | -1.095 | -0.872 | -1.312 | -0.680 | -1.101 |
| Pakistan | -0.558 | -0.709 | -0.786 | -0.772 | -1.089 | -0.871 | -1.298 | -0.680 | -1.095 |
| Indonesia | -0.556 | -0.709 | -0.786 | -0.772 | -1.081 | -0.870 | -1.278 | -0.680 | -1.087 |
| Kyrgyz Republic | -0.556 | -0.709 | -0.786 | -0.772 | -1.081 | -0.870 | -1.277 | -0.680 | -1.086 |
| Philippines | -0.555 | -0.709 | -0.786 | -0.772 | -1.078 | -0.870 | -1.271 | -0.680 | -1.084 |
| Cape Verde | -0.555 | -0.709 | -0.786 | -0.772 | -1.078 | -0.870 | -1.270 | -0.680 | -1.083 |
| Bolivia | -0.554 | -0.709 | -0.786 | -0.772 | -1.077 | -0.869 | -1.267 | -0.680 | -1.082 |
| Namibia | -0.551 | -0.709 | -0.785 | -0.772 | -1.066 | -0.868 | -1.242 | -0.680 | -1.071 |
| Sri Lanka | -0.550 | -0.709 | -0.785 | -0.772 | -1.062 | -0.867 | -1.232 | -0.680 | -1.067 |
| Botswana | -0.549 | -0.709 | -0.785 | -0.772 | -1.059 | -0.867 | -1.225 | -0.680 | -1.064 |
| Gabon | -0.548 | -0.709 | -0.785 | -0.772 | -1.055 | -0.866 | -1.216 | -0.679 | -1.060 |
| Azerbaijan | -0.547 | -0.709 | -0.785 | -0.772 | -1.053 | -0.866 | -1.213 | -0.679 | -1.058 |
| Syrian Arab Republic | -0.546 | -0.709 | -0.785 | -0.772 | -1.051 | -0.865 | -1.207 | -0.679 | -1.055 |
| Equatorial Guinea | -0.543 | -0.709 | -0.785 | -0.772 | -1.040 | -0.863 | -1.184 | -0.679 | -1.044 |
| Paraguay | -0.541 | -0.709 | -0.785 | -0.772 | -1.037 | -0.863 | -1.176 | -0.679 | -1.041 |
| Fiji | -0.539 | -0.709 | -0.784 | -0.771 | -1.032 | -0.862 | -1.167 | -0.679 | -1.037 |
| Swaziland | -0.537 | -0.709 | -0.784 | -0.771 | -1.028 | -0.861 | -1.157 | -0.679 | -1.032 |
| Moldova | -0.536 | -0.709 | -0.784 | -0.771 | -1.025 | -0.861 | -1.152 | -0.679 | -1.029 |
| Egypt, Arab Rep. | -0.535 | -0.709 | -0.784 | -0.771 | -1.023 | -0.860 | -1.147 | -0.678 | -1.027 |
| Ecuador | -0.532 | -0.709 | -0.784 | -0.771 | -1.017 | -0.859 | -1.135 | -0.678 | -1.021 |
| Jordan | -0.532 | -0.709 | -0.784 | -0.771 | -1.016 | -0.859 | -1.134 | -0.678 | -1.020 |
| Georgia | -0.531 | -0.709 | -0.784 | -0.771 | -1.015 | -0.859 | -1.131 | -0.678 | -1.019 |
| Thailand | -0.530 | -0.709 | -0.784 | -0.771 | -1.013 | -0.858 | -1.127 | -0.678 | -1.017 |
| Colombia | -0.530 | -0.709 | -0.784 | -0.771 | -1.012 | -0.858 | -1.125 | -0.678 | -1.015 |
| Albania | -0.528 | -0.709 | -0.784 | -0.771 | -1.009 | -0.857 | -1.120 | -0.678 | -1.013 |
| Tunisia | -0.527 | -0.709 | -0.784 | -0.771 | -1.007 | -0.857 | -1.116 | -0.678 | -1.011 |
| Peru | -0.525 | -0.709 | -0.784 | -0.771 | -1.004 | -0.856 | -1.110 | -0.678 | -1.007 |
| Armenia | -0.523 | -0.709 | -0.783 | -0.771 | -1.001 | -0.856 | -1.104 | -0.678 | -1.004 |

---continued

Frisch own-price elasticities for aggregate consumption categories, 144 countries, 2005, *continued*

| Country | Food, beverages & tobacco | Clothing & footwear | Housing | House furnishings | Medical & health | Transport & communi- cations | Recreation | Education | Other |
|-----------------------------|---------------------------------|------------------------|---------|----------------------|---------------------|------------------------------------|------------|-----------|--------|
| Middle-income countries: | | | | | | | | | |
| Venezuela, RB | -0.519 | -0.709 | -0.783 | -0.771 | -0.994 | -0.854 | -1.091 | -0.677 | -0.998 |
| Malaysia | -0.519 | -0.709 | -0.783 | -0.771 | -0.994 | -0.854 | -1.091 | -0.677 | -0.997 |
| Ukraine | -0.518 | -0.709 | -0.783 | -0.771 | -0.993 | -0.854 | -1.088 | -0.677 | -0.996 |
| Brazil | -0.516 | -0.709 | -0.783 | -0.771 | -0.990 | -0.854 | -1.084 | -0.677 | -0.994 |
| Montenegro | -0.515 | -0.709 | -0.783 | -0.771 | -0.989 | -0.853 | -1.081 | -0.677 | -0.992 |
| South Africa | -0.512 | -0.708 | -0.783 | -0.771 | -0.985 | -0.852 | -1.074 | -0.677 | -0.988 |
| Macedonia, FYR | -0.508 | -0.708 | -0.783 | -0.770 | -0.979 | -0.851 | -1.063 | -0.677 | -0.982 |
| Turkey | -0.507 | -0.708 | -0.783 | -0.770 | -0.978 | -0.851 | -1.062 | -0.676 | -0.981 |
| Bosnia and Herze- govina | -0.503 | -0.708 | -0.782 | -0.770 | -0.973 | -0.850 | -1.053 | -0.676 | -0.976 |
| Serbia | -0.501 | -0.708 | -0.782 | -0.770 | -0.972 | -0.849 | -1.051 | -0.676 | -0.975 |
| Belarus | -0.501 | -0.708 | -0.782 | -0.770 | -0.972 | -0.849 | -1.051 | -0.676 | -0.975 |
| Romania | -0.500 | -0.708 | -0.782 | -0.770 | -0.971 | -0.849 | -1.048 | -0.676 | -0.973 |
| Saudi Arabia | -0.499 | -0.708 | -0.782 | -0.770 | -0.970 | -0.849 | -1.047 | -0.676 | -0.973 |
| Uruguay | -0.498 | -0.708 | -0.782 | -0.770 | -0.969 | -0.849 | -1.045 | -0.676 | -0.972 |
| Mauritius | -0.498 | -0.708 | -0.782 | -0.770 | -0.969 | -0.849 | -1.045 | -0.676 | -0.972 |
| Chile | -0.498 | -0.708 | -0.782 | -0.770 | -0.969 | -0.849 | -1.045 | -0.676 | -0.971 |
| Kazakhstan | -0.496 | -0.708 | -0.782 | -0.770 | -0.966 | -0.848 | -1.041 | -0.676 | -0.969 |
| Russian Federation | -0.493 | -0.708 | -0.782 | -0.770 | -0.964 | -0.847 | -1.036 | -0.676 | -0.966 |
| Argentina | -0.491 | -0.708 | -0.782 | -0.770 | -0.962 | -0.847 | -1.034 | -0.676 | -0.965 |
| Bulgaria | -0.490 | -0.708 | -0.782 | -0.770 | -0.961 | -0.847 | -1.031 | -0.675 | -0.963 |
| Oman | -0.487 | -0.708 | -0.782 | -0.770 | -0.959 | -0.846 | -1.028 | -0.675 | -0.961 |
| Iran, Islamic Rep. | -0.482 | -0.708 | -0.782 | -0.770 | -0.954 | -0.845 | -1.020 | -0.675 | -0.957 |
| Latvia | -0.475 | -0.708 | -0.781 | -0.770 | -0.950 | -0.844 | -1.012 | -0.675 | -0.952 |
| Mexico | -0.474 | -0.708 | -0.781 | -0.770 | -0.949 | -0.844 | -1.011 | -0.675 | -0.951 |
| Lebanon | -0.471 | -0.708 | -0.781 | -0.770 | -0.947 | -0.843 | -1.007 | -0.674 | -0.949 |
| Poland | -0.461 | -0.708 | -0.781 | -0.769 | -0.940 | -0.841 | -0.997 | -0.674 | -0.942 |
| Croatia | -0.460 | -0.708 | -0.781 | -0.769 | -0.940 | -0.841 | -0.996 | -0.674 | -0.942 |
| Macao, China | -0.459 | -0.708 | -0.781 | -0.769 | -0.940 | -0.841 | -0.996 | -0.674 | -0.942 |
| Lithuania | -0.459 | -0.708 | -0.781 | -0.769 | -0.940 | -0.841 | -0.996 | -0.674 | -0.942 |
| Estonia | -0.455 | -0.708 | -0.781 | -0.769 | -0.937 | -0.840 | -0.992 | -0.674 | -0.939 |
| Brunei Darussalam | -0.450 | -0.708 | -0.781 | -0.769 | -0.935 | -0.840 | -0.988 | -0.673 | -0.937 |
| Slovak Republic | -0.449 | -0.708 | -0.781 | -0.769 | -0.934 | -0.840 | -0.987 | -0.673 | -0.936 |
| Hungary | -0.448 | -0.708 | -0.781 | -0.769 | -0.934 | -0.840 | -0.987 | -0.673 | -0.936 |
| Korea, Rep. | -0.440 | -0.708 | -0.780 | -0.769 | -0.930 | -0.838 | -0.980 | -0.673 | -0.932 |
| Bahrain | -0.440 | -0.708 | -0.780 | -0.769 | -0.930 | -0.838 | -0.980 | -0.673 | -0.932 |
| Czech Republic | -0.428 | -0.708 | -0.780 | -0.769 | -0.925 | -0.837 | -0.972 | -0.672 | -0.927 |
| Slovenia | -0.422 | -0.708 | -0.780 | -0.769 | -0.923 | -0.836 | -0.969 | -0.672 | -0.924 |
| Israel | -0.420 | -0.708 | -0.780 | -0.769 | -0.922 | -0.836 | -0.968 | -0.672 | -0.923 |

---continued

Frisch own-price elasticities for aggregate consumption categories, 144 countries, 2005, *continued*

| Country | Food, beverages & tobacco | Clothing & footwear | Housing | House furnishings | Medical & health | Transport & communications | Recreation | Education | Other |
|------------------------|---------------------------|---------------------|---------|-------------------|------------------|----------------------------|------------|-----------|--------|
| High-income countries: | | | | | | | | | |
| Portugal | -0.414 | -0.708 | -0.780 | -0.769 | -0.920 | -0.835 | -0.964 | -0.672 | -0.921 |
| Qatar | -0.411 | -0.708 | -0.780 | -0.769 | -0.919 | -0.835 | -0.963 | -0.672 | -0.921 |
| Singapore | -0.410 | -0.708 | -0.780 | -0.769 | -0.918 | -0.835 | -0.962 | -0.672 | -0.920 |
| Malta | -0.403 | -0.707 | -0.780 | -0.769 | -0.916 | -0.834 | -0.959 | -0.672 | -0.918 |
| Kuwait | -0.401 | -0.707 | -0.779 | -0.769 | -0.916 | -0.834 | -0.958 | -0.672 | -0.917 |
| New Zealand | -0.388 | -0.707 | -0.779 | -0.768 | -0.912 | -0.833 | -0.953 | -0.671 | -0.914 |
| Finland | -0.385 | -0.707 | -0.779 | -0.768 | -0.911 | -0.833 | -0.952 | -0.671 | -0.913 |
| Taiwan, China | -0.384 | -0.707 | -0.779 | -0.768 | -0.911 | -0.833 | -0.951 | -0.671 | -0.912 |
| Spain | -0.379 | -0.707 | -0.779 | -0.768 | -0.910 | -0.832 | -0.949 | -0.671 | -0.911 |
| Italy | -0.376 | -0.707 | -0.779 | -0.768 | -0.909 | -0.832 | -0.948 | -0.671 | -0.910 |
| Ireland | -0.373 | -0.707 | -0.779 | -0.768 | -0.908 | -0.832 | -0.947 | -0.671 | -0.910 |
| Denmark | -0.372 | -0.707 | -0.779 | -0.768 | -0.908 | -0.832 | -0.947 | -0.671 | -0.909 |
| Sweden | -0.369 | -0.707 | -0.779 | -0.768 | -0.907 | -0.832 | -0.946 | -0.670 | -0.909 |
| Hong Kong, China | -0.367 | -0.707 | -0.779 | -0.768 | -0.907 | -0.831 | -0.945 | -0.670 | -0.908 |
| Australia | -0.363 | -0.707 | -0.779 | -0.768 | -0.906 | -0.831 | -0.944 | -0.670 | -0.907 |
| Cyprus | -0.362 | -0.707 | -0.779 | -0.768 | -0.906 | -0.831 | -0.943 | -0.670 | -0.907 |
| Belgium | -0.361 | -0.707 | -0.779 | -0.768 | -0.906 | -0.831 | -0.943 | -0.670 | -0.907 |
| Japan | -0.361 | -0.707 | -0.779 | -0.768 | -0.906 | -0.831 | -0.943 | -0.670 | -0.907 |
| France | -0.357 | -0.707 | -0.779 | -0.768 | -0.905 | -0.831 | -0.942 | -0.670 | -0.906 |
| Germany | -0.350 | -0.707 | -0.779 | -0.768 | -0.903 | -0.830 | -0.940 | -0.670 | -0.905 |
| Canada | -0.350 | -0.707 | -0.779 | -0.768 | -0.903 | -0.830 | -0.940 | -0.670 | -0.905 |
| Iceland | -0.348 | -0.707 | -0.779 | -0.768 | -0.903 | -0.830 | -0.939 | -0.670 | -0.904 |
| Netherlands | -0.347 | -0.707 | -0.779 | -0.768 | -0.903 | -0.830 | -0.939 | -0.670 | -0.904 |
| Norway | -0.347 | -0.707 | -0.779 | -0.768 | -0.903 | -0.830 | -0.939 | -0.670 | -0.904 |
| United Kingdom | -0.339 | -0.707 | -0.779 | -0.768 | -0.901 | -0.830 | -0.937 | -0.670 | -0.903 |
| Switzerland | -0.337 | -0.707 | -0.778 | -0.768 | -0.901 | -0.830 | -0.936 | -0.670 | -0.902 |
| Austria | -0.330 | -0.707 | -0.778 | -0.768 | -0.900 | -0.829 | -0.934 | -0.669 | -0.901 |
| Luxembourg | -0.283 | -0.707 | -0.778 | -0.768 | -0.893 | -0.827 | -0.924 | -0.668 | -0.894 |
| United States | -0.254 | -0.707 | -0.778 | -0.768 | -0.890 | -0.826 | -0.920 | -0.668 | -0.891 |
| Low-Income average | -0.571 | -0.710 | -0.788 | -0.773 | -1.358 | -0.889 | -2.128 | -0.682 | -1.410 |
| Middle-Income average | -0.481 | -0.708 | -0.782 | -0.770 | -0.958 | -0.846 | -1.028 | -0.675 | -0.960 |
| High-Income average | -0.363 | -0.707 | -0.779 | -0.768 | -0.907 | -0.831 | -0.945 | -0.670 | -0.908 |

Countries are reported based on ascending per capita real income levels.

^aAs the estimated budget shares for medical and health, recreation, and "other" were negative, these values are calculated using the actual budget shares. Calculated using equation (6).

Source: Authors' calculation using 2005 International Comparison Program (ICP) data.

Appendix table 3

Slutsky own-price elasticities for aggregate consumption categories, 144 countries, 2005

| | Food, beverages, & tobacco | Clothing & footwear | Housing | House furnishings | Medical & health | Transport & communi- cations | Recreation | Education | Other |
|-----------------------------|----------------------------------|------------------------|---------|----------------------|---------------------|------------------------------------|---------------------|-----------|---------------------|
| Low-income countries: | | | | | | | | | |
| Congo, Dem. Rep. | -0.230 | -0.669 | -0.690 | -0.741 | -1.089 ^a | -0.933 | -2.743 ^a | -0.664 | -1.496 ^a |
| Burundi | -0.268 | -0.669 | -0.682 | -0.738 | -1.089 ^a | -0.869 | -1.294 ^a | -0.663 | -1.110 ^a |
| Liberia | -0.275 | -0.669 | -0.680 | -0.738 | -6.178 | -0.859 | -1.772 ^a | -0.663 | -7.980 |
| Zimbabwe | -0.285 | -0.669 | -0.678 | -0.737 | -3.061 | -0.846 | -1.427 ^a | -0.663 | -3.312 |
| Ethiopia | -0.293 | -0.669 | -0.676 | -0.736 | -2.332 | -0.836 | -3.839 ^a | -0.662 | -2.433 |
| Niger | -0.293 | -0.669 | -0.676 | -0.736 | -2.292 | -0.836 | -1.003 ^a | -0.662 | -2.386 |
| Guinea-Bissau | -0.294 | -0.669 | -0.676 | -0.736 | -2.259 | -0.835 | -1.137 ^a | -0.662 | -2.349 |
| Mozambique | -0.301 | -0.669 | -0.674 | -0.736 | -1.891 | -0.826 | -1.510 ^a | -0.662 | -1.931 |
| Malawi | -0.307 | -0.669 | -0.673 | -0.735 | -1.717 | -0.819 | -0.868 ^a | -0.662 | -1.739 |
| Rwanda | -0.309 | -0.669 | -0.672 | -0.735 | -1.666 | -0.817 | -2.168 ^a | -0.662 | -1.683 |
| Angola | -0.314 | -0.669 | -0.671 | -0.735 | -1.541 | -0.811 | -9.304 | -0.662 | -1.547 |
| Chad | -0.315 | -0.670 | -0.671 | -0.734 | -1.525 | -0.810 | -7.907 | -0.662 | -1.530 |
| Gambia, The | -0.316 | -0.670 | -0.671 | -0.734 | -1.505 | -0.809 | -6.680 | -0.662 | -1.509 |
| Central African Republic | -0.317 | -0.670 | -0.671 | -0.734 | -1.496 | -0.808 | -6.199 | -0.662 | -1.498 |
| Mali | -0.317 | -0.670 | -0.670 | -0.734 | -1.494 | -0.808 | -6.132 | -0.662 | -1.497 |
| Tanzania | -0.318 | -0.670 | -0.670 | -0.734 | -1.475 | -0.807 | -5.353 | -0.662 | -1.476 |
| Sierra Leone | -0.321 | -0.670 | -0.670 | -0.734 | -1.431 | -0.804 | -4.147 | -0.662 | -1.428 |
| Guinea | -0.321 | -0.670 | -0.669 | -0.734 | -1.423 | -0.803 | -3.994 | -0.662 | -1.421 |
| Burkina Faso | -0.323 | -0.670 | -0.669 | -0.734 | -1.398 | -0.801 | -3.538 | -0.662 | -1.393 |
| Uganda | -0.326 | -0.670 | -0.668 | -0.733 | -1.347 | -0.797 | -2.869 | -0.661 | -1.339 |
| Madagascar | -0.327 | -0.670 | -0.668 | -0.733 | -1.344 | -0.797 | -2.841 | -0.661 | -1.336 |
| Zambia | -0.327 | -0.670 | -0.668 | -0.733 | -1.340 | -0.797 | -2.804 | -0.661 | -1.332 |
| Congo, Rep. | -0.328 | -0.670 | -0.668 | -0.733 | -1.324 | -0.795 | -2.641 | -0.661 | -1.314 |
| Togo | -0.329 | -0.670 | -0.667 | -0.733 | -1.312 | -0.794 | -2.538 | -0.661 | -1.302 |
| Nepal | -0.333 | -0.670 | -0.666 | -0.733 | -1.275 | -0.790 | -2.250 | -0.661 | -1.263 |
| Ghana | -0.334 | -0.670 | -0.666 | -0.733 | -1.257 | -0.788 | -2.130 | -0.661 | -1.243 |
| Benin | -0.337 | -0.670 | -0.665 | -0.732 | -1.231 | -0.785 | -1.980 | -0.661 | -1.216 |
| Mauritania | -0.337 | -0.670 | -0.665 | -0.732 | -1.227 | -0.785 | -1.961 | -0.661 | -1.212 |
| Bangladesh | -0.339 | -0.670 | -0.665 | -0.732 | -1.215 | -0.784 | -1.896 | -0.661 | -1.199 |
| Côte d'Ivoire | -0.339 | -0.670 | -0.665 | -0.732 | -1.212 | -0.783 | -1.878 | -0.661 | -1.196 |
| Lao PDR | -0.339 | -0.670 | -0.665 | -0.732 | -1.210 | -0.783 | -1.873 | -0.661 | -1.195 |
| Kenya | -0.343 | -0.670 | -0.664 | -0.732 | -1.179 | -0.779 | -1.727 | -0.661 | -1.161 |
| Djibouti | -0.343 | -0.670 | -0.664 | -0.732 | -1.177 | -0.779 | -1.719 | -0.661 | -1.159 |
| Nigeria | -0.344 | -0.670 | -0.663 | -0.732 | -1.171 | -0.778 | -1.691 | -0.661 | -1.152 |
| Senegal | -0.344 | -0.670 | -0.663 | -0.732 | -1.169 | -0.778 | -1.685 | -0.661 | -1.151 |
| Cambodia | -0.347 | -0.670 | -0.663 | -0.732 | -1.148 | -0.774 | -1.600 | -0.661 | -1.128 |
| Cameroon | -0.349 | -0.670 | -0.662 | -0.731 | -1.131 | -0.772 | -1.541 | -0.661 | -1.111 |
| São Tomé and Príncipe | -0.350 | -0.670 | -0.662 | -0.731 | -1.126 | -0.771 | -1.521 | -0.661 | -1.105 |

