

# The Strategic Marketing Institute Working Paper

## Spending on Food: Implications for Michigan Agriculture

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## **Introduction**

Researchers at the Economic Research Service (ERS) at the U.S. Department of Agriculture (USDA) recently compiled spending figures on food purchases in 114 countries. They also compiled income elasticities for various food categories for the same 114 countries. These figures have profound implications for the agri-food industry in Michigan and the United States. The figures provide evidence of potential markets and export opportunities for farmers and processors.

The ERS grouped food items into the following general categories: beverages and tobacco, breads and cereals, dairy, fish, fruits and vegetables, meat, and other foods. The ERS also calculated total food expenditure as a percentage of total spending. The figures ran from a low of 9.726 percent in the U.S. to a high of 73.507 percent in the former Soviet Republic of Azerbaijan. Spending on food tends to be highest in the former soviet republics, Africa, and parts of Asia. It is lowest in the developed world such as the U.S., Canada and Western Europe. Generally speaking, countries that have high spending levels on food have the potential to be markets for U.S. exports *if they can generate sufficient foreign exchange earnings*, while countries that have relatively low spending on food generally have poorer export potential.

Income elasticity is a measure of the responsiveness of food demand to changes in income. Mathematically, it is the percentage change in demand divided by the percentage change in income. For most goods as income increases demand increases. The figures generated by the ERS show that this is the case for food. Income elasticities are closely related to food spending. Developed countries that spend relatively little on

food have low income elasticities. Countries that have high levels of spending on food tend to have higher income elasticities.

Spending on food and income elasticities provide information to farmers, processors and exporters on possible opportunities to market commodities and products overseas. Countries with growing economies that have relatively high income elasticities and have a high level of food spending are potential targets for U.S. and Michigan exports. Mature economies with well fed populations are less likely to be good potential markets for U.S. and Michigan products. The U.S. is the best example of a mature market. While there may be individual opportunities for expanded markets in the U.S. for the most part, it appears the U.S. food market is a zero sum game, expansion in one food category comes at the expense of a different food category.

## **Spending on Food**

### **The U.S.**

Table 1 outlines spending on food. The column “Total Food Expenditure” represents the percentage of spending devoted to food purchases. The individual categories represent the percentage share of the total food budget. Using Albania as an example, 69.264 percent of spending is devoted to food purchases: 5.125 percent of food purchases are devoted to tobacco and beverages, 20.635 percent to breads and cereals, 17.635 percent dairy, 9.544 percent fats and oils, 0.307 percent fish, 22.637 fruits and vegetables, 18.994 percent meat, and 5.392 other foods.

The U.S. is an example of a mature market only 9.726 percent of all spending is on food. This is the lowest of any nation. Of this amount, purchases of tobacco and beverages are the largest component, comprising 28.710 percent of all food related

purchases. This is also typical for advanced economies, spending on beverages and tobacco is generally the highest proportion of the typical food budget. For example, in the United Kingdom, spending on tobacco and beverages account for more than 47 percent of all spending on food related items. One reason the budget share of tobacco and beverages is so high in these economies is fact that alcohol and tobacco are often taxed. This is not only the case in the U.S., but for most European Union (EU) nations as well as Canada. The second largest segment of the food budget in the U.S. is meat products at 19.583 percent, followed by fruits and vegetables at 14.662 percent.

### **Europe and the Former Soviet Bloc**

Food consumption patterns in Western and Northern Europe are similar to those in the U.S. Food purchases are 14.021 percent of all purchases in Denmark, 15.345 percent in France, 13.093 percent in Germany, 13.289 in the Netherlands, 15.983 in Norway, and 17.535 percent in Spain, and 16.474 percent in the United Kingdom. In every country except France and Spain tobacco and beverages constituted the largest share of the food budget. For France and Spain, meats were the largest share of the food budget. While the citizens of these nations spend more on food than the U.S., it appears that the difference is not great enough for the EU and others to reduce their agricultural subsidies, and trade barriers or their opposition to Genetically Modified Organisms (GMOs).

One group of countries that do show promise as potential markets for U.S. and Michigan agricultural exports are countries of the former Soviet Bloc. Especially promising is Central Europe and the Baltic Republics. For example, purchases in the Czech Republic account for almost 25 percent of all spending, purchases in Estonia

account for more than one third of all spending, and food spending in the Ukraine account for more than 45 percent of all purchases. Russia itself shows potential; more than 34 percent of all purchases are food products.

However, the window of opportunity in these countries may be limited. Bulgaria, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia, and Slovenia have applied for membership in the EU. The best potential markets, the Czech Republic, Hungary, and Estonia, are also most likely to obtain entry into the EU first. Establishing a market presence in these countries before they are accepted into the EU will be important. The development of the Russian and Asian republics will be dependent on their economic growth much of which is dependent on exploiting oil and other resource based industries. If these economies grow, the potential for increased U.S. and Michigan exports will increase.

### **Asia and Latin America**

Asian markets are a mixed bag. Food consumption patterns in Japan and Hong Kong are similar to Europe. In the case of Japan, this means that the high levels of protection for Japanese farmers will likely continue. More than 31 percent of all spending in South Korea is on food. As the South Korean economy grows, its potential as a possible market for U.S. goods will improve. Unfortunately, the ERS did not calculate figures for either India or China, the two most populous countries in the world. Both countries appear to offer potential as export markets in some commodities. However, they also present the potential as competitors to U.S. and Michigan farmers in other commodities.