---continued

Slutsky own-price elasticities for aggregate consumption categories, 144 countries, 2005, *continued*

| | Food, beverages, & tobacco | Clothing & footwear | Housing | House furnishings | Medical & health | Transport & communi- cations | Recreation | Education | Other |
|----------------------|----------------------------------|------------------------|---------|----------------------|---------------------|------------------------------------|------------|-----------|--------|
| India | -0.351 | -0.670 | -0.661 | -0.731 | -1.116 | -0.770 | -1.488 | -0.660 | -1.095 |
| Yemen, Rep. | -0.352 | -0.670 | -0.661 | -0.731 | -1.112 | -0.769 | -1.476 | -0.660 | -1.091 |
| Vietnam | -0.352 | -0.670 | -0.661 | -0.731 | -1.112 | -0.769 | -1.474 | -0.660 | -1.090 |
| Mongolia | -0.353 | -0.670 | -0.661 | -0.731 | -1.108 | -0.768 | -1.462 | -0.660 | -1.086 |
| Iraq | -0.354 | -0.670 | -0.660 | -0.731 | -1.098 | -0.766 | -1.428 | -0.660 | -1.075 |
| Bhutan | -0.355 | -0.670 | -0.660 | -0.731 | -1.089 | -0.765 | -1.402 | -0.660 | -1.066 |
| China | -0.357 | -0.670 | -0.660 | -0.731 | -1.081 | -0.763 | -1.378 | -0.660 | -1.058 |
| Sudan | -0.360 | -0.670 | -0.659 | -0.730 | -1.063 | -0.760 | -1.326 | -0.660 | -1.038 |
| Lesotho | -0.361 | -0.670 | -0.658 | -0.730 | -1.053 | -0.758 | -1.299 | -0.660 | -1.028 |
| Tajikistan | -0.361 | -0.670 | -0.658 | -0.730 | -1.052 | -0.758 | -1.297 | -0.660 | -1.027 |
| Maldives | -0.365 | -0.670 | -0.657 | -0.730 | -1.031 | -0.753 | -1.242 | -0.660 | -1.004 |
| Morocco | -0.366 | -0.670 | -0.657 | -0.730 | -1.027 | -0.753 | -1.234 | -0.660 | -1.001 |
| Pakistan | -0.367 | -0.670 | -0.656 | -0.729 | -1.022 | -0.751 | -1.220 | -0.660 | -0.995 |
| Indonesia | -0.368 | -0.670 | -0.656 | -0.729 | -1.013 | -0.749 | -1.199 | -0.660 | -0.985 |
| Kyrgyz Republic | -0.368 | -0.670 | -0.656 | -0.729 | -1.012 | -0.749 | -1.199 | -0.660 | -0.985 |
| Philippines | -0.369 | -0.670 | -0.656 | -0.729 | -1.010 | -0.749 | -1.193 | -0.659 | -0.982 |
| Cape Verde | -0.369 | -0.670 | -0.656 | -0.729 | -1.009 | -0.749 | -1.191 | -0.659 | -0.982 |
| Bolivia | -0.369 | -0.670 | -0.655 | -0.729 | -1.008 | -0.748 | -1.188 | -0.659 | -0.980 |
| Namibia | -0.371 | -0.670 | -0.655 | -0.729 | -0.997 | -0.746 | -1.163 | -0.659 | -0.968 |
| Sri Lanka | -0.372 | -0.670 | -0.654 | -0.729 | -0.992 | -0.744 | -1.152 | -0.659 | -0.963 |
| Botswana | -0.373 | -0.670 | -0.654 | -0.729 | -0.989 | -0.744 | -1.145 | -0.659 | -0.960 |
| Gabon | -0.373 | -0.670 | -0.654 | -0.728 | -0.984 | -0.743 | -1.136 | -0.659 | -0.955 |
| Azerbaijan | -0.374 | -0.670 | -0.654 | -0.728 | -0.983 | -0.742 | -1.133 | -0.659 | -0.954 |
| Syrian Arab Republic | -0.374 | -0.670 | -0.653 | -0.728 | -0.980 | -0.741 | -1.126 | -0.659 | -0.951 |
| Equatorial Guinea | -0.376 | -0.670 | -0.653 | -0.728 | -0.968 | -0.738 | -1.102 | -0.659 | -0.938 |
| Paraguay | -0.377 | -0.670 | -0.652 | -0.728 | -0.965 | -0.737 | -1.094 | -0.659 | -0.934 |
| Fiji | -0.378 | -0.670 | -0.652 | -0.728 | -0.960 | -0.736 | -1.085 | -0.659 | -0.929 |
| Swaziland | -0.378 | -0.670 | -0.651 | -0.728 | -0.955 | -0.734 | -1.074 | -0.659 | -0.923 |
| Moldova | -0.379 | -0.670 | -0.651 | -0.728 | -0.952 | -0.734 | -1.070 | -0.659 | -0.921 |
| Egypt, Arab Rep. | -0.379 | -0.671 | -0.651 | -0.727 | -0.949 | -0.733 | -1.064 | -0.659 | -0.918 |
| Ecuador | -0.380 | -0.671 | -0.650 | -0.727 | -0.943 | -0.731 | -1.052 | -0.658 | -0.911 |
| Jordan | -0.380 | -0.671 | -0.650 | -0.727 | -0.942 | -0.731 | -1.050 | -0.658 | -0.910 |
| Georgia | -0.381 | -0.671 | -0.650 | -0.727 | -0.940 | -0.730 | -1.047 | -0.658 | -0.908 |
| Thailand | -0.381 | -0.671 | -0.650 | -0.727 | -0.938 | -0.730 | -1.043 | -0.658 | -0.906 |
| Colombia | -0.381 | -0.671 | -0.650 | -0.727 | -0.937 | -0.729 | -1.040 | -0.658 | -0.904 |
| Albania | -0.381 | -0.671 | -0.649 | -0.727 | -0.934 | -0.728 | -1.035 | -0.658 | -0.901 |
| Tunisia | -0.382 | -0.671 | -0.649 | -0.727 | -0.932 | -0.728 | -1.031 | -0.658 | -0.899 |
| Peru | -0.382 | -0.671 | -0.649 | -0.727 | -0.928 | -0.726 | -1.024 | -0.658 | -0.895 |
| Armenia | -0.383 | -0.671 | -0.648 | -0.727 | -0.925 | -0.725 | -1.018 | -0.658 | -0.892 |

---continued

Slutsky own-price elasticities for aggregate consumption categories, 144 countries, 2005, *continued*

| | Food, beverages, & tobacco | Clothing & footwear | Housing | House furnishings | Medical & health | Transport & communi- cations | Recreation | Education | Other |
|---------------------------|----------------------------------|------------------------|---------|----------------------|---------------------|------------------------------------|------------|-----------|--------|
| Middle-income countries: | | | | | | | | | |
| Venezuela, RB | -0.383 | -0.671 | -0.648 | -0.726 | -0.917 | -0.723 | -1.004 | -0.658 | -0.883 |
| Malaysia | -0.383 | -0.671 | -0.648 | -0.726 | -0.917 | -0.723 | -1.004 | -0.658 | -0.883 |
| Ukraine | -0.384 | -0.671 | -0.647 | -0.726 | -0.915 | -0.722 | -1.001 | -0.658 | -0.881 |
| Brazil | -0.384 | -0.671 | -0.647 | -0.726 | -0.913 | -0.721 | -0.997 | -0.658 | -0.879 |
| Montenegro | -0.384 | -0.671 | -0.647 | -0.726 | -0.911 | -0.721 | -0.994 | -0.658 | -0.877 |
| South Africa | -0.384 | -0.671 | -0.646 | -0.726 | -0.906 | -0.719 | -0.985 | -0.658 | -0.871 |
| Macedonia, FYR | -0.384 | -0.671 | -0.646 | -0.726 | -0.900 | -0.717 | -0.974 | -0.657 | -0.864 |
| Turkey | -0.384 | -0.671 | -0.646 | -0.726 | -0.899 | -0.716 | -0.972 | -0.657 | -0.863 |
| Bosnia and Herzegovina | -0.384 | -0.671 | -0.645 | -0.725 | -0.893 | -0.714 | -0.963 | -0.657 | -0.857 |
| Serbia | -0.384 | -0.671 | -0.645 | -0.725 | -0.892 | -0.714 | -0.960 | -0.657 | -0.855 |
| Belarus | -0.384 | -0.671 | -0.645 | -0.725 | -0.891 | -0.714 | -0.960 | -0.657 | -0.855 |
| Romania | -0.384 | -0.671 | -0.645 | -0.725 | -0.890 | -0.713 | -0.957 | -0.657 | -0.854 |
| Saudi Arabia | -0.384 | -0.671 | -0.644 | -0.725 | -0.889 | -0.713 | -0.956 | -0.657 | -0.853 |
| Uruguay | -0.384 | -0.671 | -0.644 | -0.725 | -0.888 | -0.712 | -0.954 | -0.657 | -0.852 |
| Mauritius | -0.384 | -0.671 | -0.644 | -0.725 | -0.888 | -0.712 | -0.954 | -0.657 | -0.852 |
| Chile | -0.384 | -0.671 | -0.644 | -0.725 | -0.887 | -0.712 | -0.953 | -0.657 | -0.851 |
| Kazakhstan | -0.384 | -0.671 | -0.644 | -0.725 | -0.885 | -0.711 | -0.949 | -0.657 | -0.848 |
| Russian Federation | -0.384 | -0.671 | -0.643 | -0.725 | -0.882 | -0.710 | -0.943 | -0.657 | -0.844 |
| Argentina | -0.384 | -0.671 | -0.643 | -0.725 | -0.880 | -0.709 | -0.941 | -0.657 | -0.843 |
| Bulgaria | -0.383 | -0.671 | -0.643 | -0.725 | -0.878 | -0.709 | -0.938 | -0.657 | -0.841 |
| Oman | -0.383 | -0.671 | -0.643 | -0.725 | -0.876 | -0.708 | -0.934 | -0.657 | -0.838 |
| Iran, Islamic Rep. | -0.382 | -0.671 | -0.642 | -0.724 | -0.871 | -0.706 | -0.925 | -0.656 | -0.832 |
| Latvia | -0.381 | -0.671 | -0.641 | -0.724 | -0.865 | -0.703 | -0.916 | -0.656 | -0.826 |
| Mexico | -0.380 | -0.671 | -0.641 | -0.724 | -0.864 | -0.703 | -0.914 | -0.656 | -0.825 |
| Lebanon | -0.380 | -0.671 | -0.641 | -0.724 | -0.861 | -0.702 | -0.910 | -0.656 | -0.822 |
| Poland | -0.377 | -0.671 | -0.639 | -0.724 | -0.854 | -0.698 | -0.899 | -0.656 | -0.814 |
| Croatia | -0.376 | -0.671 | -0.639 | -0.724 | -0.853 | -0.698 | -0.898 | -0.656 | -0.813 |
| Macao, China | -0.376 | -0.671 | -0.639 | -0.724 | -0.853 | -0.698 | -0.897 | -0.656 | -0.813 |
| Lithuania | -0.376 | -0.671 | -0.639 | -0.724 | -0.853 | -0.698 | -0.897 | -0.656 | -0.812 |
| Estonia | -0.375 | -0.671 | -0.639 | -0.723 | -0.850 | -0.697 | -0.893 | -0.656 | -0.809 |
| Brunei Darussalam | -0.373 | -0.671 | -0.638 | -0.723 | -0.847 | -0.695 | -0.888 | -0.655 | -0.806 |
| Slovak Republic | -0.372 | -0.671 | -0.638 | -0.723 | -0.846 | -0.695 | -0.887 | -0.655 | -0.805 |
| Hungary | -0.372 | -0.671 | -0.638 | -0.723 | -0.845 | -0.695 | -0.886 | -0.655 | -0.804 |
| Korea, Rep. | -0.369 | -0.671 | -0.637 | -0.723 | -0.840 | -0.692 | -0.879 | -0.655 | -0.799 |
| Bahrain | -0.369 | -0.671 | -0.637 | -0.723 | -0.840 | -0.692 | -0.879 | -0.655 | -0.799 |
| Czech Republic | -0.363 | -0.671 | -0.636 | -0.722 | -0.834 | -0.689 | -0.869 | -0.655 | -0.792 |
| Slovenia | -0.360 | -0.671 | -0.636 | -0.722 | -0.831 | -0.688 | -0.865 | -0.655 | -0.789 |
| Israel | -0.359 | -0.671 | -0.636 | -0.722 | -0.830 | -0.688 | -0.863 | -0.655 | -0.787 |

---continued

Slutsky own-price elasticities for aggregate consumption categories, 144 countries, 2005, *continued*

| | Food, beverages, & tobacco | Clothing & footwear | Housing | House furnishings | Medical & health | Transport & communi- cations | Recreation | Education | Other |
|------------------------|----------------------------------|------------------------|---------|----------------------|---------------------|------------------------------------|------------|-----------|--------|
| High-income countries: | | | | | | | | | |
| Portugal | -0.356 | -0.671 | -0.635 | -0.722 | -0.827 | -0.686 | -0.859 | -0.654 | -0.784 |
| Qatar | -0.355 | -0.671 | -0.635 | -0.722 | -0.826 | -0.686 | -0.858 | -0.654 | -0.783 |
| Singapore | -0.354 | -0.671 | -0.635 | -0.722 | -0.826 | -0.685 | -0.857 | -0.654 | -0.782 |
| Malta | -0.350 | -0.671 | -0.634 | -0.722 | -0.823 | -0.684 | -0.853 | -0.654 | -0.780 |
| Kuwait | -0.349 | -0.671 | -0.634 | -0.722 | -0.822 | -0.684 | -0.852 | -0.654 | -0.779 |
| New Zealand | -0.341 | -0.671 | -0.633 | -0.721 | -0.817 | -0.681 | -0.845 | -0.654 | -0.773 |
| Finland | -0.339 | -0.671 | -0.633 | -0.721 | -0.816 | -0.681 | -0.843 | -0.654 | -0.772 |
| Taiwan, China | -0.338 | -0.671 | -0.633 | -0.721 | -0.816 | -0.680 | -0.842 | -0.654 | -0.771 |
| Spain | -0.335 | -0.671 | -0.633 | -0.721 | -0.814 | -0.680 | -0.840 | -0.654 | -0.769 |
| Italy | -0.333 | -0.671 | -0.633 | -0.721 | -0.813 | -0.679 | -0.839 | -0.654 | -0.769 |
| Ireland | -0.331 | -0.671 | -0.632 | -0.721 | -0.812 | -0.679 | -0.837 | -0.654 | -0.767 |
| Denmark | -0.331 | -0.671 | -0.632 | -0.721 | -0.812 | -0.679 | -0.837 | -0.654 | -0.767 |
| Sweden | -0.329 | -0.671 | -0.632 | -0.721 | -0.811 | -0.678 | -0.835 | -0.653 | -0.766 |
| Hong Kong, China | -0.328 | -0.671 | -0.632 | -0.721 | -0.811 | -0.678 | -0.835 | -0.653 | -0.765 |
| Australia | -0.325 | -0.671 | -0.632 | -0.721 | -0.809 | -0.677 | -0.833 | -0.653 | -0.764 |
| Cyprus | -0.324 | -0.671 | -0.632 | -0.721 | -0.809 | -0.677 | -0.833 | -0.653 | -0.764 |
| Belgium | -0.324 | -0.671 | -0.632 | -0.721 | -0.809 | -0.677 | -0.832 | -0.653 | -0.763 |
| Japan | -0.323 | -0.671 | -0.632 | -0.721 | -0.809 | -0.677 | -0.832 | -0.653 | -0.763 |
| France | -0.321 | -0.671 | -0.631 | -0.721 | -0.808 | -0.676 | -0.831 | -0.653 | -0.762 |
| Germany | -0.316 | -0.671 | -0.631 | -0.721 | -0.806 | -0.675 | -0.828 | -0.653 | -0.760 |
| Canada | -0.315 | -0.671 | -0.631 | -0.721 | -0.806 | -0.675 | -0.828 | -0.653 | -0.760 |
| Iceland | -0.314 | -0.671 | -0.631 | -0.721 | -0.805 | -0.675 | -0.827 | -0.653 | -0.759 |
| Netherlands | -0.313 | -0.671 | -0.631 | -0.721 | -0.805 | -0.675 | -0.827 | -0.653 | -0.759 |
| Norway | -0.313 | -0.671 | -0.631 | -0.721 | -0.805 | -0.675 | -0.827 | -0.653 | -0.759 |
| United Kingdom | -0.307 | -0.671 | -0.630 | -0.720 | -0.803 | -0.674 | -0.824 | -0.653 | -0.757 |
| Switzerland | -0.306 | -0.671 | -0.630 | -0.720 | -0.802 | -0.673 | -0.823 | -0.653 | -0.756 |
| Austria | -0.301 | -0.671 | -0.630 | -0.720 | -0.801 | -0.672 | -0.821 | -0.653 | -0.754 |
| Luxembourg | -0.264 | -0.672 | -0.628 | -0.720 | -0.791 | -0.667 | -0.808 | -0.652 | -0.743 |
| United States | -0.239 | -0.672 | -0.627 | -0.719 | -0.786 | -0.664 | -0.801 | -0.652 | -0.738 |
| Low-Income average | -0.345 | -0.670 | -0.662 | -0.731 | -1.290 | -0.776 | -2.033 | -0.660 | -1.310 |
| Middle-Income average | -0.379 | -0.671 | -0.642 | -0.725 | -0.875 | -0.707 | -0.933 | -0.656 | -0.837 |
| High-Income average | -0.323 | -0.671 | -0.632 | -0.721 | -0.810 | -0.678 | -0.835 | -0.653 | -0.765 |

Countries are reported based on ascending per capita real income levels.

^aAs the estimated budget shares for medical and health, recreation, and "other" were negative, these values are calculated using the actual budget shares. Calculated using equation (7).

Source: Authors' calculation using 2005 International Comparison Program (ICP) data.