Latin America is an area that shows promise. In Mexico, more than 25 percent of all purchases are on food. The figure is 22.715 percent in Brazil, 22.961 in Chile, and 32.794 in Argentina. Nafta has been successful in increasing market access to U.S. producers in Mexico. Furthermore, given the different growing season, exports to the Southern Hemisphere would not directly compete against locally grown produce. This fact has improved the competitive position of U.S. agriculture generally, and Michigan producers of fruits and vegetables in particular. Expanding free trade zones beyond Canada and the U.S. could expand U.S. and Michigan export opportunities.

### **Income Elasticities**

#### **The U.S.**

As previously mentioned, income elasticities figures are similar to the spending figures. Low income elasticities are found in those countries that have a low level of spending on food. Figure 2 gives the income elasticities for various food groups for 114 countries. For example, in Albania, a one percent increase in income will increase the demand for beverages and tobacco by 0.951 percent, breads and cereals by 0.431 percent, dairy by 0.792 percent, fats and oils by 0.462 percent, etc.

The figures show that while the income elasticity of demand is positive it is in virtually every case less than one. In short Engle's Law holds. As incomes rise less and less income is devoted to food purchases. Furthermore, as incomes increase the income elasticity of demand declines. In a few cases the income elasticity for beverages and tobacco is greater than one meaning that the demand for these goods increases at a greater rate than income. However, this is true only in some African nations and some former Soviet Republics.

No nation has lower income elasticities than the U.S. The highest income elasticity is for beverages and tobacco at 0.134 percent. The lowest is breads and cereals at 0.05 percent. This means that the demand for food is almost completely unresponsive to changes in income. Rising incomes in the U.S. will be spent on items other than food.

### **Europe and the Former Soviet Bloc**

The income elasticity of demand for food items in Western and Northern Europe are higher than the U.S. but still well below those of most other nations. As is the case with the U.S., the income elasticities for beverages and tobacco tend to be higher than for other food categories. As is also the case with the U.S., the income elasticities for breads and cereals are the lowest although the income elasticity for fats and oils are also very low. The figures for Western and Northern Europe reflect nations that are well developed and well fed.

The potential for exports is greater for former Soviet Republics and satellite nations. For example the income elasticity of demand for meat in the Czech Republic is 0.507. The income elasticity of demand for meat in Estonia is 0.606. The income elasticity of demand in Russia for dairy, fish, and meat is above 0.600. These markets show potential if access can be obtained and if incomes in these countries rise. In order to fully take advantage of these developing markets, these countries will need access to foreign exchange earnings.

### **Asia and Latin America**

Income elasticities in Japan tend to be similar to those of Western and Northern Europe. Income elasticities for South Korea are somewhat higher, especially for dairy

and meat products. This reinforces the implication that South Korea is a potential market for U.S. goods.

Latin America also shows promise in certain types of products. For example the income elasticity of demand for dairy products in Mexico is 0.679, and for meat products 0.630. Income elasticities for these types of products are also high in Chile. Income elasticities for all types of products are relatively high for Brazil as well.

### **Implications**

The data generated by the ERS has several implications. The U.S. is a mature market. In many respects the U.S. market appears to be a zero sum game. While it may be possible for a product or commodity to capture a larger share the U.S. market, it will be at the cost of another product or commodity. Furthermore, the income elasticity figures show that an economic rebound in the U.S. will have little impact on the domestic agri-food industry.

As a result, if the U.S. agri-food sector is to grow and prosper access to foreign markets will be important. Western and Northern Europe are also mature markets; increasing market access in these markets will be extremely difficult. Former Soviet Bloc countries have more potential. However, the window of access is limited. Many of the best potential markets such as the Czech Republic, Estonia, and Hungary have applied for membership in the EU. Russia also has potential for U.S. exports, especially if the Russian oil industry increases production and foreign exchange earnings in that country increase.

Since China and India were not included in the ERS figures determining their potential as a market for U.S. products is difficult. This is unfortunate given that these

are the two most populous nations in the world. Japan is similar to Western Europe. However, the figures indicate that South Korea has potential for being a market for U.S. food exports.

Of all the areas of the world analyzed, Latin America has the most promise. Nafta has increased market access to Mexico. Furthermore, the growing seasons in North America is opposite those in the Southern Hemisphere. Therefore, there is not direct competition in the fresh fruit and vegetable markets in many countries. Expanding Nafta to include other countries would likely have the benefit of improving exports to this part of the world.

Another implication of these figures is the need to develop alternative uses for agricultural products. As noted the U.S. market is not a growth market. While there is a potential to increase exports, that potential may not be realized. It is increasingly difficult to reduce trade barriers and promote freer trade. As an alternative to food uses non food uses for agricultural output could be developed. Examples include energy (e.g. ethanol, biodiesel), industrial uses (e.g. packaging, industrial parts, etc.) and pharmaceuticals, sometimes referred to a nutraceuticals. Michigan, with its ties to both manufacturing and pharmaceuticals may be well positioned to take advantage of these nontraditional emerging markets.