Cournot own-price elasticities for aggregate consumption categories, 144 countries, 2005

| Country | Food, beverages, & tobacco | Clothing & footwear | Housing | House furnishings | Medical & health | Transport & communi- cations | Recreation | Education | Other |
|-----------------------------|----------------------------------|------------------------|---------|----------------------|---------------------|------------------------------------|---------------------|-----------|---------------------|
| Low-income countries: | | | | | | | | | |
| Congo, Dem. Rep. | -0.863 | -0.729 | -0.826 | -0.789 | -1.145 ^a | -1.012 | -2.778 ^a | -0.701 | -1.552 ^a |
| Burundi | -0.832 | -0.728 | -0.824 | -0.788 | -1.145 ^a | -0.962 | -1.350 ^a | -0.698 | -1.187 ^a |
| Liberia | -0.826 | -0.728 | -0.824 | -0.788 | -6.201 | -0.955 | -1.815 ^a | -0.698 | -8.013 |
| Zimbabwe | -0.818 | -0.727 | -0.823 | -0.788 | -3.087 | -0.945 | -1.478 ^a | -0.697 | -3.350 |
| Ethiopia | -0.810 | -0.727 | -0.823 | -0.787 | -2.361 | -0.939 | -3.871 ^a | -0.697 | -2.475 |
| Niger | -0.810 | -0.727 | -0.823 | -0.787 | -2.321 | -0.938 | -1.082 ^a | -0.697 | -2.429 |
| Guinea-Bissau | -0.809 | -0.727 | -0.823 | -0.787 | -2.289 | -0.938 | -1.203 ^a | -0.697 | -2.392 |
| Mozambique | -0.802 | -0.727 | -0.823 | -0.787 | -1.924 | -0.932 | -1.558 ^a | -0.696 | -1.978 |
| Malawi | -0.796 | -0.727 | -0.823 | -0.787 | -1.752 | -0.927 | -0.975 ^a | -0.696 | -1.789 |
| Rwanda | -0.794 | -0.727 | -0.823 | -0.787 | -1.701 | -0.926 | -2.206 ^a | -0.696 | -1.735 |
| Angola | -0.788 | -0.727 | -0.823 | -0.787 | -1.578 | -0.922 | -9.332 | -0.695 | -1.602 |
| Chad | -0.787 | -0.727 | -0.823 | -0.787 | -1.563 | -0.921 | -7.936 | -0.695 | -1.585 |
| Gambia, The | -0.786 | -0.727 | -0.823 | -0.787 | -1.544 | -0.921 | -6.709 | -0.695 | -1.565 |
| Central African Republic | -0.786 | -0.727 | -0.823 | -0.787 | -1.534 | -0.920 | -6.229 | -0.695 | -1.555 |
| Mali | -0.785 | -0.727 | -0.823 | -0.787 | -1.533 | -0.920 | -6.162 | -0.695 | -1.553 |
| Tanzania | -0.784 | -0.727 | -0.822 | -0.787 | -1.514 | -0.919 | -5.383 | -0.695 | -1.533 |
| Sierra Leone | -0.781 | -0.727 | -0.822 | -0.786 | -1.471 | -0.918 | -4.178 | -0.695 | -1.487 |
| Guinea | -0.781 | -0.727 | -0.822 | -0.786 | -1.463 | -0.917 | -4.026 | -0.695 | -1.480 |
| Burkina Faso | -0.779 | -0.727 | -0.822 | -0.786 | -1.439 | -0.916 | -3.571 | -0.695 | -1.453 |
| Uganda | -0.774 | -0.726 | -0.822 | -0.786 | -1.389 | -0.914 | -2.904 | -0.694 | -1.401 |
| Madagascar | -0.774 | -0.726 | -0.822 | -0.786 | -1.386 | -0.913 | -2.876 | -0.694 | -1.398 |
| Zambia | -0.773 | -0.726 | -0.822 | -0.786 | -1.383 | -0.913 | -2.839 | -0.694 | -1.395 |
| Congo, Rep. | -0.772 | -0.726 | -0.822 | -0.786 | -1.367 | -0.912 | -2.677 | -0.694 | -1.378 |
| Togo | -0.770 | -0.726 | -0.822 | -0.786 | -1.356 | -0.912 | -2.574 | -0.694 | -1.366 |
| Nepal | -0.766 | -0.726 | -0.822 | -0.786 | -1.320 | -0.910 | -2.288 | -0.694 | -1.329 |
| Ghana | -0.764 | -0.726 | -0.822 | -0.786 | -1.302 | -0.908 | -2.169 | -0.694 | -1.311 |
| Benin | -0.760 | -0.726 | -0.822 | -0.786 | -1.278 | -0.907 | -2.021 | -0.693 | -1.285 |
| Mauritania | -0.760 | -0.726 | -0.822 | -0.786 | -1.275 | -0.907 | -2.002 | -0.693 | -1.282 |
| Bangladesh | -0.758 | -0.726 | -0.822 | -0.786 | -1.263 | -0.906 | -1.937 | -0.693 | -1.270 |
| Côte d'Ivoire | -0.757 | -0.726 | -0.822 | -0.786 | -1.260 | -0.905 | -1.920 | -0.693 | -1.266 |
| Lao PDR | -0.757 | -0.726 | -0.822 | -0.786 | -1.259 | -0.905 | -1.915 | -0.693 | -1.265 |
| Kenya | -0.752 | -0.726 | -0.822 | -0.786 | -1.229 | -0.903 | -1.771 | -0.693 | -1.234 |
| Djibouti | -0.752 | -0.726 | -0.822 | -0.786 | -1.227 | -0.903 | -1.763 | -0.693 | -1.232 |
| Nigeria | -0.750 | -0.726 | -0.822 | -0.786 | -1.221 | -0.903 | -1.736 | -0.693 | -1.226 |
| Senegal | -0.750 | -0.726 | -0.822 | -0.786 | -1.219 | -0.902 | -1.730 | -0.693 | -1.225 |
| Cambodia | -0.746 | -0.726 | -0.822 | -0.786 | -1.199 | -0.901 | -1.647 | -0.692 | -1.204 |
| Cameroon | -0.742 | -0.726 | -0.822 | -0.786 | -1.184 | -0.899 | -1.588 | -0.692 | -1.188 |
| São Tomé and Príncipe | -0.741 | -0.726 | -0.822 | -0.786 | -1.179 | -0.899 | -1.569 | -0.692 | -1.183 |

--continued

Cournot own-price elasticities for aggregate consumption categories, 144 countries, 2005, *continued*

| Country | Food, beverages, & tobacco | Clothing & footwear | Housing | House furnishings | Medical & health | Transport & communi- cations | Recreation | Education | Other |
|----------------------|----------------------------------|------------------------|---------|----------------------|---------------------|------------------------------------|------------|-----------|--------|
| India | -0.739 | -0.726 | -0.822 | -0.785 | -1.170 | -0.898 | -1.537 | -0.692 | -1.174 |
| Yemen, Rep. | -0.738 | -0.726 | -0.822 | -0.785 | -1.166 | -0.898 | -1.525 | -0.692 | -1.170 |
| Vietnam | -0.738 | -0.726 | -0.822 | -0.785 | -1.166 | -0.898 | -1.523 | -0.692 | -1.170 |
| Mongolia | -0.737 | -0.726 | -0.822 | -0.785 | -1.162 | -0.897 | -1.512 | -0.692 | -1.166 |
| Iraq | -0.734 | -0.726 | -0.822 | -0.785 | -1.153 | -0.897 | -1.479 | -0.692 | -1.156 |
| Bhutan | -0.732 | -0.726 | -0.821 | -0.785 | -1.145 | -0.896 | -1.454 | -0.691 | -1.148 |
| China | -0.730 | -0.726 | -0.821 | -0.785 | -1.138 | -0.895 | -1.431 | -0.691 | -1.141 |
| Sudan | -0.724 | -0.725 | -0.821 | -0.785 | -1.121 | -0.893 | -1.381 | -0.691 | -1.124 |
| Lesotho | -0.721 | -0.725 | -0.821 | -0.785 | -1.112 | -0.892 | -1.355 | -0.691 | -1.115 |
| Tajikistan | -0.721 | -0.725 | -0.821 | -0.785 | -1.111 | -0.892 | -1.353 | -0.691 | -1.114 |
| Maldives | -0.713 | -0.725 | -0.821 | -0.785 | -1.092 | -0.890 | -1.301 | -0.690 | -1.095 |
| Morocco | -0.712 | -0.725 | -0.821 | -0.785 | -1.089 | -0.890 | -1.293 | -0.690 | -1.092 |
| Pakistan | -0.709 | -0.725 | -0.821 | -0.785 | -1.084 | -0.889 | -1.280 | -0.690 | -1.087 |
| Indonesia | -0.705 | -0.725 | -0.821 | -0.785 | -1.076 | -0.888 | -1.261 | -0.690 | -1.079 |
| Kyrgyz Republic | -0.705 | -0.725 | -0.821 | -0.785 | -1.076 | -0.888 | -1.260 | -0.690 | -1.078 |
| Philippines | -0.704 | -0.725 | -0.821 | -0.785 | -1.073 | -0.888 | -1.254 | -0.690 | -1.076 |
| Cape Verde | -0.704 | -0.725 | -0.821 | -0.785 | -1.073 | -0.888 | -1.253 | -0.690 | -1.076 |
| Bolivia | -0.703 | -0.725 | -0.821 | -0.785 | -1.072 | -0.888 | -1.250 | -0.690 | -1.074 |
| Namibia | -0.698 | -0.725 | -0.821 | -0.785 | -1.062 | -0.886 | -1.226 | -0.689 | -1.064 |
| Sri Lanka | -0.696 | -0.725 | -0.821 | -0.785 | -1.058 | -0.886 | -1.217 | -0.689 | -1.060 |
| Botswana | -0.694 | -0.725 | -0.821 | -0.785 | -1.055 | -0.885 | -1.210 | -0.689 | -1.058 |
| Gabon | -0.692 | -0.725 | -0.821 | -0.785 | -1.051 | -0.885 | -1.202 | -0.689 | -1.054 |
| Azerbaijan | -0.691 | -0.725 | -0.821 | -0.785 | -1.050 | -0.885 | -1.199 | -0.689 | -1.052 |
| Syrian Arab Republic | -0.690 | -0.725 | -0.821 | -0.785 | -1.047 | -0.884 | -1.193 | -0.689 | -1.050 |
| Equatorial Guinea | -0.683 | -0.725 | -0.821 | -0.784 | -1.037 | -0.883 | -1.171 | -0.689 | -1.040 |
| Paraguay | -0.681 | -0.725 | -0.821 | -0.784 | -1.034 | -0.883 | -1.164 | -0.688 | -1.037 |
| Fiji | -0.678 | -0.725 | -0.821 | -0.784 | -1.030 | -0.882 | -1.155 | -0.688 | -1.033 |
| Swaziland | -0.674 | -0.725 | -0.821 | -0.784 | -1.026 | -0.881 | -1.146 | -0.688 | -1.028 |
| Moldova | -0.673 | -0.725 | -0.821 | -0.784 | -1.024 | -0.881 | -1.142 | -0.688 | -1.026 |
| Egypt, Arab Rep. | -0.671 | -0.725 | -0.821 | -0.784 | -1.021 | -0.881 | -1.137 | -0.688 | -1.024 |
| Ecuador | -0.666 | -0.724 | -0.821 | -0.784 | -1.016 | -0.880 | -1.125 | -0.688 | -1.018 |
| Jordan | -0.665 | -0.724 | -0.821 | -0.784 | -1.015 | -0.880 | -1.124 | -0.688 | -1.018 |
| Georgia | -0.664 | -0.724 | -0.821 | -0.784 | -1.014 | -0.880 | -1.121 | -0.688 | -1.017 |
| Thailand | -0.663 | -0.724 | -0.821 | -0.784 | -1.012 | -0.879 | -1.118 | -0.687 | -1.015 |
| Colombia | -0.661 | -0.724 | -0.821 | -0.784 | -1.011 | -0.879 | -1.115 | -0.687 | -1.014 |
| Albania | -0.659 | -0.724 | -0.821 | -0.784 | -1.009 | -0.879 | -1.111 | -0.687 | -1.011 |
| Tunisia | -0.658 | -0.724 | -0.821 | -0.784 | -1.007 | -0.879 | -1.107 | -0.687 | -1.010 |
| Peru | -0.655 | -0.724 | -0.821 | -0.784 | -1.004 | -0.878 | -1.101 | -0.687 | -1.007 |
| Armenia | -0.652 | -0.724 | -0.821 | -0.784 | -1.001 | -0.878 | -1.096 | -0.687 | -1.004 |

--continued

Cournot own-price elasticities for aggregate consumption categories, 144 countries, 2005, continued

| Country | Food, beverages, & tobacco | Clothing & footwear | Housing | House furnishings | Medical & health | Transport & communi- cations | Recreation | Education | Other |
|---------------------------|----------------------------------|------------------------|---------|----------------------|---------------------|------------------------------------|------------|-----------|--------|
| Middle-income countries: | | | | | | | | | |
| Venezuela, RB | -0.645 | -0.724 | -0.821 | -0.784 | -0.995 | -0.877 | -1.084 | -0.687 | -0.998 |
| Malaysia | -0.645 | -0.724 | -0.821 | -0.784 | -0.995 | -0.877 | -1.084 | -0.687 | -0.998 |
| Ukraine | -0.643 | -0.724 | -0.821 | -0.784 | -0.993 | -0.877 | -1.081 | -0.686 | -0.996 |
| Brazil | -0.641 | -0.724 | -0.821 | -0.784 | -0.991 | -0.876 | -1.077 | -0.686 | -0.994 |
| Montenegro | -0.639 | -0.724 | -0.821 | -0.784 | -0.990 | -0.876 | -1.075 | -0.686 | -0.993 |
| South Africa | -0.634 | -0.724 | -0.821 | -0.784 | -0.986 | -0.875 | -1.068 | -0.686 | -0.989 |
| Macedonia, FYR | -0.627 | -0.724 | -0.821 | -0.784 | -0.981 | -0.874 | -1.058 | -0.686 | -0.984 |
| Turkey | -0.626 | -0.724 | -0.821 | -0.784 | -0.980 | -0.874 | -1.056 | -0.686 | -0.983 |
| Bosnia and Herzegovina | -0.619 | -0.724 | -0.821 | -0.784 | -0.976 | -0.874 | -1.049 | -0.685 | -0.979 |
| Serbia | -0.618 | -0.724 | -0.821 | -0.784 | -0.974 | -0.873 | -1.046 | -0.685 | -0.978 |
| Belarus | -0.617 | -0.724 | -0.821 | -0.784 | -0.974 | -0.873 | -1.046 | -0.685 | -0.978 |
| Romania | -0.616 | -0.724 | -0.821 | -0.784 | -0.973 | -0.873 | -1.044 | -0.685 | -0.977 |
| Saudi Arabia | -0.615 | -0.724 | -0.821 | -0.784 | -0.973 | -0.873 | -1.043 | -0.685 | -0.976 |
| Uruguay | -0.613 | -0.724 | -0.821 | -0.784 | -0.972 | -0.873 | -1.041 | -0.685 | -0.975 |
| Mauritius | -0.613 | -0.724 | -0.821 | -0.784 | -0.972 | -0.873 | -1.041 | -0.685 | -0.975 |
| Chile | -0.612 | -0.724 | -0.821 | -0.784 | -0.971 | -0.873 | -1.041 | -0.685 | -0.975 |
| Kazakhstan | -0.609 | -0.724 | -0.821 | -0.784 | -0.969 | -0.873 | -1.037 | -0.685 | -0.973 |
| Russian Federation | -0.605 | -0.724 | -0.821 | -0.784 | -0.967 | -0.872 | -1.033 | -0.685 | -0.970 |
| Argentina | -0.603 | -0.724 | -0.821 | -0.784 | -0.966 | -0.872 | -1.031 | -0.685 | -0.969 |
| Bulgaria | -0.600 | -0.724 | -0.821 | -0.784 | -0.964 | -0.872 | -1.029 | -0.684 | -0.968 |
| Oman | -0.597 | -0.724 | -0.821 | -0.783 | -0.962 | -0.871 | -1.025 | -0.684 | -0.966 |
| Iran, Islamic Rep. | -0.589 | -0.723 | -0.821 | -0.783 | -0.958 | -0.871 | -1.018 | -0.684 | -0.962 |
| Latvia | -0.580 | -0.723 | -0.821 | -0.783 | -0.954 | -0.870 | -1.011 | -0.684 | -0.958 |
| Mexico | -0.577 | -0.723 | -0.821 | -0.783 | -0.953 | -0.870 | -1.010 | -0.683 | -0.957 |
| Lebanon | -0.573 | -0.723 | -0.821 | -0.783 | -0.951 | -0.869 | -1.007 | -0.683 | -0.956 |
| Poland | -0.559 | -0.723 | -0.821 | -0.783 | -0.946 | -0.868 | -0.997 | -0.683 | -0.950 |
| Croatia | -0.558 | -0.723 | -0.821 | -0.783 | -0.946 | -0.868 | -0.997 | -0.683 | -0.950 |
| Macao, China | -0.557 | -0.723 | -0.821 | -0.783 | -0.945 | -0.868 | -0.996 | -0.683 | -0.950 |
| Lithuania | -0.557 | -0.723 | -0.821 | -0.783 | -0.945 | -0.868 | -0.996 | -0.683 | -0.950 |
| Estonia | -0.551 | -0.723 | -0.821 | -0.783 | -0.943 | -0.868 | -0.993 | -0.682 | -0.948 |
| Brunei Darussalam | -0.544 | -0.723 | -0.821 | -0.783 | -0.941 | -0.867 | -0.989 | -0.682 | -0.946 |
| Slovak Republic | -0.543 | -0.723 | -0.821 | -0.783 | -0.940 | -0.867 | -0.988 | -0.682 | -0.945 |
| Hungary | -0.542 | -0.723 | -0.821 | -0.783 | -0.940 | -0.867 | -0.988 | -0.682 | -0.945 |
| Korea, Rep. | -0.531 | -0.723 | -0.821 | -0.783 | -0.937 | -0.867 | -0.982 | -0.682 | -0.941 |
| Bahrain | -0.530 | -0.723 | -0.821 | -0.783 | -0.937 | -0.867 | -0.982 | -0.682 | -0.941 |
| Czech Republic | -0.514 | -0.723 | -0.821 | -0.783 | -0.932 | -0.866 | -0.975 | -0.681 | -0.937 |
| Slovenia | -0.506 | -0.723 | -0.821 | -0.783 | -0.930 | -0.865 | -0.972 | -0.681 | -0.935 |
| Israel | -0.503 | -0.723 | -0.821 | -0.783 | -0.930 | -0.865 | -0.971 | -0.681 | -0.935 |

--continued

Cournot own-price elasticities for aggregate consumption categories, 144 countries, 2005, continued

| Country | Food, beverages, & tobacco | Clothing & footwear | Housing | House furnishings | Medical & health | Transport & communi- cations | Recreation | Education | Other |
|------------------------|----------------------------------|------------------------|---------|----------------------|---------------------|------------------------------------|------------|-----------|--------|
| High-income countries: | | | | | | | | | |
| Portugal | -0.496 | -0.723 | -0.821 | -0.783 | -0.928 | -0.865 | -0.968 | -0.680 | -0.933 |
| Qatar | -0.492 | -0.723 | -0.821 | -0.783 | -0.927 | -0.865 | -0.967 | -0.680 | -0.932 |
| Singapore | -0.490 | -0.723 | -0.821 | -0.783 | -0.927 | -0.865 | -0.966 | -0.680 | -0.932 |
| Malta | -0.482 | -0.722 | -0.821 | -0.783 | -0.925 | -0.864 | -0.964 | -0.680 | -0.930 |
| Kuwait | -0.480 | -0.722 | -0.821 | -0.783 | -0.924 | -0.864 | -0.963 | -0.680 | -0.930 |
| New Zealand | -0.463 | -0.722 | -0.821 | -0.783 | -0.921 | -0.864 | -0.958 | -0.679 | -0.927 |
| Finland | -0.459 | -0.722 | -0.821 | -0.783 | -0.921 | -0.863 | -0.957 | -0.679 | -0.926 |
| Taiwan, China | -0.457 | -0.722 | -0.821 | -0.783 | -0.920 | -0.863 | -0.957 | -0.679 | -0.926 |
| Spain | -0.451 | -0.722 | -0.821 | -0.783 | -0.919 | -0.863 | -0.955 | -0.679 | -0.925 |
| Italy | -0.447 | -0.722 | -0.821 | -0.783 | -0.919 | -0.863 | -0.954 | -0.679 | -0.924 |
| Ireland | -0.443 | -0.722 | -0.821 | -0.783 | -0.918 | -0.863 | -0.953 | -0.679 | -0.924 |
| Denmark | -0.442 | -0.722 | -0.821 | -0.783 | -0.918 | -0.863 | -0.953 | -0.679 | -0.924 |
| Sweden | -0.438 | -0.722 | -0.821 | -0.783 | -0.917 | -0.863 | -0.952 | -0.679 | -0.923 |
| Hong Kong, China | -0.436 | -0.722 | -0.821 | -0.783 | -0.917 | -0.863 | -0.952 | -0.679 | -0.923 |
| Australia | -0.431 | -0.722 | -0.821 | -0.783 | -0.916 | -0.863 | -0.950 | -0.679 | -0.922 |
| Cyprus | -0.430 | -0.722 | -0.821 | -0.783 | -0.916 | -0.862 | -0.950 | -0.679 | -0.922 |
| Belgium | -0.428 | -0.722 | -0.821 | -0.783 | -0.916 | -0.862 | -0.950 | -0.679 | -0.922 |
| Japan | -0.428 | -0.722 | -0.821 | -0.783 | -0.916 | -0.862 | -0.950 | -0.679 | -0.922 |
| France | -0.423 | -0.722 | -0.821 | -0.782 | -0.915 | -0.862 | -0.949 | -0.678 | -0.921 |
| Germany | -0.414 | -0.722 | -0.821 | -0.782 | -0.914 | -0.862 | -0.947 | -0.678 | -0.920 |
| Canada | -0.414 | -0.722 | -0.821 | -0.782 | -0.914 | -0.862 | -0.947 | -0.678 | -0.920 |
| Iceland | -0.411 | -0.722 | -0.821 | -0.782 | -0.913 | -0.862 | -0.946 | -0.678 | -0.920 |
| Netherlands | -0.411 | -0.722 | -0.821 | -0.782 | -0.913 | -0.862 | -0.946 | -0.678 | -0.920 |
| Norway | -0.410 | -0.722 | -0.821 | -0.782 | -0.913 | -0.862 | -0.946 | -0.678 | -0.919 |
| United Kingdom | -0.400 | -0.722 | -0.821 | -0.782 | -0.912 | -0.862 | -0.944 | -0.678 | -0.918 |
| Switzerland | -0.398 | -0.722 | -0.821 | -0.782 | -0.912 | -0.862 | -0.944 | -0.678 | -0.918 |
| Austria | -0.389 | -0.722 | -0.821 | -0.782 | -0.911 | -0.861 | -0.942 | -0.678 | -0.917 |
| Luxembourg | -0.332 | -0.722 | -0.821 | -0.782 | -0.905 | -0.860 | -0.934 | -0.676 | -0.912 |
| United States | -0.297 | -0.721 | -0.821 | -0.782 | -0.902 | -0.860 | -0.930 | -0.676 | -0.909 |
| Low-income average | -0.737 | -0.726 | -0.822 | -0.786 | -1.344 | -0.903 | -2.086 | -0.692 | -1.389 |
| Middle-income average | -0.588 | -0.723 | -0.821 | -0.783 | -0.962 | -0.871 | -1.025 | -0.684 | -0.966 |
| High-income average | -0.431 | -0.722 | -0.821 | -0.783 | -0.917 | -0.863 | -0.952 | -0.679 | -0.923 |

Countries are reported based on ascending per capita real income levels.