**Table 1: Food Budget Shares for 114 Countries**

| <b>Country</b>                 | <b>Beverages<br/>and<br/>Tobacco</b> | <b>Breads<br/>and<br/>Cereals</b> | <b>Dairy</b> | <b>Fats<br/>and<br/>Oils</b> | <b>Fish</b> | <b>Fruits and<br/>Vegetables</b> | <b>Meat</b> | <b>Other<br/>Foods</b> | <b>Total Food<br/>Expenditure</b> |
|--------------------------------|--------------------------------------|-----------------------------------|--------------|------------------------------|-------------|----------------------------------|-------------|------------------------|-----------------------------------|
| Albania                        | 5.125                                | 20.635                            | 17.635       | 9.544                        | 0.307       | 22.637                           | 18.994      | 5.392                  | 69.264                            |
| Antigua and<br>Barbuda         | 8.732                                | 25.776                            | 11.047       | 4.682                        | 10.363      | 16.623                           | 7.628       | 15.150                 | 36.119                            |
| Argentina                      | 15.016                               | 14.593                            | 12.672       | 3.461                        | 1.390       | 17.224                           | 26.134      | 9.510                  | 32.794                            |
| Armenia                        | 5.204                                | 18.856                            | 6.229        | 9.580                        | 1.570       | 34.360                           | 8.179       | 16.022                 | 69.657                            |
| Australia                      | 25.244                               | 13.499                            | 9.672        | 1.655                        | 3.110       | 18.343                           | 16.913      | 11.564                 | 15.071                            |
| Austria                        | 23.724                               | 13.449                            | 11.290       | 3.799                        | 1.642       | 14.105                           | 20.980      | 11.012                 | 13.534                            |
| Azerbaijan                     | 2.894                                | 39.017                            | 5.644        | 10.216                       | 1.071       | 13.038                           | 14.400      | 13.720                 | 73.507                            |
| Bahamas                        | 21.889                               | 14.055                            | 11.060       | 5.530                        | 6.221       | 11.290                           | 23.272      | 6.682                  | 35.734                            |
| Bahrain                        | 7.912                                | 13.132                            | 10.385       | 3.132                        | 9.451       | 25.549                           | 13.462      | 16.978                 | 28.549                            |
| Bangladesh                     | 4.115                                | 50.168                            | 3.209        | 3.880                        | 9.211       | 9.581                            | 4.376       | 15.458                 | 56.050                            |
| Barbados                       | 18.001                               | 13.119                            | 9.019        | 3.279                        | 4.918       | 18.042                           | 22.142      | 11.480                 | 11.100                            |
| Belarus                        | 12.999                               | 14.981                            | 18.055       | 6.307                        | 4.091       | 14.788                           | 21.673      | 7.105                  | 50.454                            |
| Belgium                        | 21.059                               | 10.783                            | 10.959       | 3.867                        | 6.063       | 12.382                           | 24.723      | 10.165                 | 14.357                            |
| Belize                         | 15.000                               | 10.888                            | 10.293       | 4.411                        | 0.882       | 7.352                            | 6.470       | 44.703                 | 31.174                            |
| Benin                          | 9.455                                | 23.568                            | 4.127        | 4.477                        | 7.564       | 33.245                           | 14.270      | 3.294                  | 55.398                            |
| Bermuda                        | 20.284                               | 10.065                            | 7.844        | 4.336                        | 2.972       | 13.525                           | 11.546      | 29.428                 | 14.232                            |
| Bolivia                        | 13.404                               | 21.906                            | 5.948        | 3.164                        | 0.887       | 22.171                           | 23.897      | 8.624                  | 42.516                            |
| Botswana                       | 36.429                               | 24.229                            | 4.702        | 2.252                        | 0.729       | 6.226                            | 11.856      | 13.578                 | 32.796                            |
| Brazil                         | 12.315                               | 16.798                            | 14.036       | 3.622                        | 2.309       | 14.833                           | 24.540      | 11.546                 | 22.715                            |
| Bulgaria                       | 12.346                               | 17.074                            | 13.936       | 3.486                        | 0.813       | 24.777                           | 19.683      | 7.886                  | 30.699                            |
| Cameroon                       | 19.144                               | 16.075                            | 1.248        | 3.794                        | 4.663       | 31.211                           | 16.221      | 7.646                  | 43.805                            |
| Canada                         | 29.481                               | 11.429                            | 11.185       | 2.108                        | 2.651       | 18.119                           | 16.456      | 8.570                  | 11.680                            |
| Chile                          | 13.414                               | 21.483                            | 11.193       | 4.595                        | 2.063       | 17.334                           | 21.791      | 8.127                  | 22.961                            |
| Congo                          | 9.526                                | 10.665                            | 3.856        | 2.505                        | 14.500      | 44.849                           | 9.225       | 4.874                  | 46.917                            |
| Cote d'Ivoire<br>(Ivory Coast) | 19.518                               | 19.598                            | 4.421        | 1.494                        | 2.156       | 23.259                           | 14.377      | 15.176                 | 44.318                            |
| Czech<br>Republic              | 28.092                               | 10.250                            | 11.628       | 4.034                        | 1.755       | 12.377                           | 21.272      | 10.592                 | 24.996                            |
| Denmark                        | 28.806                               | 8.929                             | 11.115       | 2.157                        | 2.040       | 11.925                           | 20.377      | 14.650                 | 14.021                            |
| Dominica                       | 6.008                                | 16.865                            | 8.749        | 2.146                        | 9.565       | 29.686                           | 11.525      | 15.456                 | 38.274                            |
| Ecuador                        | 9.784                                | 14.802                            | 12.917       | 5.900                        | 5.480       | 21.091                           | 19.505      | 10.521                 | 29.091                            |
| Egypt                          | 9.249                                | 24.649                            | 10.104       | 8.361                        | 4.558       | 12.529                           | 23.625      | 6.925                  | 48.078                            |
| Estonia                        | 21.391                               | 16.081                            | 13.172       | 4.732                        | 2.966       | 10.185                           | 20.264      | 11.210                 | 33.452                            |
| Fiji                           | 18.198                               | 15.716                            | 6.992        | 3.959                        | 11.848      | 21.165                           | 12.753      | 9.370                  | 36.279                            |
| Finland                        | 31.447                               | 11.444                            | 12.569       | 1.963                        | 2.845       | 13.451                           | 15.161      | 11.120                 | 14.672                            |
| France                         | 21.358                               | 10.887                            | 11.799       | 2.851                        | 4.750       | 12.389                           | 24.921      | 11.045                 | 15.345                            |
| Gabon                          | 9.526                                | 10.665                            | 3.856        | 2.505                        | 14.500      | 44.850                           | 9.225       | 4.873                  | 47.940                            |
| Georgia                        | 4.391                                | 27.098                            | 14.451       | 6.991                        | 1.521       | 21.991                           | 12.860      | 10.698                 | 47.385                            |
| Germany                        | 28.246                               | 14.872                            | 7.109        | 2.272                        | 1.871       | 8.279                            | 20.299      | 17.052                 | 13.093                            |
| Greece                         | 24.556                               | 7.252                             | 13.577       | 5.375                        | 4.534       | 17.269                           | 16.033      | 11.405                 | 21.168                            |
| Grenada                        | 8.732                                | 25.776                            | 11.047       | 4.682                        | 10.363      | 16.623                           | 7.628       | 15.150                 | 40.991                            |
| Guinea                         | 19.144                               | 16.074                            | 1.248        | 3.794                        | 4.663       | 31.211                           | 16.221      | 7.646                  | 43.693                            |
| Hong Kong                      | 17.865                               | 9.044                             | 3.439        | 3.325                        | 19.656      | 11.807                           | 22.674      | 12.189                 | 10.284                            |