^a As the estimated budget shares for medical and health, recreation, and other were negative, these values are calculated using the actual budget shares. Calculated using equation (8).

Source: Authors' calculation using 2005 International Comparison Program (ICP) data.

Unconditional expenditure elasticities of demand for food subcategories, 144 countries, 2005

| Country | Per capita food | Cereals | Meats | Fish | Dairy | Oils & fats | Fruits & vegetables | Food other | Beverages & tobacco |
|-------------------------------|-----------------|---------|-------|-------|-------|-------------|---------------------|--------------------|---------------------|
| Low-income countries: | | | | | | | | | |
| Congo, Dem. Rep. | 0.014 | 0.685 | 0.846 | 0.751 | 0.877 | 0.691 | 0.728 | 1.373 ^a | 4.545 |
| Burundi | 0.020 | 0.661 | 0.832 | 0.733 | 0.861 | 0.668 | 0.709 | 1.413 ^a | 2.351 |
| Liberia | 0.013 | 0.673 | 0.828 | 0.736 | 0.858 | 0.679 | 0.715 | 2.100 ^a | 7.094 |
| Zimbabwe | 0.031 | 0.637 | 0.824 | 0.720 | 0.853 | 0.645 | 0.693 | 3.417 | 1.661 |
| Ethiopia | 0.040 | 0.622 | 0.820 | 0.713 | 0.848 | 0.631 | 0.684 | 2.275 | 1.488 |
| Niger | 0.037 | 0.626 | 0.819 | 0.714 | 0.848 | 0.635 | 0.686 | 2.546 | 1.539 |
| Guinea-Bissau | 0.040 | 0.621 | 0.819 | 0.712 | 0.848 | 0.630 | 0.683 | 2.261 | 1.485 |
| Mozambique | 0.055 | 0.600 | 0.815 | 0.703 | 0.843 | 0.611 | 0.671 | 1.745 | 1.346 |
| Malawi | 0.017 | 0.651 | 0.812 | 0.718 | 0.840 | 0.657 | 0.695 | 0.982 ^a | 2.846 |
| Rwanda | 0.060 | 0.591 | 0.810 | 0.698 | 0.839 | 0.603 | 0.665 | 1.649 | 1.309 |
| Angola | 0.051 | 0.599 | 0.807 | 0.698 | 0.835 | 0.610 | 0.667 | 1.817 | 1.360 |
| Chad | 0.050 | 0.600 | 0.806 | 0.698 | 0.834 | 0.610 | 0.667 | 1.842 | 1.367 |
| Gambia, The | 0.027 | 0.629 | 0.806 | 0.706 | 0.834 | 0.637 | 0.681 | 5.252 | 1.755 |
| Central African Re- public | | | | | | | | | |
| Mali | 0.068 | 0.580 | 0.805 | 0.691 | 0.833 | 0.592 | 0.657 | 1.549 | 1.268 |
| Mali | 0.060 | 0.588 | 0.805 | 0.694 | 0.833 | 0.599 | 0.661 | 1.644 | 1.303 |
| Tanzania | 0.085 | 0.563 | 0.804 | 0.687 | 0.832 | 0.577 | 0.650 | 1.424 | 1.216 |
| Sierra Leone | 0.044 | 0.603 | 0.802 | 0.696 | 0.831 | 0.613 | 0.667 | 2.011 | 1.408 |
| Guinea | 0.045 | 0.603 | 0.802 | 0.696 | 0.830 | 0.613 | 0.667 | 2.001 | 1.405 |
| Burkina Faso | 0.072 | 0.573 | 0.801 | 0.687 | 0.829 | 0.585 | 0.652 | 1.502 | 1.246 |
| Uganda | 0.062 | 0.581 | 0.798 | 0.687 | 0.826 | 0.592 | 0.654 | 1.605 | 1.283 |
| Madagascar | 0.069 | 0.574 | 0.798 | 0.685 | 0.826 | 0.586 | 0.651 | 1.525 | 1.253 |
| Zambia | 0.018 | 0.638 | 0.798 | 0.705 | 0.826 | 0.645 | 0.683 | 1.672 | 2.604 |
| Congo, Rep. | 0.070 | 0.572 | 0.797 | 0.684 | 0.824 | 0.584 | 0.650 | 1.516 | 1.248 |
| Togo | 0.075 | 0.567 | 0.796 | 0.682 | 0.823 | 0.580 | 0.647 | 1.476 | 1.232 |
| Nepal | 0.094 | 0.548 | 0.793 | 0.675 | 0.820 | 0.563 | 0.638 | 1.362 | 1.181 |
| Ghana | 0.061 | 0.577 | 0.792 | 0.682 | 0.819 | 0.588 | 0.649 | 1.599 | 1.275 |
| Benin | 0.077 | 0.560 | 0.789 | 0.676 | 0.817 | 0.573 | 0.641 | 1.448 | 1.215 |
| Mauritania | 0.105 | 0.536 | 0.789 | 0.669 | 0.816 | 0.551 | 0.631 | 1.314 | 1.155 |
| Bangladesh | 0.110 | 0.531 | 0.788 | 0.667 | 0.815 | 0.547 | 0.628 | 1.298 | 1.147 |
| Côte d'Ivoire | 0.095 | 0.543 | 0.787 | 0.670 | 0.814 | 0.558 | 0.633 | 1.349 | 1.171 |
| Lao PDR | 0.104 | 0.535 | 0.787 | 0.668 | 0.814 | 0.551 | 0.629 | 1.315 | 1.154 |
| Kenya | 0.074 | 0.559 | 0.784 | 0.672 | 0.811 | 0.571 | 0.638 | 1.457 | 1.215 |
| Djibouti | 0.123 | 0.518 | 0.783 | 0.661 | 0.810 | 0.535 | 0.620 | 1.257 | 1.123 |
| Nigeria | 0.092 | 0.542 | 0.783 | 0.667 | 0.810 | 0.557 | 0.630 | 1.352 | 1.169 |
| Senegal | 0.109 | 0.529 | 0.782 | 0.663 | 0.809 | 0.544 | 0.624 | 1.293 | 1.141 |
| Cambodia | 0.120 | 0.517 | 0.780 | 0.659 | 0.806 | 0.534 | 0.618 | 1.257 | 1.121 |
| Cameroon | 0.123 | 0.514 | 0.777 | 0.656 | 0.804 | 0.531 | 0.616 | 1.247 | 1.115 |
| São Tomé and Príncipe | 0.137 | 0.502 | 0.776 | 0.653 | 0.803 | 0.521 | 0.611 | 1.218 | 1.099 |

--continued

Unconditional expenditure elasticities of demand for food subcategories, 144 countries, 2005, *continued*

| Country | Per capita food | Cereals | Meats | Fish | Dairy | Oils & fats | Fruits & vegetables | Food other | Beverages & tobacco |
|----------------------|-----------------|---------|-------|-------|-------|-------------|---------------------|------------|---------------------|
| India | 0.094 | 0.535 | 0.775 | 0.660 | 0.801 | 0.550 | 0.623 | 1.332 | 1.154 |
| Yemen, Rep. | 0.119 | 0.515 | 0.774 | 0.654 | 0.801 | 0.532 | 0.614 | 1.252 | 1.115 |
| Vietnam | 0.091 | 0.537 | 0.774 | 0.659 | 0.801 | 0.551 | 0.623 | 1.343 | 1.159 |
| Mongolia | 0.120 | 0.513 | 0.773 | 0.653 | 0.800 | 0.530 | 0.613 | 1.247 | 1.112 |
| Iraq | 0.111 | 0.519 | 0.771 | 0.653 | 0.798 | 0.535 | 0.615 | 1.268 | 1.121 |
| Bhutan | 0.127 | 0.506 | 0.770 | 0.649 | 0.796 | 0.523 | 0.609 | 1.227 | 1.100 |
| China | 0.094 | 0.531 | 0.768 | 0.654 | 0.795 | 0.545 | 0.618 | 1.319 | 1.144 |
| Sudan | 0.154 | 0.483 | 0.764 | 0.640 | 0.790 | 0.502 | 0.597 | 1.173 | 1.068 |
| Lesotho | 0.092 | 0.528 | 0.762 | 0.649 | 0.788 | 0.542 | 0.613 | 1.317 | 1.138 |
| Tajikistan | 0.103 | 0.518 | 0.762 | 0.646 | 0.788 | 0.533 | 0.609 | 1.274 | 1.118 |
| Maldives | 0.116 | 0.505 | 0.756 | 0.639 | 0.782 | 0.521 | 0.601 | 1.229 | 1.092 |
| Morocco | 0.165 | 0.469 | 0.755 | 0.631 | 0.781 | 0.490 | 0.587 | 1.145 | 1.047 |
| Pakistan | 0.150 | 0.478 | 0.753 | 0.632 | 0.779 | 0.498 | 0.589 | 1.162 | 1.056 |
| Indonesia | 0.213 | 0.435 | 0.750 | 0.621 | 0.776 | 0.460 | 0.572 | 1.095 | 1.016 |
| Kyrgyz Republic | 0.149 | 0.477 | 0.750 | 0.629 | 0.776 | 0.496 | 0.587 | 1.159 | 1.052 |
| Philippines | 0.219 | 0.430 | 0.749 | 0.620 | 0.775 | 0.456 | 0.570 | 1.089 | 1.013 |
| Cape Verde | 0.167 | 0.464 | 0.749 | 0.626 | 0.775 | 0.485 | 0.582 | 1.134 | 1.038 |
| Bolivia | 0.163 | 0.467 | 0.749 | 0.626 | 0.774 | 0.487 | 0.583 | 1.139 | 1.041 |
| Namibia | 0.148 | 0.475 | 0.745 | 0.625 | 0.770 | 0.494 | 0.583 | 1.152 | 1.046 |
| Sri Lanka | 0.182 | 0.451 | 0.743 | 0.619 | 0.768 | 0.473 | 0.574 | 1.110 | 1.021 |
| Botswana | 0.137 | 0.480 | 0.742 | 0.624 | 0.767 | 0.498 | 0.584 | 1.164 | 1.050 |
| Gabon | 0.188 | 0.445 | 0.740 | 0.615 | 0.765 | 0.467 | 0.570 | 1.099 | 1.013 |
| Azerbaijan | 0.272 | 0.391 | 0.739 | 0.606 | 0.764 | 0.422 | 0.552 | 1.046 | 0.982 |
| Syrian Arab Republic | 0.257 | 0.400 | 0.738 | 0.606 | 0.763 | 0.429 | 0.554 | 1.052 | 0.984 |
| Equatorial Guinea | 0.204 | 0.430 | 0.733 | 0.608 | 0.758 | 0.454 | 0.561 | 1.076 | 0.996 |
| Paraguay | 0.267 | 0.390 | 0.731 | 0.599 | 0.756 | 0.419 | 0.547 | 1.036 | 0.972 |
| Fiji | 0.228 | 0.413 | 0.728 | 0.601 | 0.753 | 0.438 | 0.553 | 1.053 | 0.981 |
| Swaziland | 0.213 | 0.421 | 0.726 | 0.601 | 0.750 | 0.445 | 0.554 | 1.059 | 0.983 |
| Moldova | 0.153 | 0.458 | 0.724 | 0.607 | 0.749 | 0.477 | 0.566 | 1.113 | 1.013 |
| Egypt, Arab Rep. | 0.279 | 0.378 | 0.723 | 0.592 | 0.747 | 0.409 | 0.539 | 1.020 | 0.958 |
| Ecuador | 0.240 | 0.400 | 0.719 | 0.592 | 0.743 | 0.426 | 0.543 | 1.033 | 0.964 |
| Jordan | 0.294 | 0.367 | 0.718 | 0.587 | 0.743 | 0.399 | 0.533 | 1.008 | 0.948 |
| Georgia | 0.216 | 0.414 | 0.717 | 0.594 | 0.742 | 0.438 | 0.547 | 1.045 | 0.971 |
| Thailand | 0.234 | 0.402 | 0.716 | 0.591 | 0.740 | 0.428 | 0.542 | 1.032 | 0.962 |
| Colombia | 0.244 | 0.395 | 0.715 | 0.589 | 0.739 | 0.422 | 0.539 | 1.025 | 0.958 |
| Albania | 0.242 | 0.396 | 0.713 | 0.588 | 0.738 | 0.422 | 0.539 | 1.024 | 0.956 |
| Tunisia | 0.324 | 0.346 | 0.712 | 0.579 | 0.736 | 0.381 | 0.523 | 0.989 | 0.934 |
| Peru | 0.301 | 0.359 | 0.709 | 0.579 | 0.733 | 0.391 | 0.525 | 0.993 | 0.935 |
| Armenia | 0.374 | 0.314 | 0.707 | 0.571 | 0.731 | 0.353 | 0.512 | 0.968 | 0.918 |

--continued

Unconditional expenditure elasticities of demand for food subcategories, 144 countries, 2005, *continued*

| Country | Per capita food | Cereals | Meats | Fish | Dairy | Oils & fats | Fruits & vegetables | Food other | Beverages & tobacco |
|--------------------------|-----------------|---------|-------|-------|-------|-------------|---------------------|------------|---------------------|
| Middle-income countries: | | | | | | | | | |
| Venezuela, RB | 0.342 | 0.330 | 0.701 | 0.568 | 0.725 | 0.366 | 0.512 | 0.968 | 0.916 |
| Malaysia | 0.256 | 0.380 | 0.701 | 0.576 | 0.725 | 0.408 | 0.527 | 0.999 | 0.935 |
| Ukraine | 0.312 | 0.347 | 0.699 | 0.570 | 0.723 | 0.380 | 0.516 | 0.975 | 0.920 |
| Brazil | 0.281 | 0.364 | 0.697 | 0.571 | 0.721 | 0.393 | 0.520 | 0.983 | 0.924 |
| Montenegro | 0.330 | 0.335 | 0.696 | 0.565 | 0.719 | 0.369 | 0.510 | 0.965 | 0.912 |
| South Africa | 0.278 | 0.363 | 0.692 | 0.566 | 0.715 | 0.392 | 0.516 | 0.976 | 0.917 |
| Macedonia, FYR | 0.388 | 0.297 | 0.685 | 0.552 | 0.709 | 0.336 | 0.494 | 0.935 | 0.888 |
| Turkey | 0.310 | 0.341 | 0.684 | 0.558 | 0.707 | 0.372 | 0.505 | 0.954 | 0.900 |
| Bosnia and Herzegovina | 0.431 | 0.268 | 0.679 | 0.544 | 0.702 | 0.313 | 0.483 | 0.917 | 0.874 |
| Serbia | 0.349 | 0.315 | 0.677 | 0.549 | 0.700 | 0.350 | 0.494 | 0.933 | 0.883 |
| Belarus | 0.433 | 0.267 | 0.677 | 0.542 | 0.700 | 0.311 | 0.481 | 0.915 | 0.871 |
| Romania | 0.396 | 0.287 | 0.675 | 0.544 | 0.698 | 0.327 | 0.485 | 0.919 | 0.874 |
| Saudi Arabia | 0.356 | 0.310 | 0.674 | 0.546 | 0.697 | 0.346 | 0.491 | 0.928 | 0.879 |
| Uruguay | 0.379 | 0.296 | 0.673 | 0.543 | 0.696 | 0.334 | 0.486 | 0.920 | 0.873 |
| Mauritius | 0.432 | 0.265 | 0.673 | 0.539 | 0.696 | 0.310 | 0.479 | 0.910 | 0.866 |
| Chile | 0.310 | 0.335 | 0.672 | 0.548 | 0.695 | 0.366 | 0.496 | 0.938 | 0.884 |
| Kazakhstan | 0.260 | 0.361 | 0.669 | 0.550 | 0.692 | 0.388 | 0.502 | 0.952 | 0.892 |
| Russian Federation | 0.446 | 0.254 | 0.665 | 0.532 | 0.688 | 0.300 | 0.472 | 0.897 | 0.855 |
| Argentina | 0.456 | 0.248 | 0.663 | 0.530 | 0.686 | 0.294 | 0.469 | 0.893 | 0.851 |
| Bulgaria | 0.411 | 0.273 | 0.661 | 0.531 | 0.683 | 0.314 | 0.473 | 0.898 | 0.854 |
| Oman | 0.455 | 0.247 | 0.658 | 0.526 | 0.680 | 0.292 | 0.465 | 0.885 | 0.844 |
| Iran, Islamic Rep. | 0.211 | 0.378 | 0.650 | 0.539 | 0.673 | 0.399 | 0.497 | 0.950 | 0.882 |
| Latvia | 0.500 | 0.215 | 0.642 | 0.510 | 0.663 | 0.265 | 0.448 | 0.857 | 0.819 |
| Mexico | 0.550 | 0.184 | 0.640 | 0.506 | 0.661 | 0.241 | 0.441 | 0.848 | 0.812 |
| Lebanon | 0.673 | 0.106 | 0.635 | 0.496 | 0.657 | 0.182 | 0.424 | 0.831 | 0.799 |
| Poland | 0.505 | 0.205 | 0.622 | 0.494 | 0.643 | 0.255 | 0.434 | 0.830 | 0.794 |
| Croatia | 0.483 | 0.217 | 0.621 | 0.495 | 0.642 | 0.264 | 0.436 | 0.832 | 0.794 |
| Macao, China | 0.489 | 0.214 | 0.620 | 0.494 | 0.641 | 0.261 | 0.434 | 0.830 | 0.793 |
| Lithuania | 0.640 | 0.125 | 0.620 | 0.486 | 0.641 | 0.193 | 0.417 | 0.813 | 0.782 |
| Estonia | 0.566 | 0.168 | 0.614 | 0.485 | 0.635 | 0.225 | 0.421 | 0.813 | 0.779 |
| Brunei Darussalam | 0.552 | 0.174 | 0.608 | 0.480 | 0.628 | 0.228 | 0.418 | 0.806 | 0.772 |
| Slovak Republic | 0.520 | 0.192 | 0.606 | 0.481 | 0.626 | 0.242 | 0.421 | 0.807 | 0.772 |
| Hungary | 0.514 | 0.194 | 0.605 | 0.480 | 0.626 | 0.244 | 0.421 | 0.807 | 0.772 |
| Korea, Rep. | 0.392 | 0.255 | 0.594 | 0.479 | 0.614 | 0.290 | 0.428 | 0.810 | 0.769 |
| Bahrain | 0.666 | 0.104 | 0.594 | 0.464 | 0.614 | 0.173 | 0.397 | 0.777 | 0.747 |
| Czech Republic | 0.607 | 0.135 | 0.577 | 0.454 | 0.597 | 0.194 | 0.392 | 0.760 | 0.730 |
| Slovenia | 0.634 | 0.118 | 0.569 | 0.446 | 0.589 | 0.180 | 0.384 | 0.747 | 0.718 |
| Israel | 0.577 | 0.149 | 0.566 | 0.447 | 0.586 | 0.202 | 0.387 | 0.748 | 0.718 |