**Table 1 (continued): Food Budget Shares for 114 Countries**

| <b>Country</b> | <b>Beverages<br/>and<br/>Tobacco</b> | <b>Breads<br/>and<br/>Cereals</b> | <b>Dairy</b> | <b>Fats<br/>and<br/>Oils</b> | <b>Fish</b> | <b>Fruits and<br/>Vegetables</b> | <b>Meat</b> | <b>Other<br/>Foods</b> | <b>Total Food<br/>Expenditure</b> |
|----------------|--------------------------------------|-----------------------------------|--------------|------------------------------|-------------|----------------------------------|-------------|------------------------|-----------------------------------|
| Hungary        | 23.581                               | 10.907                            | 12.759       | 4.735                        | 0.771       | 12.674                           | 20.482      | 14.091                 | 22.545                            |
| Iceland        | 27.406                               | 11.866                            | 11.558       | 1.616                        | 5.045       | 10.827                           | 16.450      | 15.232                 | 18.900                            |
| Indonesia      | 11.324                               | 33.472                            | 5.704        | 4.736                        | 8.703       | 23.726                           | 5.135       | 7.200                  | 50.620                            |
| Iran           | 4.794                                | 24.799                            | 11.167       | 6.963                        | 1.657       | 18.619                           | 23.879      | 8.122                  | 32.546                            |
| Ireland        | 37.326                               | 9.511                             | 10.093       | 2.739                        | 1.972       | 13.423                           | 16.377      | 8.558                  | 16.586                            |
| Israel         | 18.589                               | 14.446                            | 12.972       | 1.862                        | 2.511       | 19.366                           | 14.106      | 16.147                 | 17.697                            |
| Italy          | 16.184                               | 11.317                            | 13.901       | 3.856                        | 5.401       | 19.142                           | 23.584      | 6.614                  | 16.593                            |
| Jamaica        | 11.504                               | 18.916                            | 11.870       | 3.164                        | 6.806       | 14.122                           | 24.720      | 8.898                  | 34.778                            |
| Japan          | 23.148                               | 22.279                            | 4.793        | 0.661                        | 17.024      | 12.787                           | 7.818       | 11.490                 | 14.878                            |
| Jordan         | 10.054                               | 8.418                             | 11.334       | 9.039                        | 1.682       | 15.474                           | 27.557      | 16.443                 | 37.667                            |
| Kazakhstan     | 11.173                               | 30.773                            | 9.202        | 7.122                        | 1.605       | 9.320                            | 17.758      | 13.048                 | 51.817                            |
| Kenya          | 15.486                               | 32.488                            | 15.084       | 2.643                        | 0.427       | 17.568                           | 5.134       | 11.170                 | 45.823                            |
| Korea          | 17.821                               | 20.700                            | 5.020        | 0.879                        | 11.688      | 21.231                           | 12.694      | 9.967                  | 31.640                            |
| Kyrgyzstan     | 10.840                               | 21.084                            | 8.107        | 6.099                        | 0.348       | 33.861                           | 9.645       | 10.015                 | 47.150                            |
| Latvia         | 18.917                               | 12.887                            | 14.890       | 4.293                        | 3.047       | 17.801                           | 18.867      | 9.298                  | 41.762                            |
| Lebanon        | 13.330                               | 10.465                            | 9.446        | 4.214                        | 1.680       | 35.142                           | 18.838      | 6.885                  | 39.332                            |
| Lithuania      | 19.879                               | 12.918                            | 14.103       | 4.829                        | 3.468       | 11.982                           | 20.671      | 12.151                 | 40.416                            |
| Luxembourg     | 43.119                               | 8.879                             | 7.828        | 1.879                        | 2.264       | 11.643                           | 18.302      | 6.087                  | 17.084                            |
| Macedonia      | 15.608                               | 18.103                            | 12.363       | 5.313                        | 2.111       | 18.451                           | 19.350      | 8.700                  | 34.725                            |
| Madagascar     | 5.918                                | 44.469                            | 2.092        | 2.346                        | 3.788       | 26.183                           | 9.648       | 5.555                  | 65.883                            |
| Malawi         | 4.865                                | 40.438                            | 3.231        | 3.109                        | 12.840      | 13.210                           | 17.475      | 4.832                  | 53.350                            |
| Mali           | 6.756                                | 34.392                            | 3.807        | 8.107                        | 3.008       | 9.892                            | 14.105      | 19.933                 | 53.271                            |
| Mauritius      | 24.690                               | 10.056                            | 10.472       | 5.222                        | 8.357       | 17.857                           | 15.551      | 7.795                  | 28.123                            |
| Mexico         | 18.880                               | 21.669                            | 10.878       | 2.304                        | 3.121       | 13.004                           | 17.328      | 12.816                 | 26.627                            |
| Moldova        | 7.058                                | 19.778                            | 16.957       | 6.050                        | 1.689       | 24.043                           | 15.857      | 8.568                  | 43.445                            |
| Mongolia       | 6.126                                | 30.378                            | 18.107       | 3.462                        | 0.032       | 3.780                            | 31.207      | 6.909                  | 58.737                            |
| Morocco        | 11.851                               | 20.152                            | 6.554        | 8.597                        | 1.921       | 18.408                           | 19.914      | 12.604                 | 45.607                            |
| Nepal          | 9.790                                | 57.613                            | 5.359        | 4.330                        | 0.628       | 14.575                           | 3.293       | 4.412                  | 57.884                            |
| Netherlands    | 24.000                               | 12.357                            | 12.610       | 2.213                        | 2.162       | 15.719                           | 18.672      | 12.266                 | 13.289                            |
| New Zealand    | 32.928                               | 12.616                            | 9.195        | 2.284                        | 1.740       | 16.851                           | 13.873      | 10.513                 | 15.187                            |
| Nigeria        | 2.731                                | 34.080                            | 5.613        | 5.146                        | 15.222      | 15.437                           | 12.883      | 8.888                  | 72.974                            |
| Norway         | 29.994                               | 7.700                             | 12.789       | 1.525                        | 4.851       | 11.065                           | 16.345      | 15.732                 | 15.983                            |
| Oman           | 4.654                                | 16.836                            | 11.213       | 4.638                        | 7.719       | 22.252                           | 16.375      | 16.312                 | 24.138                            |
| Pakistan       | 4.385                                | 21.202                            | 26.841       | 10.064                       | 0.707       | 17.317                           | 7.682       | 11.804                 | 46.988                            |
| Paraguay       | 11.050                               | 15.455                            | 9.960        | 4.121                        | 3.091       | 12.707                           | 33.657      | 9.960                  | 27.275                            |
| Peru           | 9.226                                | 21.304                            | 9.622        | 3.700                        | 4.652       | 21.367                           | 22.180      | 7.950                  | 30.313                            |
| Philippines    | 11.910                               | 29.728                            | 6.711        | 1.761                        | 14.503      | 11.095                           | 14.486      | 9.805                  | 48.351                            |
| Poland         | 26.530                               | 10.328                            | 8.352        | 3.443                        | 1.546       | 14.491                           | 21.245      | 14.065                 | 30.650                            |
| Portugal       | 21.488                               | 13.061                            | 8.535        | 3.653                        | 12.179      | 14.501                           | 22.399      | 4.185                  | 23.227                            |
| Qatar          | 7.319                                | 10.635                            | 10.356       | 2.721                        | 5.613       | 20.991                           | 23.154      | 19.211                 | 26.217                            |
| Romania        | 13.471                               | 14.624                            | 12.817       | 5.713                        | 0.795       | 20.606                           | 24.344      | 7.630                  | 45.264                            |
| Russia         | 15.459                               | 14.260                            | 13.265       | 4.262                        | 4.130       | 16.237                           | 22.291      | 9.465                  | 34.346                            |
| Senegal        | 6.535                                | 26.512                            | 4.400        | 13.948                       | 13.122      | 13.080                           | 13.928      | 8.474                  | 53.350                            |
| Sierra Leone   | 5.289                                | 34.935                            | 1.135        | 12.242                       | 12.732      | 16.469                           | 4.376       | 12.822                 | 62.094                            |
| Singapore      | 25.213                               | 10.294                            | 4.970        | 1.821                        | 14.989      | 18.143                           | 13.286      | 11.284                 | 13.041                            |
| Slovakia       | 25.444                               | 10.039                            | 13.864       | 4.570                        | 1.683       | 13.435                           | 20.562      | 10.404                 | 32.059                            |