--continued

Unconditional expenditure elasticities of demand for food subcategories, 144 countries, 2005, *continued*

| Country | Per capita food | Cereals | Meats | Fish | Dairy | Oils & fats | Fruits & vegetables | Food other | Beverages & tobacco |
|------------------------|-----------------|---------|-------|-------|-------|-------------|---------------------|------------|---------------------|
| High-income countries: | | | | | | | | | |
| Portugal | 0.797 | 0.016 | 0.558 | 0.431 | 0.577 | 0.104 | 0.361 | 0.722 | 0.697 |
| Qatar | 0.613 | 0.127 | 0.555 | 0.436 | 0.574 | 0.184 | 0.376 | 0.731 | 0.701 |
| Singapore | 0.432 | 0.218 | 0.553 | 0.443 | 0.572 | 0.254 | 0.394 | 0.747 | 0.712 |
| Malta | 0.769 | 0.034 | 0.545 | 0.421 | 0.563 | 0.114 | 0.354 | 0.706 | 0.680 |
| Kuwait | 0.762 | 0.038 | 0.542 | 0.420 | 0.560 | 0.116 | 0.353 | 0.703 | 0.678 |
| New Zealand | 0.734 | 0.053 | 0.524 | 0.407 | 0.542 | 0.125 | 0.344 | 0.682 | 0.657 |
| Finland | 0.709 | 0.067 | 0.520 | 0.405 | 0.538 | 0.134 | 0.344 | 0.678 | 0.652 |
| Taiwan, China | 0.675 | 0.085 | 0.518 | 0.404 | 0.535 | 0.147 | 0.345 | 0.677 | 0.651 |
| Spain | 1.132 | -0.246 | 0.511 | 0.384 | 0.529 | -0.074 | 0.303 | 0.648 | 0.629 |
| Italy | 0.834 | -0.009 | 0.508 | 0.391 | 0.525 | 0.078 | 0.325 | 0.655 | 0.633 |
| Ireland | 0.734 | 0.051 | 0.504 | 0.391 | 0.520 | 0.120 | 0.331 | 0.655 | 0.631 |
| Denmark | 0.659 | 0.091 | 0.502 | 0.393 | 0.519 | 0.149 | 0.336 | 0.658 | 0.632 |
| Sweden | 0.635 | 0.103 | 0.498 | 0.390 | 0.515 | 0.157 | 0.335 | 0.653 | 0.628 |
| Hong Kong, China | 0.639 | 0.100 | 0.496 | 0.389 | 0.513 | 0.154 | 0.334 | 0.651 | 0.625 |
| Australia | 0.746 | 0.043 | 0.491 | 0.380 | 0.507 | 0.112 | 0.321 | 0.637 | 0.614 |
| Cyprus | 0.999 | -0.121 | 0.489 | 0.371 | 0.506 | 0.000 | 0.300 | 0.624 | 0.605 |
| Belgium | 0.747 | 0.042 | 0.488 | 0.378 | 0.504 | 0.111 | 0.319 | 0.634 | 0.611 |
| Japan | 0.682 | 0.077 | 0.488 | 0.380 | 0.504 | 0.136 | 0.324 | 0.637 | 0.613 |
| France | 0.787 | 0.019 | 0.482 | 0.372 | 0.498 | 0.093 | 0.312 | 0.624 | 0.602 |
| Germany | 0.757 | 0.035 | 0.473 | 0.366 | 0.489 | 0.103 | 0.309 | 0.613 | 0.591 |
| Canada | 0.670 | 0.080 | 0.472 | 0.369 | 0.488 | 0.136 | 0.315 | 0.618 | 0.594 |
| Iceland | 0.755 | 0.036 | 0.470 | 0.364 | 0.485 | 0.104 | 0.307 | 0.609 | 0.587 |
| Netherlands | 0.750 | 0.039 | 0.469 | 0.363 | 0.484 | 0.105 | 0.306 | 0.608 | 0.586 |
| Norway | 0.711 | 0.059 | 0.468 | 0.364 | 0.484 | 0.120 | 0.309 | 0.610 | 0.587 |
| United Kingdom | 0.846 | -0.015 | 0.458 | 0.351 | 0.473 | 0.066 | 0.292 | 0.589 | 0.569 |
| Switzerland | 0.958 | -0.085 | 0.455 | 0.346 | 0.470 | 0.018 | 0.282 | 0.582 | 0.563 |
| Austria | 0.891 | -0.040 | 0.445 | 0.341 | 0.460 | 0.046 | 0.281 | 0.572 | 0.553 |
| Luxembourg | 1.239 | -0.270 | 0.382 | 0.284 | 0.395 | -0.106 | 0.221 | 0.482 | 0.468 |
| United States | 1.000 | -0.085 | 0.343 | 0.260 | 0.354 | -0.001 | 0.210 | 0.438 | 0.424 |
| Low-income average | 0.130 | 0.514 | 0.771 | 0.654 | 0.798 | 0.531 | 0.615 | 1.420 | 1.325 |
| Middle-income average | 0.439 | 0.253 | 0.649 | 0.521 | 0.671 | 0.297 | 0.462 | 0.882 | 0.839 |
| High-income average | 0.781 | 0.019 | 0.490 | 0.379 | 0.506 | 0.097 | 0.319 | 0.636 | 0.613 |

Countries are reported based on ascending per capita real income levels.

^aAs the estimated "food other" values were negative, these values are calculated using the actual budget shares. Calculated using equation (11).

Source: Authors' calculation using 2005 International Comparison Program (ICP) data.

Unconditional Frisch own-price elasticities of demand for food subcategories, 144 countries, 2005

| Country | Per capita food | Cereals | Meats | Fish | Dairy | Oils & fats | Fruits & vegetables | Food other | Beverages & tobacco |
|-----------------------|-----------------|---------|--------|--------|--------|-------------|---------------------|---------------------|---------------------|
| Low-income countries: | | | | | | | | | |
| Congo, Dem. Rep. | 0.014 | -0.502 | -0.621 | -0.551 | -0.643 | -0.507 | -0.534 | -1.007 ^a | -3.334 |
| Burundi | 0.020 | -0.485 | -0.610 | -0.538 | -0.632 | -0.490 | -0.520 | -1.037 ^a | -1.725 |
| Liberia | 0.013 | -0.494 | -0.608 | -0.540 | -0.629 | -0.498 | -0.524 | -1.540 ^a | -5.204 |
| Zimbabwe | 0.031 | -0.467 | -0.604 | -0.528 | -0.625 | -0.473 | -0.508 | -2.507 | -1.218 |
| Ethiopia | 0.040 | -0.456 | -0.601 | -0.523 | -0.622 | -0.463 | -0.502 | -1.669 | -1.092 |
| Niger | 0.037 | -0.459 | -0.601 | -0.524 | -0.622 | -0.466 | -0.503 | -1.867 | -1.129 |
| Guinea-Bissau | 0.040 | -0.455 | -0.601 | -0.523 | -0.622 | -0.463 | -0.501 | -1.658 | -1.089 |
| Mozambique | 0.055 | -0.440 | -0.598 | -0.516 | -0.619 | -0.448 | -0.493 | -1.280 | -0.987 |
| Malawi | 0.017 | -0.478 | -0.595 | -0.527 | -0.617 | -0.482 | -0.510 | -0.720 ^a | -2.088 |
| Rwanda | 0.060 | -0.434 | -0.594 | -0.512 | -0.615 | -0.442 | -0.488 | -1.209 | -0.960 |
| Angola | 0.051 | -0.439 | -0.592 | -0.512 | -0.612 | -0.447 | -0.489 | -1.333 | -0.998 |
| Chad | 0.050 | -0.440 | -0.591 | -0.512 | -0.612 | -0.448 | -0.489 | -1.351 | -1.003 |
| Gambia, The | 0.027 | -0.461 | -0.591 | -0.518 | -0.612 | -0.467 | -0.500 | -3.853 | -1.287 |
| Central African Re- | | | | | | | | | |
| public | 0.068 | -0.425 | -0.591 | -0.507 | -0.611 | -0.434 | -0.482 | -1.136 | -0.930 |
| Mali | 0.060 | -0.431 | -0.591 | -0.509 | -0.611 | -0.440 | -0.485 | -1.206 | -0.956 |
| Tanzania | 0.085 | -0.413 | -0.590 | -0.504 | -0.610 | -0.424 | -0.477 | -1.044 | -0.892 |
| Sierra Leone | 0.044 | -0.443 | -0.589 | -0.511 | -0.609 | -0.450 | -0.489 | -1.475 | -1.033 |
| Guinea | 0.045 | -0.442 | -0.588 | -0.511 | -0.609 | -0.449 | -0.489 | -1.468 | -1.031 |
| Burkina Faso | 0.072 | -0.420 | -0.587 | -0.504 | -0.608 | -0.429 | -0.478 | -1.102 | -0.914 |
| Uganda | 0.062 | -0.426 | -0.585 | -0.504 | -0.606 | -0.435 | -0.480 | -1.177 | -0.941 |
| Madagascar | 0.069 | -0.421 | -0.585 | -0.502 | -0.606 | -0.430 | -0.478 | -1.119 | -0.919 |
| Zambia | 0.018 | -0.468 | -0.585 | -0.517 | -0.606 | -0.473 | -0.501 | -1.227 ^a | -1.910 |
| Congo, Rep. | 0.070 | -0.420 | -0.584 | -0.501 | -0.605 | -0.429 | -0.477 | -1.112 | -0.916 |
| Togo | 0.075 | -0.416 | -0.584 | -0.500 | -0.604 | -0.425 | -0.475 | -1.082 | -0.904 |
| Nepal | 0.094 | -0.402 | -0.582 | -0.495 | -0.602 | -0.413 | -0.468 | -0.999 | -0.866 |
| Ghana | 0.061 | -0.423 | -0.581 | -0.500 | -0.601 | -0.431 | -0.476 | -1.173 | -0.935 |
| Benin | 0.077 | -0.411 | -0.579 | -0.496 | -0.599 | -0.421 | -0.470 | -1.062 | -0.892 |
| Mauritania | 0.105 | -0.393 | -0.579 | -0.491 | -0.599 | -0.405 | -0.463 | -0.964 | -0.848 |
| Bangladesh | 0.110 | -0.390 | -0.578 | -0.490 | -0.598 | -0.401 | -0.461 | -0.952 | -0.841 |
| Côte d'Ivoire | 0.095 | -0.398 | -0.578 | -0.491 | -0.597 | -0.409 | -0.464 | -0.989 | -0.859 |
| Lao PDR | 0.104 | -0.393 | -0.577 | -0.490 | -0.597 | -0.404 | -0.462 | -0.964 | -0.847 |
| Kenya | 0.074 | -0.410 | -0.575 | -0.493 | -0.595 | -0.419 | -0.468 | -1.069 | -0.891 |
| Djibouti | 0.123 | -0.380 | -0.575 | -0.485 | -0.594 | -0.392 | -0.455 | -0.922 | -0.824 |
| Nigeria | 0.092 | -0.398 | -0.574 | -0.489 | -0.594 | -0.408 | -0.462 | -0.992 | -0.857 |
| Senegal | 0.109 | -0.388 | -0.574 | -0.486 | -0.594 | -0.399 | -0.458 | -0.949 | -0.837 |
| Cambodia | 0.120 | -0.379 | -0.572 | -0.483 | -0.592 | -0.392 | -0.454 | -0.922 | -0.823 |
| Cameroon | 0.123 | -0.377 | -0.570 | -0.481 | -0.590 | -0.389 | -0.452 | -0.915 | -0.818 |
| São Tomé and Príncipe | 0.137 | -0.369 | -0.569 | -0.479 | -0.589 | -0.382 | -0.448 | -0.893 | -0.806 |

--continued

Unconditional Frisch own-price elasticities of demand for food subcategories, 144 countries, 2005, *continued*

| Country | Per capita food | Cereals | Meats | Fish | Dairy | Oils & fats | Fruits & vegetables | Food other | Beverages & tobacco |
|----------------------|-----------------|---------|--------|--------|--------|-------------|---------------------|------------|---------------------|
| India | 0.094 | -0.393 | -0.568 | -0.484 | -0.588 | -0.403 | -0.457 | -0.977 | -0.846 |
| Yemen, Rep. | 0.119 | -0.378 | -0.568 | -0.480 | -0.587 | -0.390 | -0.451 | -0.918 | -0.818 |
| Vietnam | 0.091 | -0.394 | -0.568 | -0.484 | -0.587 | -0.404 | -0.457 | -0.985 | -0.850 |
| Mongolia | 0.120 | -0.376 | -0.567 | -0.479 | -0.587 | -0.389 | -0.450 | -0.915 | -0.816 |
| Iraq | 0.111 | -0.381 | -0.566 | -0.479 | -0.585 | -0.393 | -0.451 | -0.930 | -0.823 |
| Bhutan | 0.127 | -0.371 | -0.565 | -0.476 | -0.584 | -0.384 | -0.446 | -0.900 | -0.807 |
| China | 0.094 | -0.389 | -0.564 | -0.480 | -0.583 | -0.400 | -0.453 | -0.968 | -0.839 |
| Sudan | 0.154 | -0.354 | -0.561 | -0.470 | -0.580 | -0.369 | -0.438 | -0.860 | -0.783 |
| Lesotho | 0.092 | -0.387 | -0.559 | -0.476 | -0.578 | -0.398 | -0.450 | -0.966 | -0.835 |
| Tajikistan | 0.103 | -0.380 | -0.559 | -0.474 | -0.578 | -0.391 | -0.447 | -0.934 | -0.820 |
| Maldives | 0.116 | -0.370 | -0.554 | -0.469 | -0.574 | -0.382 | -0.441 | -0.902 | -0.801 |
| Morocco | 0.165 | -0.344 | -0.554 | -0.463 | -0.573 | -0.359 | -0.430 | -0.840 | -0.768 |
| Pakistan | 0.150 | -0.351 | -0.552 | -0.463 | -0.571 | -0.365 | -0.432 | -0.852 | -0.774 |
| Indonesia | 0.213 | -0.319 | -0.550 | -0.456 | -0.569 | -0.337 | -0.420 | -0.803 | -0.746 |
| Kyrgyz Republic | 0.149 | -0.350 | -0.550 | -0.462 | -0.569 | -0.364 | -0.431 | -0.850 | -0.772 |
| Philippines | 0.219 | -0.316 | -0.550 | -0.455 | -0.568 | -0.334 | -0.418 | -0.799 | -0.743 |
| Cape Verde | 0.167 | -0.341 | -0.550 | -0.459 | -0.568 | -0.356 | -0.427 | -0.832 | -0.762 |
| Bolivia | 0.163 | -0.343 | -0.549 | -0.459 | -0.568 | -0.357 | -0.427 | -0.835 | -0.763 |
| Namibia | 0.148 | -0.348 | -0.546 | -0.458 | -0.565 | -0.362 | -0.428 | -0.845 | -0.767 |
| Sri Lanka | 0.182 | -0.331 | -0.545 | -0.454 | -0.563 | -0.347 | -0.421 | -0.814 | -0.749 |
| Botswana | 0.137 | -0.352 | -0.544 | -0.458 | -0.563 | -0.365 | -0.428 | -0.854 | -0.770 |
| Gabon | 0.188 | -0.326 | -0.543 | -0.451 | -0.561 | -0.342 | -0.418 | -0.806 | -0.743 |
| Azerbaijan | 0.272 | -0.287 | -0.542 | -0.444 | -0.561 | -0.309 | -0.405 | -0.767 | -0.720 |
| Syrian Arab Republic | 0.257 | -0.294 | -0.541 | -0.445 | -0.560 | -0.315 | -0.407 | -0.771 | -0.722 |
| Equatorial Guinea | 0.204 | -0.316 | -0.537 | -0.446 | -0.556 | -0.333 | -0.411 | -0.789 | -0.731 |
| Paraguay | 0.267 | -0.286 | -0.536 | -0.440 | -0.554 | -0.308 | -0.401 | -0.760 | -0.713 |
| Fiji | 0.228 | -0.303 | -0.534 | -0.441 | -0.553 | -0.322 | -0.405 | -0.773 | -0.720 |
| Swaziland | 0.213 | -0.309 | -0.532 | -0.441 | -0.550 | -0.326 | -0.406 | -0.777 | -0.721 |
| Moldova | 0.153 | -0.336 | -0.531 | -0.445 | -0.549 | -0.350 | -0.415 | -0.816 | -0.743 |
| Egypt, Arab Rep. | 0.279 | -0.278 | -0.530 | -0.434 | -0.548 | -0.300 | -0.395 | -0.748 | -0.703 |
| Ecuador | 0.240 | -0.293 | -0.527 | -0.434 | -0.545 | -0.313 | -0.398 | -0.758 | -0.707 |
| Jordan | 0.294 | -0.269 | -0.527 | -0.430 | -0.545 | -0.293 | -0.391 | -0.739 | -0.696 |
| Georgia | 0.216 | -0.304 | -0.526 | -0.435 | -0.544 | -0.321 | -0.401 | -0.766 | -0.712 |
| Thailand | 0.234 | -0.295 | -0.525 | -0.433 | -0.543 | -0.314 | -0.398 | -0.757 | -0.706 |
| Colombia | 0.244 | -0.290 | -0.525 | -0.432 | -0.542 | -0.310 | -0.396 | -0.752 | -0.703 |
| Albania | 0.242 | -0.291 | -0.523 | -0.431 | -0.541 | -0.310 | -0.395 | -0.751 | -0.701 |
| Tunisia | 0.324 | -0.254 | -0.522 | -0.425 | -0.540 | -0.279 | -0.384 | -0.725 | -0.685 |
| Peru | 0.301 | -0.263 | -0.520 | -0.425 | -0.538 | -0.287 | -0.385 | -0.728 | -0.686 |
| Armenia | 0.374 | -0.230 | -0.518 | -0.419 | -0.536 | -0.259 | -0.375 | -0.710 | -0.674 |

--continued

Unconditional Frisch own-price elasticities of demand for food subcategories, 144 countries, 2005, *continued*

| Country | Per capita food | Cereals | Meats | Fish | Dairy | Oils & fats | Fruits & vegetables | Food other | Beverages & tobacco |
|--------------------------|-----------------|---------|--------|--------|--------|-------------|---------------------|------------|---------------------|
| Middle-income countries: | | | | | | | | | |
| Venezuela, RB | 0.342 | -0.242 | -0.514 | -0.417 | -0.532 | -0.268 | -0.376 | -0.710 | -0.672 |
| Malaysia | 0.256 | -0.279 | -0.514 | -0.422 | -0.532 | -0.299 | -0.386 | -0.733 | -0.686 |
| Ukraine | 0.312 | -0.255 | -0.513 | -0.418 | -0.530 | -0.279 | -0.378 | -0.715 | -0.675 |
| Brazil | 0.281 | -0.267 | -0.512 | -0.419 | -0.529 | -0.289 | -0.381 | -0.721 | -0.678 |
| Montenegro | 0.330 | -0.246 | -0.510 | -0.415 | -0.528 | -0.271 | -0.374 | -0.708 | -0.669 |
| South Africa | 0.278 | -0.266 | -0.507 | -0.415 | -0.525 | -0.287 | -0.378 | -0.716 | -0.673 |
| Macedonia, FYR | 0.388 | -0.218 | -0.503 | -0.405 | -0.520 | -0.247 | -0.362 | -0.686 | -0.652 |
| Turkey | 0.310 | -0.250 | -0.502 | -0.409 | -0.519 | -0.273 | -0.370 | -0.700 | -0.660 |
| Bosnia and Herzegovina | 0.431 | -0.197 | -0.498 | -0.399 | -0.515 | -0.229 | -0.354 | -0.673 | -0.641 |
| Serbia | 0.349 | -0.231 | -0.497 | -0.402 | -0.513 | -0.257 | -0.362 | -0.685 | -0.648 |
| Belarus | 0.433 | -0.196 | -0.496 | -0.398 | -0.513 | -0.228 | -0.353 | -0.671 | -0.639 |
| Romania | 0.396 | -0.211 | -0.495 | -0.399 | -0.512 | -0.240 | -0.356 | -0.674 | -0.641 |
| Saudi Arabia | 0.356 | -0.227 | -0.495 | -0.401 | -0.511 | -0.254 | -0.360 | -0.681 | -0.645 |
| Uruguay | 0.379 | -0.217 | -0.494 | -0.398 | -0.510 | -0.245 | -0.357 | -0.675 | -0.641 |
| Mauritius | 0.432 | -0.195 | -0.494 | -0.396 | -0.510 | -0.227 | -0.351 | -0.667 | -0.636 |
| Chile | 0.310 | -0.245 | -0.493 | -0.402 | -0.510 | -0.268 | -0.364 | -0.688 | -0.649 |
| Kazakhstan | 0.260 | -0.265 | -0.491 | -0.403 | -0.508 | -0.284 | -0.368 | -0.699 | -0.654 |
| Russian Federation | 0.446 | -0.187 | -0.488 | -0.390 | -0.504 | -0.220 | -0.346 | -0.658 | -0.627 |
| Argentina | 0.456 | -0.182 | -0.487 | -0.389 | -0.503 | -0.216 | -0.344 | -0.655 | -0.625 |
| Bulgaria | 0.411 | -0.200 | -0.485 | -0.390 | -0.501 | -0.230 | -0.347 | -0.658 | -0.626 |
| Oman | 0.455 | -0.181 | -0.482 | -0.386 | -0.499 | -0.214 | -0.341 | -0.649 | -0.619 |
| Iran, Islamic Rep. | 0.211 | -0.277 | -0.477 | -0.395 | -0.493 | -0.293 | -0.364 | -0.697 | -0.647 |
| Latvia | 0.500 | -0.157 | -0.471 | -0.374 | -0.487 | -0.194 | -0.329 | -0.629 | -0.601 |
| Mexico | 0.550 | -0.135 | -0.469 | -0.371 | -0.485 | -0.177 | -0.323 | -0.622 | -0.596 |
| Lebanon | 0.673 | -0.078 | -0.466 | -0.364 | -0.482 | -0.133 | -0.311 | -0.609 | -0.586 |
| Poland | 0.505 | -0.151 | -0.456 | -0.363 | -0.472 | -0.187 | -0.318 | -0.609 | -0.582 |
| Croatia | 0.483 | -0.159 | -0.455 | -0.363 | -0.471 | -0.193 | -0.320 | -0.610 | -0.583 |
| Macao, China | 0.489 | -0.157 | -0.455 | -0.362 | -0.470 | -0.191 | -0.319 | -0.609 | -0.582 |
| Lithuania | 0.640 | -0.091 | -0.455 | -0.356 | -0.470 | -0.141 | -0.306 | -0.597 | -0.573 |
| Estonia | 0.566 | -0.123 | -0.451 | -0.356 | -0.466 | -0.165 | -0.309 | -0.596 | -0.572 |
| Brunei Darussalam | 0.552 | -0.128 | -0.446 | -0.352 | -0.461 | -0.167 | -0.307 | -0.591 | -0.566 |
| Slovak Republic | 0.520 | -0.141 | -0.444 | -0.353 | -0.459 | -0.177 | -0.309 | -0.592 | -0.566 |
| Hungary | 0.514 | -0.143 | -0.444 | -0.352 | -0.459 | -0.179 | -0.309 | -0.592 | -0.566 |
| Korea, Rep. | 0.392 | -0.187 | -0.436 | -0.351 | -0.451 | -0.213 | -0.314 | -0.594 | -0.564 |
| Bahrain | 0.666 | -0.076 | -0.436 | -0.340 | -0.450 | -0.127 | -0.291 | -0.570 | -0.548 |
| Czech Republic | 0.607 | -0.099 | -0.424 | -0.333 | -0.438 | -0.142 | -0.287 | -0.558 | -0.535 |
| Slovenia | 0.634 | -0.087 | -0.418 | -0.327 | -0.432 | -0.132 | -0.281 | -0.548 | -0.527 |
| Israel | 0.577 | -0.109 | -0.416 | -0.328 | -0.430 | -0.148 | -0.284 | -0.549 | -0.527 |

--continued

Unconditional Frisch own-price elasticities of demand for food subcategories, 144 countries, 2005, *continued*

| Country | Per capita food | Cereals | Meats | Fish | Dairy | Oils & fats | Fruits & vegetables | Food other | Beverages & tobacco |
|------------------------|-----------------|--------------------|--------|--------|--------|--------------------|---------------------|------------|---------------------|
| High-income countries: | | | | | | | | | |
| Portugal | 0.797 | -0.012 | -0.410 | -0.316 | -0.423 | -0.076 | -0.265 | -0.530 | -0.511 |
| Qatar | 0.613 | -0.093 | -0.407 | -0.320 | -0.421 | -0.135 | -0.276 | -0.536 | -0.515 |
| Singapore | 0.432 | -0.160 | -0.406 | -0.325 | -0.419 | -0.187 | -0.289 | -0.548 | -0.522 |
| Malta | 0.769 | -0.025 | -0.399 | -0.309 | -0.413 | -0.084 | -0.260 | -0.518 | -0.499 |
| Kuwait | 0.762 | -0.028 | -0.398 | -0.308 | -0.411 | -0.085 | -0.259 | -0.516 | -0.497 |
| New Zealand | 0.734 | -0.039 | -0.385 | -0.299 | -0.398 | -0.092 | -0.253 | -0.500 | -0.482 |
| Finland | 0.709 | -0.049 | -0.382 | -0.297 | -0.394 | -0.098 | -0.252 | -0.497 | -0.479 |
| Taiwan, China | 0.675 | -0.062 | -0.380 | -0.297 | -0.393 | -0.108 | -0.253 | -0.497 | -0.478 |
| Spain | 1.132 | 0.000 ^b | -0.375 | -0.281 | -0.388 | 0.000 ^b | -0.223 | -0.476 | -0.461 |
| Italy | 0.834 | 0.000 ^b | -0.373 | -0.287 | -0.385 | -0.057 | -0.238 | -0.481 | -0.464 |
| Ireland | 0.734 | -0.037 | -0.369 | -0.287 | -0.382 | -0.088 | -0.243 | -0.480 | -0.463 |
| Denmark | 0.659 | -0.067 | -0.368 | -0.288 | -0.381 | -0.109 | -0.247 | -0.482 | -0.464 |
| Sweden | 0.635 | -0.075 | -0.365 | -0.286 | -0.378 | -0.115 | -0.246 | -0.479 | -0.461 |
| Hong Kong, China | 0.639 | -0.073 | -0.364 | -0.285 | -0.376 | -0.113 | -0.245 | -0.477 | -0.459 |
| Australia | 0.746 | -0.032 | -0.360 | -0.279 | -0.372 | -0.082 | -0.236 | -0.467 | -0.450 |
| Cyprus | 0.999 | 0.000 ^b | -0.359 | -0.272 | -0.371 | 0.000 ^b | -0.220 | -0.458 | -0.443 |
| Belgium | 0.747 | -0.031 | -0.358 | -0.278 | -0.370 | -0.081 | -0.234 | -0.465 | -0.448 |
| Japan | 0.682 | -0.056 | -0.358 | -0.279 | -0.370 | -0.099 | -0.238 | -0.467 | -0.449 |
| France | 0.787 | -0.014 | -0.354 | -0.273 | -0.366 | -0.069 | -0.229 | -0.458 | -0.442 |
| Germany | 0.757 | -0.026 | -0.347 | -0.269 | -0.359 | -0.076 | -0.226 | -0.450 | -0.434 |
| Canada | 0.670 | -0.059 | -0.347 | -0.271 | -0.358 | -0.100 | -0.231 | -0.453 | -0.436 |
| Iceland | 0.755 | -0.027 | -0.345 | -0.267 | -0.356 | -0.076 | -0.225 | -0.447 | -0.431 |
| Netherlands | 0.750 | -0.029 | -0.344 | -0.266 | -0.355 | -0.077 | -0.225 | -0.446 | -0.430 |
| Norway | 0.711 | -0.044 | -0.344 | -0.267 | -0.355 | -0.088 | -0.227 | -0.447 | -0.431 |
| United Kingdom | 0.846 | 0.000 ^b | -0.336 | -0.258 | -0.347 | -0.048 | -0.214 | -0.432 | -0.418 |
| Switzerland | 0.958 | 0.000 ^b | -0.334 | -0.254 | -0.345 | -0.013 | -0.207 | -0.427 | -0.413 |
| Austria | 0.891 | 0.000 ^b | -0.327 | -0.250 | -0.338 | -0.034 | -0.206 | -0.420 | -0.406 |
| Luxembourg | 1.239 | 0.000 ^b | -0.280 | -0.208 | -0.290 | 0.000 ^b | -0.162 | -0.354 | -0.343 |
| United States | 1.000 | 0.000 ^b | -0.252 | -0.191 | -0.260 | 0.000 ^b | -0.154 | -0.321 | -0.311 |
| Low-income average | 0.130 | -0.377 | -0.566 | -0.480 | -0.585 | -0.390 | -0.451 | -1.042 | -0.972 |
| Middle-income average | 0.439 | -0.186 | -0.476 | -0.382 | -0.492 | -0.218 | -0.339 | -0.647 | -0.615 |
| High-income average | 0.781 | -0.036 | -0.359 | -0.278 | -0.371 | -0.076 | -0.234 | -0.467 | -0.450 |

Countries are reported based on ascending per capita real income levels.

^aAs the estimated budget shares for "food other" values were negative, these values are calculated using the actual budget shares. Calculated using equation (12).

^bAs these estimated Frisch own-price elasticities were positive, implying a Giffen good, which does not make economic sense, these values were set to zero.

Source: Authors' calculation using 2005 International Comparison Program (ICP) data.

Marginal shares for aggregate consumption categories, 144 countries, 2005

| | Per capita income | Food, beverages, & tobacco | Clothing & footwear | Housing | House furnishings | Medical & health | Transport & communi- cations | Recreation | Education | Other |
|-----------------------------|----------------------|----------------------------------|---------------------------|---------|----------------------|---------------------|---------------------------------------|------------|-----------|-------|
| Low-income countries: | | | | | | | | | | |
| Congo, Dem. Rep. | 0.005 | 0.634 | 0.060 | 0.135 | 0.048 | 0.007 | 0.079 | -0.010 | 0.037 | 0.010 |
| Burundi | 0.009 | 0.564 | 0.059 | 0.142 | 0.050 | 0.021 | 0.093 | 0.006 | 0.035 | 0.030 |
| Liberia | 0.010 | 0.551 | 0.059 | 0.144 | 0.050 | 0.023 | 0.096 | 0.010 | 0.035 | 0.033 |
| Zimbabwe | 0.012 | 0.532 | 0.058 | 0.146 | 0.051 | 0.027 | 0.099 | 0.014 | 0.035 | 0.038 |
| Ethiopia | 0.014 | 0.518 | 0.058 | 0.147 | 0.051 | 0.029 | 0.102 | 0.018 | 0.034 | 0.043 |
| Niger | 0.014 | 0.517 | 0.058 | 0.147 | 0.051 | 0.029 | 0.103 | 0.018 | 0.034 | 0.043 |
| Guinea-Bissau | 0.014 | 0.516 | 0.058 | 0.147 | 0.051 | 0.030 | 0.103 | 0.018 | 0.034 | 0.043 |
| Mozambique | 0.017 | 0.500 | 0.058 | 0.149 | 0.051 | 0.033 | 0.106 | 0.022 | 0.034 | 0.047 |
| Malawi | 0.018 | 0.489 | 0.057 | 0.150 | 0.052 | 0.035 | 0.108 | 0.025 | 0.034 | 0.051 |
| Rwanda | 0.019 | 0.486 | 0.057 | 0.150 | 0.052 | 0.035 | 0.109 | 0.025 | 0.034 | 0.052 |
| Angola | 0.021 | 0.474 | 0.057 | 0.151 | 0.052 | 0.038 | 0.111 | 0.028 | 0.033 | 0.055 |
| Chad | 0.021 | 0.472 | 0.057 | 0.152 | 0.052 | 0.038 | 0.112 | 0.029 | 0.033 | 0.055 |
| Gambia, The | 0.022 | 0.470 | 0.057 | 0.152 | 0.052 | 0.038 | 0.112 | 0.029 | 0.033 | 0.056 |
| Central African Republic | 0.022 | 0.469 | 0.057 | 0.152 | 0.052 | 0.038 | 0.112 | 0.030 | 0.033 | 0.056 |
| Mali | 0.022 | 0.469 | 0.057 | 0.152 | 0.052 | 0.039 | 0.112 | 0.030 | 0.033 | 0.056 |
| Tanzania | 0.023 | 0.466 | 0.057 | 0.152 | 0.052 | 0.039 | 0.113 | 0.030 | 0.033 | 0.057 |
| Sierra Leone | 0.024 | 0.461 | 0.057 | 0.153 | 0.052 | 0.040 | 0.114 | 0.032 | 0.033 | 0.059 |
| Guinea | 0.024 | 0.460 | 0.057 | 0.153 | 0.052 | 0.040 | 0.114 | 0.032 | 0.033 | 0.059 |
| Burkina Faso | 0.025 | 0.456 | 0.057 | 0.153 | 0.053 | 0.041 | 0.115 | 0.033 | 0.033 | 0.060 |
| Uganda | 0.027 | 0.447 | 0.057 | 0.154 | 0.053 | 0.042 | 0.117 | 0.035 | 0.033 | 0.062 |
| Madagascar | 0.027 | 0.447 | 0.057 | 0.154 | 0.053 | 0.043 | 0.117 | 0.035 | 0.033 | 0.062 |
| Zambia | 0.027 | 0.446 | 0.057 | 0.154 | 0.053 | 0.043 | 0.117 | 0.035 | 0.033 | 0.063 |
| Congo, Rep. | 0.028 | 0.443 | 0.057 | 0.155 | 0.053 | 0.043 | 0.117 | 0.036 | 0.033 | 0.063 |
| Togo | 0.029 | 0.441 | 0.057 | 0.155 | 0.053 | 0.044 | 0.118 | 0.036 | 0.033 | 0.064 |
| Nepal | 0.031 | 0.434 | 0.057 | 0.156 | 0.053 | 0.045 | 0.119 | 0.038 | 0.032 | 0.066 |
| Ghana | 0.032 | 0.429 | 0.056 | 0.156 | 0.053 | 0.046 | 0.120 | 0.039 | 0.032 | 0.067 |
| Benin | 0.034 | 0.423 | 0.056 | 0.157 | 0.053 | 0.047 | 0.121 | 0.041 | 0.032 | 0.069 |
| Mauritania | 0.034 | 0.422 | 0.056 | 0.157 | 0.053 | 0.047 | 0.122 | 0.041 | 0.032 | 0.069 |
| Bangladesh | 0.035 | 0.419 | 0.056 | 0.157 | 0.054 | 0.048 | 0.122 | 0.042 | 0.032 | 0.070 |
| Côte d'Ivoire | 0.035 | 0.418 | 0.056 | 0.157 | 0.054 | 0.048 | 0.122 | 0.042 | 0.032 | 0.071 |
| Lao PDR | 0.035 | 0.418 | 0.056 | 0.157 | 0.054 | 0.048 | 0.122 | 0.042 | 0.032 | 0.071 |
| Kenya | 0.038 | 0.409 | 0.056 | 0.158 | 0.054 | 0.050 | 0.124 | 0.044 | 0.032 | 0.073 |
| Djibouti | 0.039 | 0.408 | 0.056 | 0.158 | 0.054 | 0.050 | 0.124 | 0.044 | 0.032 | 0.073 |
| Nigeria | 0.039 | 0.406 | 0.056 | 0.158 | 0.054 | 0.050 | 0.125 | 0.045 | 0.032 | 0.074 |
| Senegal | 0.040 | 0.406 | 0.056 | 0.158 | 0.054 | 0.050 | 0.125 | 0.045 | 0.032 | 0.074 |
| Cambodia | 0.042 | 0.399 | 0.056 | 0.159 | 0.054 | 0.052 | 0.126 | 0.046 | 0.032 | 0.076 |
| Cameroon | 0.045 | 0.393 | 0.056 | 0.160 | 0.054 | 0.053 | 0.127 | 0.048 | 0.032 | 0.078 |
| São Tomé and Príncipe | 0.045 | 0.391 | 0.056 | 0.160 | 0.054 | 0.053 | 0.128 | 0.048 | 0.032 | 0.078 |

--continued

Marginal shares for aggregate consumption categories, 144 countries, 2005, *continued*

| | Per capita income | Food, beverages, & tobacco | Clothing & footwear | Housing | House furnishings | Medical & health | Transport & communications | Recreation | Education | Other |
|----------------------|-------------------|----------------------------|---------------------|---------|-------------------|------------------|----------------------------|------------|-----------|-------|
| India | 0.047 | 0.388 | 0.056 | 0.160 | 0.054 | 0.054 | 0.129 | 0.049 | 0.031 | 0.079 |
| Yemen, Rep. | 0.048 | 0.386 | 0.056 | 0.160 | 0.054 | 0.054 | 0.129 | 0.050 | 0.031 | 0.080 |
| Vietnam | 0.048 | 0.386 | 0.056 | 0.160 | 0.054 | 0.054 | 0.129 | 0.050 | 0.031 | 0.080 |
| Mongolia | 0.048 | 0.384 | 0.056 | 0.161 | 0.054 | 0.054 | 0.129 | 0.050 | 0.031 | 0.080 |
| Iraq | 0.050 | 0.380 | 0.056 | 0.161 | 0.055 | 0.055 | 0.130 | 0.051 | 0.031 | 0.081 |
| Bhutan | 0.052 | 0.377 | 0.056 | 0.161 | 0.055 | 0.056 | 0.131 | 0.052 | 0.031 | 0.082 |
| China | 0.054 | 0.373 | 0.055 | 0.162 | 0.055 | 0.057 | 0.132 | 0.053 | 0.031 | 0.083 |
| Sudan | 0.058 | 0.364 | 0.055 | 0.163 | 0.055 | 0.058 | 0.133 | 0.055 | 0.031 | 0.086 |
| Lesotho | 0.061 | 0.360 | 0.055 | 0.163 | 0.055 | 0.059 | 0.134 | 0.056 | 0.031 | 0.087 |
| Tajikistan | 0.061 | 0.359 | 0.055 | 0.163 | 0.055 | 0.059 | 0.134 | 0.056 | 0.031 | 0.087 |
| Maldives | 0.068 | 0.348 | 0.055 | 0.164 | 0.055 | 0.061 | 0.137 | 0.059 | 0.031 | 0.090 |
| Morocco | 0.069 | 0.346 | 0.055 | 0.164 | 0.055 | 0.062 | 0.137 | 0.059 | 0.031 | 0.091 |
| Pakistan | 0.071 | 0.343 | 0.055 | 0.165 | 0.056 | 0.062 | 0.138 | 0.060 | 0.030 | 0.092 |
| Indonesia | 0.075 | 0.337 | 0.055 | 0.165 | 0.056 | 0.063 | 0.139 | 0.061 | 0.030 | 0.093 |
| Kyrgyz Republic | 0.075 | 0.337 | 0.055 | 0.165 | 0.056 | 0.063 | 0.139 | 0.061 | 0.030 | 0.093 |
| Philippines | 0.076 | 0.335 | 0.055 | 0.166 | 0.056 | 0.064 | 0.139 | 0.062 | 0.030 | 0.094 |
| Cape Verde | 0.076 | 0.335 | 0.055 | 0.166 | 0.056 | 0.064 | 0.139 | 0.062 | 0.030 | 0.094 |
| Bolivia | 0.077 | 0.334 | 0.055 | 0.166 | 0.056 | 0.064 | 0.139 | 0.062 | 0.030 | 0.094 |
| Namibia | 0.082 | 0.327 | 0.055 | 0.166 | 0.056 | 0.065 | 0.141 | 0.064 | 0.030 | 0.096 |
| Sri Lanka | 0.085 | 0.324 | 0.055 | 0.167 | 0.056 | 0.066 | 0.141 | 0.065 | 0.030 | 0.097 |
| Botswana | 0.086 | 0.322 | 0.055 | 0.167 | 0.056 | 0.066 | 0.142 | 0.065 | 0.030 | 0.098 |
| Gabon | 0.089 | 0.319 | 0.055 | 0.167 | 0.056 | 0.067 | 0.142 | 0.066 | 0.030 | 0.098 |
| Azerbaijan | 0.090 | 0.318 | 0.054 | 0.167 | 0.056 | 0.067 | 0.143 | 0.066 | 0.030 | 0.099 |
| Syrian Arab Republic | 0.092 | 0.315 | 0.054 | 0.168 | 0.056 | 0.067 | 0.143 | 0.067 | 0.030 | 0.099 |
| Equatorial Guinea | 0.099 | 0.307 | 0.054 | 0.168 | 0.056 | 0.069 | 0.145 | 0.069 | 0.030 | 0.102 |
| Paraguay | 0.102 | 0.304 | 0.054 | 0.169 | 0.057 | 0.070 | 0.145 | 0.069 | 0.030 | 0.103 |
| Fiji | 0.106 | 0.300 | 0.054 | 0.169 | 0.057 | 0.070 | 0.146 | 0.070 | 0.030 | 0.104 |
| Swaziland | 0.110 | 0.296 | 0.054 | 0.170 | 0.057 | 0.071 | 0.147 | 0.071 | 0.029 | 0.105 |
| Moldova | 0.112 | 0.294 | 0.054 | 0.170 | 0.057 | 0.071 | 0.148 | 0.072 | 0.029 | 0.105 |
| Egypt, Arab Rep. | 0.114 | 0.291 | 0.054 | 0.170 | 0.057 | 0.072 | 0.148 | 0.072 | 0.029 | 0.106 |
| Ecuador | 0.121 | 0.286 | 0.054 | 0.171 | 0.057 | 0.073 | 0.149 | 0.074 | 0.029 | 0.108 |
| Jordan | 0.121 | 0.285 | 0.054 | 0.171 | 0.057 | 0.073 | 0.149 | 0.074 | 0.029 | 0.108 |
| Georgia | 0.123 | 0.284 | 0.054 | 0.171 | 0.057 | 0.073 | 0.150 | 0.074 | 0.029 | 0.108 |
| Thailand | 0.125 | 0.282 | 0.054 | 0.171 | 0.057 | 0.074 | 0.150 | 0.075 | 0.029 | 0.109 |
| Colombia | 0.127 | 0.280 | 0.054 | 0.171 | 0.057 | 0.074 | 0.150 | 0.075 | 0.029 | 0.109 |
| Albania | 0.130 | 0.278 | 0.054 | 0.171 | 0.057 | 0.074 | 0.151 | 0.076 | 0.029 | 0.110 |
| Tunisia | 0.132 | 0.276 | 0.054 | 0.172 | 0.057 | 0.075 | 0.151 | 0.076 | 0.029 | 0.110 |
| Peru | 0.136 | 0.272 | 0.054 | 0.172 | 0.057 | 0.075 | 0.152 | 0.077 | 0.029 | 0.111 |
| Armenia | 0.141 | 0.269 | 0.054 | 0.172 | 0.057 | 0.076 | 0.152 | 0.078 | 0.029 | 0.112 |