**Table 1 (continued): Food Budget Shares for 114 Countries**

| <b>Country</b>         | <b>Beverages<br/>and<br/>Tobacco</b> | <b>Breads<br/>and<br/>Cereals</b> | <b>Dairy</b> | <b>Fats<br/>and<br/>Oils</b> | <b>Fish</b> | <b>Fruits and<br/>Vegetables</b> | <b>Meat</b> | <b>Other<br/>Foods</b> | <b>Total Food<br/>Expenditure</b> |
|------------------------|--------------------------------------|-----------------------------------|--------------|------------------------------|-------------|----------------------------------|-------------|------------------------|-----------------------------------|
| Slovenia               | 24.129                               | 10.078                            | 11.413       | 2.979                        | 1.905       | 17.207                           | 22.131      | 10.159                 | 21.342                            |
| Spain                  | 17.701                               | 12.465                            | 11.600       | 4.769                        | 10.322      | 13.818                           | 23.975      | 5.349                  | 17.525                            |
| Sri Lanka              | 14.930                               | 21.806                            | 6.666        | 1.439                        | 12.446      | 26.419                           | 1.781       | 14.514                 | 63.550                            |
| St. Kitts and<br>Nevis | 8.733                                | 25.776                            | 11.047       | 4.682                        | 10.363      | 16.623                           | 7.628       | 15.150                 | 36.330                            |
| St. Lucia              | 7.622                                | 14.392                            | 11.499       | 2.836                        | 7.381       | 30.323                           | 21.234      | 4.714                  | 46.620                            |
| Swaziland              | 11.948                               | 25.255                            | 9.419        | 4.365                        | 2.276       | 11.334                           | 22.874      | 12.530                 | 27.483                            |
| Sweden                 | 27.468                               | 11.424                            | 11.711       | 2.288                        | 4.368       | 14.445                           | 15.179      | 13.118                 | 13.255                            |
| Switzerland            | 26.183                               | 10.734                            | 15.157       | 1.970                        | 1.813       | 17.019                           | 16.552      | 10.602                 | 14.572                            |
| Syria                  | 10.319                               | 8.499                             | 12.253       | 13.020                       | 0.988       | 27.845                           | 16.008      | 11.068                 | 47.924                            |
| Tajikistan             | 1.190                                | 46.888                            | 1.745        | 10.803                       | 0.371       | 31.619                           | 5.248       | 2.135                  | 68.942                            |
| Tanzania               | 4.745                                | 39.548                            | 3.558        | 3.302                        | 6.377       | 24.223                           | 9.598       | 8.649                  | 73.239                            |
| Thailand               | 28.567                               | 16.111                            | 5.232        | 2.764                        | 3.310       | 16.385                           | 18.644      | 8.987                  | 28.555                            |
| Trinidad and<br>Tobago | 16.998                               | 14.221                            | 9.362        | 5.141                        | 5.730       | 14.635                           | 16.003      | 17.910                 | 22.063                            |
| Tunisia                | 13.659                               | 13.832                            | 10.581       | 4.317                        | 5.021       | 28.194                           | 13.559      | 10.839                 | 35.949                            |
| Turkey                 | 9.470                                | 20.340                            | 12.840       | 8.420                        | 1.010       | 23.230                           | 13.550      | 11.140                 | 32.605                            |
| Turkmenistan           | 6.450                                | 24.809                            | 9.907        | 6.193                        | 1.038       | 20.235                           | 23.116      | 8.251                  | 50.818                            |
| Ukraine                | 9.382                                | 17.816                            | 13.994       | 4.211                        | 2.503       | 19.872                           | 21.626      | 10.597                 | 45.034                            |
| United<br>Kingdom      | 47.530                               | 8.306                             | 6.884        | 1.271                        | 2.254       | 12.018                           | 12.573      | 9.164                  | 16.374                            |
| United States          | 28.710                               | 11.387                            | 8.587        | 1.771                        | 1.194       | 14.662                           | 19.583      | 14.106                 | 9.726                             |
| Uruguay                | 19.900                               | 21.455                            | 10.170       | 1.973                        | 1.690       | 15.247                           | 20.135      | 9.429                  | 25.246                            |
| Uzbekistan             | 4.798                                | 27.316                            | 12.000       | 5.055                        | 0.151       | 19.301                           | 10.670      | 20.709                 | 48.328                            |
| Venezuela              | 7.180                                | 26.930                            | 10.043       | 3.865                        | 3.769       | 17.082                           | 22.369      | 8.762                  | 29.468                            |
| Vietnam                | 7.847                                | 35.654                            | 2.812        | 1.513                        | 10.337      | 9.437                            | 21.926      | 10.475                 | 64.754                            |
| Yemen                  | 22.888                               | 26.113                            | 5.701        | 5.530                        | 6.127       | 10.753                           | 11.828      | 11.060                 | 61.131                            |
| Zambia                 | 12.978                               | 18.451                            | 6.018        | 6.554                        | 12.277      | 13.118                           | 24.381      | 6.223                  | 60.808                            |
| Zimbabwe               | 13.908                               | 23.704                            | 8.988        | 6.682                        | 2.614       | 10.016                           | 22.044      | 12.043                 | 25.575                            |

Source: USDA Economic Research Service

Note: Total Food Expenditures represent the percentage of spending devoted to food purchases. The individual components represent the percentage of total food budget.