--continued

Appendix table 7

Marginal shares for aggregate consumption categories, 144 countries, 2005, *continued*

| | Per capita income | Food, beverages, & tobacco | Clothing & footwear | Housing | House furnishings | Medical & health | Transport & communi- cations | Recreation | Education | Other |
|---------------------------|----------------------|----------------------------------|---------------------------|---------|----------------------|---------------------|---------------------------------------|------------|-----------|-------|
| Middle-income countries: | | | | | | | | | | |
| Venezuela, RB | 0.151 | 0.261 | 0.054 | 0.173 | 0.058 | 0.078 | 0.154 | 0.080 | 0.029 | 0.114 |
| Malaysia | 0.151 | 0.261 | 0.053 | 0.173 | 0.058 | 0.078 | 0.154 | 0.080 | 0.029 | 0.115 |
| Ukraine | 0.154 | 0.259 | 0.053 | 0.173 | 0.058 | 0.078 | 0.154 | 0.080 | 0.029 | 0.115 |
| Brazil | 0.157 | 0.257 | 0.053 | 0.174 | 0.058 | 0.078 | 0.155 | 0.081 | 0.029 | 0.116 |
| Montenegro | 0.160 | 0.255 | 0.053 | 0.174 | 0.058 | 0.079 | 0.155 | 0.081 | 0.029 | 0.116 |
| South Africa | 0.168 | 0.250 | 0.053 | 0.174 | 0.058 | 0.080 | 0.156 | 0.082 | 0.028 | 0.118 |
| Macedonia, FYR | 0.180 | 0.243 | 0.053 | 0.175 | 0.058 | 0.081 | 0.158 | 0.084 | 0.028 | 0.120 |
| Turkey | 0.182 | 0.241 | 0.053 | 0.175 | 0.058 | 0.081 | 0.158 | 0.085 | 0.028 | 0.120 |
| Bosnia and Herzegovina | 0.193 | 0.235 | 0.053 | 0.176 | 0.058 | 0.082 | 0.159 | 0.086 | 0.028 | 0.122 |
| Serbia | 0.196 | 0.233 | 0.053 | 0.176 | 0.058 | 0.083 | 0.160 | 0.086 | 0.028 | 0.122 |
| Belarus | 0.196 | 0.233 | 0.053 | 0.176 | 0.058 | 0.083 | 0.160 | 0.087 | 0.028 | 0.122 |
| Romania | 0.200 | 0.231 | 0.053 | 0.176 | 0.058 | 0.083 | 0.160 | 0.087 | 0.028 | 0.123 |
| Saudi Arabia | 0.201 | 0.230 | 0.053 | 0.176 | 0.058 | 0.083 | 0.160 | 0.087 | 0.028 | 0.123 |
| Uruguay | 0.204 | 0.229 | 0.053 | 0.176 | 0.058 | 0.084 | 0.161 | 0.088 | 0.028 | 0.124 |
| Mauritius | 0.204 | 0.229 | 0.053 | 0.176 | 0.058 | 0.084 | 0.161 | 0.088 | 0.028 | 0.124 |
| Chile | 0.205 | 0.228 | 0.053 | 0.176 | 0.058 | 0.084 | 0.161 | 0.088 | 0.028 | 0.124 |
| Kazakhstan | 0.212 | 0.225 | 0.053 | 0.177 | 0.059 | 0.084 | 0.161 | 0.088 | 0.028 | 0.125 |
| Russian Federation | 0.220 | 0.221 | 0.053 | 0.177 | 0.059 | 0.085 | 0.162 | 0.089 | 0.028 | 0.126 |
| Argentina | 0.224 | 0.219 | 0.053 | 0.177 | 0.059 | 0.086 | 0.163 | 0.090 | 0.028 | 0.126 |
| Bulgaria | 0.228 | 0.217 | 0.053 | 0.178 | 0.059 | 0.086 | 0.163 | 0.090 | 0.028 | 0.127 |
| Oman | 0.235 | 0.213 | 0.053 | 0.178 | 0.059 | 0.087 | 0.164 | 0.091 | 0.028 | 0.128 |
| Iran, Islamic Rep. | 0.251 | 0.207 | 0.053 | 0.179 | 0.059 | 0.088 | 0.165 | 0.093 | 0.027 | 0.130 |
| Latvia | 0.270 | 0.199 | 0.052 | 0.179 | 0.059 | 0.089 | 0.167 | 0.095 | 0.027 | 0.132 |
| Mexico | 0.274 | 0.197 | 0.052 | 0.180 | 0.059 | 0.090 | 0.167 | 0.095 | 0.027 | 0.133 |
| Lebanon | 0.284 | 0.193 | 0.052 | 0.180 | 0.059 | 0.090 | 0.168 | 0.096 | 0.027 | 0.134 |
| Poland | 0.314 | 0.182 | 0.052 | 0.181 | 0.060 | 0.092 | 0.170 | 0.099 | 0.027 | 0.137 |
| Croatia | 0.316 | 0.182 | 0.052 | 0.181 | 0.060 | 0.093 | 0.170 | 0.099 | 0.027 | 0.137 |
| Macao, China | 0.318 | 0.181 | 0.052 | 0.181 | 0.060 | 0.093 | 0.170 | 0.099 | 0.027 | 0.137 |
| Lithuania | 0.319 | 0.181 | 0.052 | 0.181 | 0.060 | 0.093 | 0.170 | 0.099 | 0.027 | 0.137 |
| Estonia | 0.332 | 0.176 | 0.052 | 0.182 | 0.060 | 0.094 | 0.171 | 0.100 | 0.027 | 0.138 |
| Brunei Darussalam | 0.347 | 0.172 | 0.052 | 0.182 | 0.060 | 0.094 | 0.172 | 0.101 | 0.027 | 0.140 |
| Slovak Republic | 0.351 | 0.170 | 0.052 | 0.182 | 0.060 | 0.095 | 0.172 | 0.102 | 0.027 | 0.140 |
| Hungary | 0.353 | 0.170 | 0.052 | 0.182 | 0.060 | 0.095 | 0.173 | 0.102 | 0.027 | 0.140 |
| Korea, Rep. | 0.379 | 0.162 | 0.052 | 0.183 | 0.060 | 0.096 | 0.174 | 0.104 | 0.026 | 0.142 |
| Bahrain | 0.380 | 0.162 | 0.052 | 0.183 | 0.060 | 0.096 | 0.174 | 0.104 | 0.026 | 0.142 |
| Czech Republic | 0.420 | 0.151 | 0.052 | 0.184 | 0.060 | 0.098 | 0.176 | 0.106 | 0.026 | 0.145 |
| Slovenia | 0.439 | 0.146 | 0.051 | 0.185 | 0.061 | 0.099 | 0.177 | 0.108 | 0.026 | 0.147 |
| Israel | 0.446 | 0.144 | 0.051 | 0.185 | 0.061 | 0.100 | 0.178 | 0.108 | 0.026 | 0.147 |

--continued

Marginal shares for aggregate consumption categories, 144 countries, 2005, *continued*

| | Per capita income | Food, beverages, & tobacco | Clothing & footwear | Housing | House furnishings | Medical & health | Transport & communications | Recreation | Education | Other |
|------------------------|-------------------|----------------------------|---------------------|---------|-------------------|------------------|----------------------------|------------|-----------|-------|
| High-income countries: | | | | | | | | | | |
| Portugal | 0.466 | 0.140 | 0.051 | 0.185 | 0.061 | 0.100 | 0.179 | 0.109 | 0.026 | 0.149 |
| Qatar | 0.474 | 0.138 | 0.051 | 0.186 | 0.061 | 0.101 | 0.179 | 0.110 | 0.026 | 0.149 |
| Singapore | 0.480 | 0.137 | 0.051 | 0.186 | 0.061 | 0.101 | 0.179 | 0.110 | 0.026 | 0.150 |
| Malta | 0.501 | 0.132 | 0.051 | 0.186 | 0.061 | 0.102 | 0.180 | 0.111 | 0.026 | 0.151 |
| Kuwait | 0.507 | 0.131 | 0.051 | 0.186 | 0.061 | 0.102 | 0.180 | 0.111 | 0.026 | 0.151 |
| New Zealand | 0.551 | 0.122 | 0.051 | 0.187 | 0.061 | 0.104 | 0.182 | 0.113 | 0.026 | 0.154 |
| Finland | 0.562 | 0.119 | 0.051 | 0.188 | 0.061 | 0.104 | 0.183 | 0.114 | 0.026 | 0.154 |
| Taiwan, China | 0.567 | 0.118 | 0.051 | 0.188 | 0.061 | 0.104 | 0.183 | 0.114 | 0.026 | 0.155 |
| Spain | 0.584 | 0.115 | 0.051 | 0.188 | 0.061 | 0.105 | 0.183 | 0.115 | 0.025 | 0.155 |
| Italy | 0.592 | 0.114 | 0.051 | 0.188 | 0.061 | 0.105 | 0.184 | 0.115 | 0.025 | 0.156 |
| Ireland | 0.604 | 0.112 | 0.051 | 0.188 | 0.061 | 0.106 | 0.184 | 0.116 | 0.025 | 0.156 |
| Denmark | 0.607 | 0.111 | 0.051 | 0.188 | 0.061 | 0.106 | 0.184 | 0.116 | 0.025 | 0.157 |
| Sweden | 0.618 | 0.109 | 0.051 | 0.189 | 0.062 | 0.106 | 0.185 | 0.116 | 0.025 | 0.157 |
| Hong Kong, China | 0.623 | 0.108 | 0.051 | 0.189 | 0.062 | 0.106 | 0.185 | 0.117 | 0.025 | 0.157 |
| Australia | 0.636 | 0.106 | 0.051 | 0.189 | 0.062 | 0.107 | 0.185 | 0.117 | 0.025 | 0.158 |
| Cyprus | 0.640 | 0.105 | 0.051 | 0.189 | 0.062 | 0.107 | 0.185 | 0.117 | 0.025 | 0.158 |
| Belgium | 0.643 | 0.105 | 0.051 | 0.189 | 0.062 | 0.107 | 0.186 | 0.118 | 0.025 | 0.158 |
| Japan | 0.644 | 0.105 | 0.051 | 0.189 | 0.062 | 0.107 | 0.186 | 0.118 | 0.025 | 0.158 |
| France | 0.658 | 0.102 | 0.051 | 0.189 | 0.062 | 0.107 | 0.186 | 0.118 | 0.025 | 0.159 |
| Germany | 0.681 | 0.099 | 0.051 | 0.190 | 0.062 | 0.108 | 0.187 | 0.119 | 0.025 | 0.160 |
| Canada | 0.682 | 0.099 | 0.051 | 0.190 | 0.062 | 0.108 | 0.187 | 0.119 | 0.025 | 0.160 |
| Iceland | 0.689 | 0.097 | 0.051 | 0.190 | 0.062 | 0.108 | 0.187 | 0.119 | 0.025 | 0.160 |
| Netherlands | 0.692 | 0.097 | 0.051 | 0.190 | 0.062 | 0.108 | 0.187 | 0.119 | 0.025 | 0.161 |
| Norway | 0.692 | 0.097 | 0.051 | 0.190 | 0.062 | 0.108 | 0.187 | 0.119 | 0.025 | 0.161 |
| United Kingdom | 0.720 | 0.093 | 0.051 | 0.190 | 0.062 | 0.109 | 0.188 | 0.120 | 0.025 | 0.162 |
| Switzerland | 0.726 | 0.092 | 0.051 | 0.190 | 0.062 | 0.109 | 0.188 | 0.121 | 0.025 | 0.162 |
| Austria | 0.750 | 0.088 | 0.050 | 0.191 | 0.062 | 0.110 | 0.189 | 0.122 | 0.025 | 0.163 |
| Luxembourg | 0.906 | 0.068 | 0.050 | 0.193 | 0.063 | 0.114 | 0.193 | 0.126 | 0.024 | 0.169 |
| United States | 1.000 | 0.057 | 0.050 | 0.194 | 0.063 | 0.116 | 0.195 | 0.129 | 0.024 | 0.172 |
| Low-income average | 0.058 | 0.392 | 0.056 | 0.160 | 0.054 | 0.053 | 0.128 | 0.048 | 0.032 | 0.078 |
| Middle-income average | 0.258 | 0.209 | 0.053 | 0.178 | 0.059 | 0.087 | 0.165 | 0.092 | 0.028 | 0.129 |
| High-income average | 0.638 | 0.107 | 0.051 | 0.189 | 0.062 | 0.106 | 0.185 | 0.117 | 0.025 | 0.158 |

Countries are reported based on ascending per capita real income levels.

Source: Authors' calculation using 2005 International Comparison Program (ICP) data.

Conditional marginal shares for food subgroups, 144 countries, 2005

| Country | Per capita income | Per capita food | Cereals | Meats | Fish | Dairy | Oils & fats | Fruits & vegetables | Food other | Beverages & tobacco |
|--------------------------|-------------------|-----------------|---------|-------|-------|-------|-------------|---------------------|------------|---------------------|
| Low-income countries: | | | | | | | | | | |
| Congo, Dem. Rep. | 0.005 | 0.014 | 0.311 | 0.147 | 0.067 | 0.078 | 0.060 | 0.227 | 0.048 | 0.063 |
| Burundi | 0.009 | 0.020 | 0.286 | 0.147 | 0.064 | 0.078 | 0.055 | 0.214 | 0.077 | 0.079 |
| Liberia | 0.010 | 0.013 | 0.318 | 0.147 | 0.067 | 0.078 | 0.061 | 0.231 | 0.040 | 0.058 |
| Zimbabwe | 0.012 | 0.031 | 0.252 | 0.146 | 0.060 | 0.079 | 0.049 | 0.197 | 0.116 | 0.102 |
| Ethiopia | 0.014 | 0.040 | 0.232 | 0.146 | 0.057 | 0.080 | 0.045 | 0.187 | 0.138 | 0.115 |
| Niger | 0.014 | 0.037 | 0.239 | 0.146 | 0.058 | 0.080 | 0.047 | 0.190 | 0.130 | 0.110 |
| Guinea-Bissau | 0.014 | 0.040 | 0.232 | 0.146 | 0.057 | 0.080 | 0.045 | 0.187 | 0.139 | 0.115 |
| Mozambique | 0.017 | 0.055 | 0.208 | 0.145 | 0.054 | 0.080 | 0.041 | 0.174 | 0.166 | 0.131 |
| Malawi | 0.018 | 0.017 | 0.298 | 0.147 | 0.065 | 0.078 | 0.057 | 0.220 | 0.064 | 0.071 |
| Rwanda | 0.019 | 0.060 | 0.201 | 0.145 | 0.053 | 0.081 | 0.040 | 0.171 | 0.174 | 0.136 |
| Angola | 0.021 | 0.051 | 0.214 | 0.145 | 0.055 | 0.080 | 0.042 | 0.177 | 0.159 | 0.127 |
| Chad | 0.021 | 0.050 | 0.215 | 0.145 | 0.055 | 0.080 | 0.042 | 0.178 | 0.157 | 0.126 |
| Gambia, The | 0.022 | 0.027 | 0.262 | 0.146 | 0.061 | 0.079 | 0.051 | 0.202 | 0.104 | 0.095 |
| Central African Republic | 0.022 | 0.068 | 0.191 | 0.145 | 0.052 | 0.081 | 0.038 | 0.166 | 0.185 | 0.142 |
| Mali | 0.022 | 0.060 | 0.201 | 0.145 | 0.053 | 0.081 | 0.040 | 0.171 | 0.174 | 0.135 |
| Tanzania | 0.023 | 0.085 | 0.174 | 0.145 | 0.050 | 0.081 | 0.035 | 0.157 | 0.205 | 0.153 |
| Sierra Leone | 0.024 | 0.044 | 0.224 | 0.146 | 0.056 | 0.080 | 0.044 | 0.183 | 0.147 | 0.120 |
| Guinea | 0.024 | 0.045 | 0.224 | 0.146 | 0.056 | 0.080 | 0.044 | 0.182 | 0.148 | 0.120 |
| Burkina Faso | 0.025 | 0.072 | 0.187 | 0.145 | 0.052 | 0.081 | 0.037 | 0.163 | 0.190 | 0.145 |
| Uganda | 0.027 | 0.062 | 0.199 | 0.145 | 0.053 | 0.081 | 0.039 | 0.170 | 0.177 | 0.137 |
| Madagascar | 0.027 | 0.069 | 0.190 | 0.145 | 0.052 | 0.081 | 0.038 | 0.165 | 0.186 | 0.142 |
| Zambia | 0.027 | 0.018 | 0.294 | 0.147 | 0.065 | 0.078 | 0.057 | 0.218 | 0.067 | 0.074 |
| Congo, Rep. | 0.028 | 0.070 | 0.189 | 0.145 | 0.052 | 0.081 | 0.038 | 0.165 | 0.187 | 0.143 |
| Togo | 0.029 | 0.075 | 0.184 | 0.145 | 0.051 | 0.081 | 0.037 | 0.162 | 0.193 | 0.146 |
| Nepal | 0.031 | 0.094 | 0.167 | 0.145 | 0.049 | 0.081 | 0.033 | 0.153 | 0.213 | 0.158 |
| Ghana | 0.032 | 0.061 | 0.199 | 0.145 | 0.053 | 0.081 | 0.039 | 0.170 | 0.176 | 0.136 |
| Benin | 0.034 | 0.077 | 0.182 | 0.145 | 0.051 | 0.081 | 0.036 | 0.161 | 0.195 | 0.148 |
| Mauritania | 0.034 | 0.105 | 0.158 | 0.144 | 0.048 | 0.082 | 0.032 | 0.149 | 0.223 | 0.164 |
| Bangladesh | 0.035 | 0.110 | 0.155 | 0.144 | 0.048 | 0.082 | 0.031 | 0.147 | 0.227 | 0.166 |
| Côte d'Ivoire | 0.035 | 0.095 | 0.166 | 0.145 | 0.049 | 0.081 | 0.033 | 0.153 | 0.214 | 0.159 |
| Lao PDR | 0.035 | 0.104 | 0.159 | 0.144 | 0.048 | 0.082 | 0.032 | 0.149 | 0.222 | 0.163 |
| Kenya | 0.038 | 0.074 | 0.185 | 0.145 | 0.052 | 0.081 | 0.037 | 0.163 | 0.192 | 0.146 |
| Djibouti | 0.039 | 0.123 | 0.146 | 0.144 | 0.047 | 0.082 | 0.030 | 0.143 | 0.237 | 0.172 |
| Nigeria | 0.039 | 0.092 | 0.168 | 0.145 | 0.050 | 0.081 | 0.034 | 0.154 | 0.211 | 0.157 |
| Senegal | 0.040 | 0.109 | 0.156 | 0.144 | 0.048 | 0.082 | 0.031 | 0.148 | 0.226 | 0.165 |
| Cambodia | 0.042 | 0.120 | 0.148 | 0.144 | 0.047 | 0.082 | 0.030 | 0.144 | 0.235 | 0.171 |
| Cameroon | 0.045 | 0.123 | 0.146 | 0.144 | 0.047 | 0.082 | 0.030 | 0.143 | 0.237 | 0.172 |
| São Tomé and Príncipe | 0.045 | 0.137 | 0.137 | 0.144 | 0.046 | 0.082 | 0.028 | 0.138 | 0.247 | 0.177 |