**Table 2: Income Elasticities for Food Subgroups for 114 Countries**

| Country                        | Beverages<br>and<br>Tobacco | Breads<br>and<br>Cereals | Dairy | Fats<br>and<br>Oils | Fish  | Fruits and<br>Vegetables | Meat  | Other<br>Foods |
|--------------------------------|-----------------------------|--------------------------|-------|---------------------|-------|--------------------------|-------|----------------|
| Albania                        | 0.951                       | 0.431                    | 0.792 | 0.462               | 0.823 | 0.588                    | 0.734 | 0.731          |
| Antigua and<br>Barbuda         | 0.770                       | 0.310                    | 0.667 | 0.351               | 0.688 | 0.493                    | 0.622 | 0.620          |
| Argentina                      | 0.670                       | 0.246                    | 0.587 | 0.290               | 0.604 | 0.432                    | 0.549 | 0.547          |
| Armenia                        | 1.023                       | 0.476                    | 0.814 | 0.500               | 0.850 | 0.605                    | 0.748 | 0.746          |
| Australia                      | 0.388                       | 0.143                    | 0.340 | 0.168               | 0.350 | 0.250                    | 0.318 | 0.317          |
| Austria                        | 0.404                       | 0.153                    | 0.353 | 0.178               | 0.364 | 0.260                    | 0.330 | 0.329          |
| Azerbaijan                     | 1.059                       | 0.493                    | 0.835 | 0.517               | 0.874 | 0.621                    | 0.767 | 0.764          |
| Bahamas                        | 0.489                       | 0.113                    | 0.438 | 0.171               | 0.450 | 0.320                    | 0.413 | 0.411          |
| Bahrain                        | 0.772                       | 0.309                    | 0.670 | 0.351               | 0.691 | 0.495                    | 0.625 | 0.623          |
| Bangladesh                     | 1.139                       | 0.523                    | 0.859 | 0.543               | 0.903 | 0.638                    | 0.784 | 0.781          |
| Barbados                       | 0.375                       | 0.175                    | 0.297 | 0.183               | 0.311 | 0.221                    | 0.273 | 0.272          |
| Belarus                        | 0.891                       | 0.411                    | 0.729 | 0.436               | 0.759 | 0.542                    | 0.673 | 0.671          |
| Belgium                        | 0.424                       | 0.163                    | 0.369 | 0.188               | 0.381 | 0.273                    | 0.345 | 0.344          |
| Belize                         | 0.899                       | 0.412                    | 0.741 | 0.439               | 0.771 | 0.551                    | 0.685 | 0.683          |
| Benin                          | 1.336                       | 0.568                    | 0.900 | 0.584               | 0.956 | 0.665                    | 0.812 | 0.809          |
| Bermuda                        | 0.338                       | 0.104                    | 0.300 | 0.133               | 0.308 | 0.220                    | 0.281 | 0.281          |
| Bolivia                        | 1.031                       | 0.480                    | 0.820 | 0.504               | 0.857 | 0.610                    | 0.754 | 0.751          |
| Botswana                       | 0.989                       | 0.458                    | 0.764 | 0.478               | 0.801 | 0.568                    | 0.700 | 0.697          |
| Brazil                         | 0.877                       | 0.404                    | 0.718 | 0.429               | 0.747 | 0.533                    | 0.663 | 0.661          |
| Bulgaria                       | 0.872                       | 0.401                    | 0.716 | 0.426               | 0.745 | 0.532                    | 0.662 | 0.660          |
| Cameroon                       | 1.227                       | 0.529                    | 0.842 | 0.545               | 0.893 | 0.623                    | 0.761 | 0.758          |
| Canada                         | 0.376                       | 0.155                    | 0.324 | 0.174               | 0.335 | 0.240                    | 0.302 | 0.301          |
| Chile                          | 0.824                       | 0.379                    | 0.676 | 0.403               | 0.704 | 0.502                    | 0.625 | 0.622          |
| Congo                          | 1.466                       | 0.567                    | 0.887 | 0.581               | 0.949 | 0.653                    | 0.794 | 0.791          |
| Cote d'Ivoire<br>(Ivory Coast) | 1.250                       | 0.535                    | 0.850 | 0.551               | 0.902 | 0.628                    | 0.767 | 0.764          |
| Czech Republic                 | 0.638                       | 0.272                    | 0.545 | 0.300               | 0.564 | 0.404                    | 0.507 | 0.506          |
| Denmark                        | 0.322                       | 0.124                    | 0.281 | 0.143               | 0.289 | 0.207                    | 0.262 | 0.261          |
| Dominica                       | 0.859                       | 0.382                    | 0.724 | 0.413               | 0.750 | 0.537                    | 0.671 | 0.669          |
| Ecuador                        | 1.089                       | 0.501                    | 0.825 | 0.521               | 0.867 | 0.613                    | 0.754 | 0.751          |
| Egypt                          | 0.898                       | 0.411                    | 0.741 | 0.438               | 0.770 | 0.550                    | 0.685 | 0.683          |
| Estonia                        | 0.776                       | 0.345                    | 0.654 | 0.374               | 0.678 | 0.485                    | 0.606 | 0.604          |
| Fiji                           | 0.830                       | 0.367                    | 0.701 | 0.398               | 0.727 | 0.520                    | 0.651 | 0.649          |
| Finland                        | 0.521                       | 0.217                    | 0.448 | 0.242               | 0.464 | 0.332                    | 0.418 | 0.417          |
| France                         | 0.431                       | 0.159                    | 0.377 | 0.187               | 0.389 | 0.278                    | 0.353 | 0.352          |
| Gabon                          | 0.788                       | 0.358                    | 0.654 | 0.384               | 0.680 | 0.486                    | 0.605 | 0.603          |
| Georgia                        | 1.003                       | 0.467                    | 0.787 | 0.488               | 0.823 | 0.585                    | 0.722 | 0.719          |
| Germany                        | 0.402                       | 0.153                    | 0.351 | 0.177               | 0.362 | 0.259                    | 0.328 | 0.327          |
| Greece                         | 0.597                       | 0.233                    | 0.519 | 0.267               | 0.535 | 0.383                    | 0.485 | 0.483          |
| Grenada                        | 0.825                       | 0.360                    | 0.700 | 0.393               | 0.725 | 0.519                    | 0.651 | 0.649          |
| Guinea                         | 1.084                       | 0.493                    | 0.802 | 0.511               | 0.845 | 0.595                    | 0.730 | 0.727          |
| Hong Kong                      | 0.335                       | 0.137                    | 0.289 | 0.154               | 0.299 | 0.214                    | 0.270 | 0.269          |