--continued

Conditional marginal shares for food subgroups, 144 countries, 2005, *continued*

| Country | Per capita income | Per capita food | Cereals | Meats | Fish | Dairy | Oils & fats | Fruits & vegetables | Food other | Beverages & tobacco |
|----------------------|-------------------|-----------------|---------|-------|-------|-------|-------------|---------------------|------------|---------------------|
| India | 0.047 | 0.094 | 0.167 | 0.145 | 0.049 | 0.081 | 0.033 | 0.153 | 0.213 | 0.158 |
| Yemen, Rep. | 0.048 | 0.119 | 0.148 | 0.144 | 0.047 | 0.082 | 0.030 | 0.144 | 0.234 | 0.170 |
| Vietnam | 0.048 | 0.091 | 0.169 | 0.145 | 0.050 | 0.081 | 0.034 | 0.155 | 0.210 | 0.156 |
| Mongolia | 0.048 | 0.120 | 0.148 | 0.144 | 0.047 | 0.082 | 0.030 | 0.144 | 0.235 | 0.171 |
| Iraq | 0.050 | 0.111 | 0.154 | 0.144 | 0.048 | 0.082 | 0.031 | 0.147 | 0.228 | 0.167 |
| Bhutan | 0.052 | 0.127 | 0.143 | 0.144 | 0.047 | 0.082 | 0.029 | 0.141 | 0.240 | 0.173 |
| China | 0.054 | 0.094 | 0.167 | 0.145 | 0.049 | 0.081 | 0.033 | 0.153 | 0.213 | 0.158 |
| Sudan | 0.058 | 0.154 | 0.129 | 0.144 | 0.045 | 0.082 | 0.026 | 0.134 | 0.257 | 0.183 |
| Lesotho | 0.061 | 0.092 | 0.168 | 0.145 | 0.050 | 0.081 | 0.034 | 0.154 | 0.211 | 0.157 |
| Tajikistan | 0.061 | 0.103 | 0.159 | 0.144 | 0.048 | 0.082 | 0.032 | 0.149 | 0.222 | 0.163 |
| Maldives | 0.068 | 0.116 | 0.150 | 0.144 | 0.047 | 0.082 | 0.030 | 0.145 | 0.232 | 0.169 |
| Morocco | 0.069 | 0.165 | 0.123 | 0.144 | 0.044 | 0.083 | 0.025 | 0.131 | 0.263 | 0.187 |
| Pakistan | 0.071 | 0.150 | 0.131 | 0.144 | 0.045 | 0.082 | 0.027 | 0.135 | 0.254 | 0.182 |
| Indonesia | 0.075 | 0.213 | 0.104 | 0.144 | 0.042 | 0.083 | 0.022 | 0.121 | 0.285 | 0.200 |
| Kyrgyz Republic | 0.075 | 0.149 | 0.131 | 0.144 | 0.045 | 0.082 | 0.027 | 0.135 | 0.254 | 0.182 |
| Philippines | 0.076 | 0.219 | 0.101 | 0.143 | 0.042 | 0.083 | 0.021 | 0.120 | 0.288 | 0.201 |
| Cape Verde | 0.076 | 0.167 | 0.122 | 0.144 | 0.044 | 0.083 | 0.025 | 0.131 | 0.264 | 0.187 |
| Bolivia | 0.077 | 0.163 | 0.125 | 0.144 | 0.044 | 0.083 | 0.026 | 0.132 | 0.261 | 0.186 |
| Namibia | 0.082 | 0.148 | 0.132 | 0.144 | 0.045 | 0.082 | 0.027 | 0.136 | 0.253 | 0.181 |
| Sri Lanka | 0.085 | 0.182 | 0.116 | 0.144 | 0.043 | 0.083 | 0.024 | 0.127 | 0.271 | 0.192 |
| Botswana | 0.086 | 0.137 | 0.138 | 0.144 | 0.046 | 0.082 | 0.028 | 0.139 | 0.246 | 0.177 |
| Gabon | 0.089 | 0.188 | 0.113 | 0.144 | 0.043 | 0.083 | 0.024 | 0.126 | 0.274 | 0.193 |
| Azerbaijan | 0.090 | 0.272 | 0.085 | 0.143 | 0.040 | 0.084 | 0.018 | 0.112 | 0.307 | 0.212 |
| Syrian Arab Republic | 0.092 | 0.257 | 0.089 | 0.143 | 0.040 | 0.083 | 0.019 | 0.114 | 0.301 | 0.209 |
| Equatorial Guinea | 0.099 | 0.204 | 0.107 | 0.144 | 0.042 | 0.083 | 0.022 | 0.123 | 0.281 | 0.197 |
| Paraguay | 0.102 | 0.267 | 0.086 | 0.143 | 0.040 | 0.083 | 0.019 | 0.112 | 0.305 | 0.211 |
| Fiji | 0.106 | 0.228 | 0.098 | 0.143 | 0.041 | 0.083 | 0.021 | 0.119 | 0.291 | 0.203 |
| Swaziland | 0.110 | 0.213 | 0.104 | 0.144 | 0.042 | 0.083 | 0.022 | 0.121 | 0.285 | 0.200 |
| Moldova | 0.112 | 0.153 | 0.129 | 0.144 | 0.045 | 0.082 | 0.026 | 0.134 | 0.256 | 0.183 |
| Egypt, Arab Rep. | 0.114 | 0.279 | 0.083 | 0.143 | 0.039 | 0.084 | 0.018 | 0.111 | 0.309 | 0.213 |
| Ecuador | 0.121 | 0.240 | 0.094 | 0.143 | 0.041 | 0.083 | 0.020 | 0.117 | 0.296 | 0.206 |
| Jordan | 0.121 | 0.294 | 0.079 | 0.143 | 0.039 | 0.084 | 0.017 | 0.109 | 0.314 | 0.216 |
| Georgia | 0.123 | 0.216 | 0.103 | 0.143 | 0.042 | 0.083 | 0.022 | 0.121 | 0.286 | 0.200 |
| Thailand | 0.125 | 0.234 | 0.097 | 0.143 | 0.041 | 0.083 | 0.021 | 0.118 | 0.293 | 0.204 |
| Colombia | 0.127 | 0.244 | 0.093 | 0.143 | 0.041 | 0.083 | 0.020 | 0.116 | 0.297 | 0.207 |
| Albania | 0.130 | 0.242 | 0.094 | 0.143 | 0.041 | 0.083 | 0.020 | 0.116 | 0.296 | 0.206 |
| Tunisia | 0.132 | 0.324 | 0.071 | 0.143 | 0.038 | 0.084 | 0.016 | 0.105 | 0.322 | 0.221 |
| Peru | 0.136 | 0.301 | 0.077 | 0.143 | 0.039 | 0.084 | 0.017 | 0.108 | 0.315 | 0.217 |
| Armenia | 0.141 | 0.374 | 0.060 | 0.143 | 0.037 | 0.084 | 0.014 | 0.099 | 0.335 | 0.228 |

--continued

Appendix table 8

Conditional marginal shares for food subgroups, 144 countries, 2005, *continued*

| Country | Per capita income | Per capita food | Cereals | Meats | Fish | Dairy | Oils & fats | Fruits & vegetables | Food other | Beverages & tobacco |
|--------------------------|-------------------|-----------------|---------|-------|-------|-------|-------------|---------------------|------------|---------------------|
| Middle-income countries: | | | | | | | | | | |
| Venezuela, RB | 0.151 | 0.342 | 0.067 | 0.143 | 0.038 | 0.084 | 0.015 | 0.103 | 0.327 | 0.224 |
| Malaysia | 0.151 | 0.256 | 0.090 | 0.143 | 0.040 | 0.083 | 0.019 | 0.114 | 0.301 | 0.209 |
| Ukraine | 0.154 | 0.312 | 0.074 | 0.143 | 0.038 | 0.084 | 0.016 | 0.106 | 0.319 | 0.219 |
| Brazil | 0.157 | 0.281 | 0.082 | 0.143 | 0.039 | 0.084 | 0.018 | 0.110 | 0.310 | 0.214 |
| Montenegro | 0.160 | 0.330 | 0.070 | 0.143 | 0.038 | 0.084 | 0.016 | 0.104 | 0.324 | 0.222 |
| South Africa | 0.168 | 0.278 | 0.083 | 0.143 | 0.039 | 0.084 | 0.018 | 0.111 | 0.309 | 0.213 |
| Macedonia, FYR | 0.180 | 0.388 | 0.058 | 0.143 | 0.036 | 0.084 | 0.013 | 0.098 | 0.338 | 0.230 |
| Turkey | 0.182 | 0.310 | 0.075 | 0.143 | 0.038 | 0.084 | 0.017 | 0.107 | 0.318 | 0.219 |
| Bosnia and Herzegovina | 0.193 | 0.431 | 0.049 | 0.143 | 0.035 | 0.084 | 0.012 | 0.094 | 0.347 | 0.236 |
| Serbia | 0.196 | 0.349 | 0.066 | 0.143 | 0.037 | 0.084 | 0.015 | 0.102 | 0.328 | 0.225 |
| Belarus | 0.196 | 0.433 | 0.049 | 0.143 | 0.035 | 0.084 | 0.012 | 0.093 | 0.347 | 0.236 |
| Romania | 0.200 | 0.396 | 0.056 | 0.143 | 0.036 | 0.084 | 0.013 | 0.097 | 0.340 | 0.231 |
| Saudi Arabia | 0.201 | 0.356 | 0.064 | 0.143 | 0.037 | 0.084 | 0.015 | 0.101 | 0.330 | 0.226 |
| Uruguay | 0.204 | 0.379 | 0.059 | 0.143 | 0.037 | 0.084 | 0.014 | 0.099 | 0.336 | 0.229 |
| Mauritius | 0.204 | 0.432 | 0.049 | 0.143 | 0.035 | 0.084 | 0.012 | 0.094 | 0.347 | 0.236 |
| Chile | 0.205 | 0.310 | 0.075 | 0.143 | 0.038 | 0.084 | 0.017 | 0.106 | 0.318 | 0.219 |
| Kazakhstan | 0.212 | 0.260 | 0.088 | 0.143 | 0.040 | 0.083 | 0.019 | 0.113 | 0.303 | 0.210 |
| Russian Federation | 0.220 | 0.446 | 0.047 | 0.142 | 0.035 | 0.084 | 0.011 | 0.092 | 0.350 | 0.237 |
| Argentina | 0.224 | 0.456 | 0.045 | 0.142 | 0.035 | 0.085 | 0.011 | 0.091 | 0.352 | 0.238 |
| Bulgaria | 0.228 | 0.411 | 0.053 | 0.143 | 0.036 | 0.084 | 0.013 | 0.095 | 0.343 | 0.233 |
| Oman | 0.235 | 0.455 | 0.045 | 0.142 | 0.035 | 0.085 | 0.011 | 0.092 | 0.352 | 0.238 |
| Iran, Islamic Rep. | 0.251 | 0.211 | 0.104 | 0.144 | 0.042 | 0.083 | 0.022 | 0.122 | 0.284 | 0.199 |
| Latvia | 0.270 | 0.500 | 0.038 | 0.142 | 0.034 | 0.085 | 0.010 | 0.088 | 0.360 | 0.243 |
| Mexico | 0.274 | 0.550 | 0.031 | 0.142 | 0.033 | 0.085 | 0.008 | 0.084 | 0.369 | 0.248 |
| Lebanon | 0.284 | 0.673 | 0.015 | 0.142 | 0.031 | 0.085 | 0.006 | 0.076 | 0.386 | 0.258 |
| Poland | 0.314 | 0.505 | 0.037 | 0.142 | 0.034 | 0.085 | 0.010 | 0.087 | 0.361 | 0.244 |
| Croatia | 0.316 | 0.483 | 0.041 | 0.142 | 0.034 | 0.085 | 0.010 | 0.089 | 0.357 | 0.241 |
| Macao, China | 0.318 | 0.489 | 0.040 | 0.142 | 0.034 | 0.085 | 0.010 | 0.089 | 0.358 | 0.242 |
| Lithuania | 0.319 | 0.640 | 0.019 | 0.142 | 0.032 | 0.085 | 0.006 | 0.078 | 0.382 | 0.256 |
| Estonia | 0.332 | 0.566 | 0.029 | 0.142 | 0.033 | 0.085 | 0.008 | 0.083 | 0.371 | 0.249 |
| Brunei Darussalam | 0.347 | 0.552 | 0.030 | 0.142 | 0.033 | 0.085 | 0.008 | 0.084 | 0.369 | 0.248 |
| Slovak Republic | 0.351 | 0.520 | 0.035 | 0.142 | 0.034 | 0.085 | 0.009 | 0.086 | 0.364 | 0.245 |
| Hungary | 0.353 | 0.514 | 0.036 | 0.142 | 0.034 | 0.085 | 0.009 | 0.087 | 0.363 | 0.245 |
| Korea, Rep. | 0.379 | 0.392 | 0.057 | 0.143 | 0.036 | 0.084 | 0.013 | 0.097 | 0.339 | 0.231 |
| Bahrain | 0.380 | 0.666 | 0.016 | 0.142 | 0.031 | 0.085 | 0.006 | 0.077 | 0.385 | 0.258 |
| Czech Republic | 0.420 | 0.607 | 0.023 | 0.142 | 0.032 | 0.085 | 0.007 | 0.080 | 0.377 | 0.253 |
| Slovenia | 0.439 | 0.634 | 0.020 | 0.142 | 0.032 | 0.085 | 0.006 | 0.079 | 0.381 | 0.255 |
| Israel | 0.446 | 0.577 | 0.027 | 0.142 | 0.033 | 0.085 | 0.008 | 0.082 | 0.373 | 0.250 |

--continued

Conditional marginal shares for food subgroups, 144 countries, 2005, *continued*

| Country | Per capita income | Per capita food | Cereals | Meats | Fish | Dairy | Oils & fats | Fruits & vegetables | Food other | Beverages & tobacco |
|------------------------|-------------------|-----------------|---------|-------|-------|-------|-------------|---------------------|------------|---------------------|
| High-income countries: | | | | | | | | | | |
| Portugal | 0.466 | 0.797 | 0.002 | 0.142 | 0.030 | 0.086 | 0.003 | 0.070 | 0.401 | 0.267 |
| Qatar | 0.474 | 0.613 | 0.022 | 0.142 | 0.032 | 0.085 | 0.007 | 0.080 | 0.378 | 0.253 |
| Singapore | 0.480 | 0.432 | 0.049 | 0.143 | 0.035 | 0.084 | 0.012 | 0.094 | 0.347 | 0.236 |
| Malta | 0.501 | 0.769 | 0.005 | 0.142 | 0.030 | 0.086 | 0.004 | 0.071 | 0.398 | 0.265 |
| Kuwait | 0.507 | 0.762 | 0.006 | 0.142 | 0.030 | 0.086 | 0.004 | 0.071 | 0.397 | 0.265 |
| New Zealand | 0.551 | 0.734 | 0.009 | 0.142 | 0.031 | 0.085 | 0.004 | 0.073 | 0.394 | 0.263 |
| Finland | 0.562 | 0.709 | 0.011 | 0.142 | 0.031 | 0.085 | 0.005 | 0.074 | 0.391 | 0.261 |
| Taiwan, China | 0.567 | 0.675 | 0.015 | 0.142 | 0.031 | 0.085 | 0.006 | 0.076 | 0.387 | 0.258 |
| Spain | 0.584 | 1.132 | -0.025 | 0.141 | 0.027 | 0.086 | -0.002 | 0.056 | 0.432 | 0.285 |
| Italy | 0.592 | 0.834 | -0.001 | 0.142 | 0.029 | 0.086 | 0.003 | 0.068 | 0.405 | 0.269 |
| Ireland | 0.604 | 0.734 | 0.009 | 0.142 | 0.031 | 0.085 | 0.004 | 0.073 | 0.394 | 0.263 |
| Denmark | 0.607 | 0.659 | 0.017 | 0.142 | 0.031 | 0.085 | 0.006 | 0.077 | 0.384 | 0.257 |
| Sweden | 0.618 | 0.635 | 0.020 | 0.142 | 0.032 | 0.085 | 0.006 | 0.078 | 0.381 | 0.255 |
| Hong Kong, China | 0.623 | 0.639 | 0.019 | 0.142 | 0.032 | 0.085 | 0.006 | 0.078 | 0.382 | 0.256 |
| Australia | 0.636 | 0.746 | 0.007 | 0.142 | 0.030 | 0.086 | 0.004 | 0.072 | 0.395 | 0.263 |
| Cyprus | 0.640 | 0.999 | -0.015 | 0.141 | 0.028 | 0.086 | 0.000 | 0.061 | 0.421 | 0.278 |
| Belgium | 0.643 | 0.747 | 0.007 | 0.142 | 0.030 | 0.086 | 0.004 | 0.072 | 0.395 | 0.264 |
| Japan | 0.644 | 0.682 | 0.014 | 0.142 | 0.031 | 0.085 | 0.005 | 0.076 | 0.387 | 0.259 |
| France | 0.658 | 0.787 | 0.003 | 0.142 | 0.030 | 0.086 | 0.003 | 0.070 | 0.400 | 0.266 |
| Germany | 0.681 | 0.757 | 0.006 | 0.142 | 0.030 | 0.086 | 0.004 | 0.072 | 0.397 | 0.264 |
| Canada | 0.682 | 0.670 | 0.016 | 0.142 | 0.031 | 0.085 | 0.006 | 0.076 | 0.386 | 0.258 |
| Iceland | 0.689 | 0.755 | 0.006 | 0.142 | 0.030 | 0.086 | 0.004 | 0.072 | 0.396 | 0.264 |
| Netherlands | 0.692 | 0.750 | 0.007 | 0.142 | 0.030 | 0.086 | 0.004 | 0.072 | 0.396 | 0.264 |
| Norway | 0.692 | 0.711 | 0.011 | 0.142 | 0.031 | 0.085 | 0.005 | 0.074 | 0.391 | 0.261 |
| United Kingdom | 0.720 | 0.846 | -0.002 | 0.142 | 0.029 | 0.086 | 0.002 | 0.067 | 0.406 | 0.270 |
| Switzerland | 0.726 | 0.958 | -0.012 | 0.141 | 0.028 | 0.086 | 0.001 | 0.062 | 0.417 | 0.276 |
| Austria | 0.750 | 0.891 | -0.006 | 0.142 | 0.029 | 0.086 | 0.002 | 0.065 | 0.411 | 0.273 |
| Luxembourg | 0.906 | 1.239 | -0.032 | 0.141 | 0.026 | 0.087 | -0.003 | 0.052 | 0.440 | 0.289 |
| United States | 1.000 | 1.000 | -0.015 | 0.141 | 0.028 | 0.086 | 0.000 | 0.061 | 0.421 | 0.278 |
| Low-income average | 0.058 | 0.130 | 0.161 | 0.145 | 0.049 | 0.082 | 0.032 | 0.150 | 0.220 | 0.162 |
| Middle-income average | 0.258 | 0.439 | 0.051 | 0.143 | 0.036 | 0.084 | 0.012 | 0.094 | 0.345 | 0.234 |
| High-income average | 0.638 | 0.781 | 0.005 | 0.142 | 0.030 | 0.086 | 0.004 | 0.071 | 0.398 | 0.265 |

Countries are reported based on ascending per capita real income levels.

Source: Authors' calculation using 2005 International Comparison Program (ICP) data.