**Table 2 (continued): Income Elasticities for Food Subgroups for 114 Countries**

| <b>Country</b> | <b>Beverages<br/>and<br/>Tobacco</b> | <b>Breads<br/>and<br/>Cereals</b> | <b>Dairy</b> | <b>Fats<br/>and<br/>Oils</b> | <b>Fish</b> | <b>Fruits and<br/>Vegetables</b> | <b>Meat</b> | <b>Other<br/>Foods</b> |
|----------------|--------------------------------------|-----------------------------------|--------------|------------------------------|-------------|----------------------------------|-------------|------------------------|
| Hungary        | 0.745                                | 0.337                             | 0.622        | 0.362                        | 0.645       | 0.462                            | 0.576       | 0.574                  |
| Iceland        | 0.326                                | 0.118                             | 0.286        | 0.140                        | 0.294       | 0.210                            | 0.268       | 0.267                  |
| Indonesia      | 0.909                                | 0.376                             | 0.783        | 0.421                        | 0.809       | 0.579                            | 0.730       | 0.728                  |
| Iran           | 0.869                                | 0.404                             | 0.691        | 0.425                        | 0.722       | 0.514                            | 0.635       | 0.633                  |
| Ireland        | 0.578                                | 0.245                             | 0.495        | 0.271                        | 0.512       | 0.367                            | 0.461       | 0.460                  |
| Israel         | 0.525                                | 0.211                             | 0.455        | 0.239                        | 0.469       | 0.336                            | 0.424       | 0.423                  |
| Italy          | 0.417                                | 0.160                             | 0.364        | 0.185                        | 0.375       | 0.268                            | 0.340       | 0.339                  |
| Jamaica        | 1.009                                | 0.470                             | 0.797        | 0.492                        | 0.834       | 0.593                            | 0.732       | 0.730                  |
| Japan          | 0.388                                | 0.160                             | 0.334        | 0.179                        | 0.345       | 0.247                            | 0.312       | 0.311                  |
| Jordan         | 1.024                                | 0.477                             | 0.809        | 0.500                        | 0.846       | 0.601                            | 0.743       | 0.740                  |
| Kazakhstan     | 0.878                                | 0.401                             | 0.727        | 0.428                        | 0.755       | 0.540                            | 0.672       | 0.670                  |
| Kenya          | 1.618                                | 0.583                             | 0.906        | 0.596                        | 0.975       | 0.665                            | 0.808       | 0.805                  |
| Korea          | 0.576                                | 0.187                             | 0.510        | 0.234                        | 0.524       | 0.374                            | 0.478       | 0.477                  |
| Kyrgyzstan     | 1.145                                | 0.517                             | 0.837        | 0.535                        | 0.882       | 0.620                            | 0.761       | 0.758                  |
| Latvia         | 0.878                                | 0.404                             | 0.720        | 0.430                        | 0.749       | 0.535                            | 0.665       | 0.662                  |
| Lebanon        | 0.859                                | 0.380                             | 0.725        | 0.413                        | 0.752       | 0.538                            | 0.673       | 0.671                  |
| Lithuania      | 0.829                                | 0.373                             | 0.695        | 0.401                        | 0.721       | 0.516                            | 0.644       | 0.642                  |
| Luxembourg     | 0.159                                | 0.040                             | 0.142        | 0.057                        | 0.146       | 0.104                            | 0.133       | 0.133                  |
| Macedonia      | 0.906                                | 0.417                             | 0.742        | 0.443                        | 0.773       | 0.552                            | 0.685       | 0.683                  |
| Madagascar     | 1.372                                | 0.579                             | 0.917        | 0.596                        | 0.975       | 0.678                            | 0.827       | 0.824                  |
| Malawi         | 1.538                                | 0.592                             | 0.925        | 0.606                        | 0.991       | 0.681                            | 0.828       | 0.825                  |
| Mali           | 1.656                                | 0.596                             | 0.928        | 0.610                        | 0.998       | 0.681                            | 0.827       | 0.824                  |
| Mauritius      | 0.565                                | 0.254                             | 0.473        | 0.274                        | 0.491       | 0.351                            | 0.438       | 0.437                  |
| Mexico         | 0.807                                | 0.360                             | 0.679        | 0.389                        | 0.704       | 0.504                            | 0.630       | 0.628                  |
| Moldova        | 1.187                                | 0.524                             | 0.839        | 0.540                        | 0.888       | 0.621                            | 0.760       | 0.758                  |
| Mongolia       | 1.273                                | 0.565                             | 0.909        | 0.584                        | 0.960       | 0.673                            | 0.824       | 0.821                  |
| Morocco        | 0.974                                | 0.452                             | 0.757        | 0.472                        | 0.793       | 0.563                            | 0.694       | 0.691                  |
| Nepal          | 1.102                                | 0.513                             | 0.869        | 0.537                        | 0.909       | 0.646                            | 0.798       | 0.795                  |
| Netherlands    | 0.466                                | 0.185                             | 0.405        | 0.211                        | 0.418       | 0.299                            | 0.378       | 0.377                  |
| New Zealand    | 0.523                                | 0.217                             | 0.450        | 0.242                        | 0.465       | 0.333                            | 0.419       | 0.418                  |
| Nigeria        | 1.693                                | 0.608                             | 0.946        | 0.622                        | 1.018       | 0.694                            | 0.843       | 0.840                  |
| Norway         | 0.426                                | 0.170                             | 0.369        | 0.193                        | 0.381       | 0.272                            | 0.344       | 0.343                  |
| Oman           | 0.676                                | 0.288                             | 0.578        | 0.318                        | 0.598       | 0.428                            | 0.538       | 0.537                  |
| Pakistan       | 1.084                                | 0.504                             | 0.843        | 0.526                        | 0.883       | 0.626                            | 0.772       | 0.770                  |
| Paraguay       | 1.172                                | 0.523                             | 0.843        | 0.541                        | 0.890       | 0.625                            | 0.765       | 0.762                  |
| Peru           | 0.944                                | 0.439                             | 0.759        | 0.462                        | 0.792       | 0.564                            | 0.699       | 0.697                  |
| Philippines    | 0.888                                | 0.387                             | 0.754        | 0.423                        | 0.781       | 0.559                            | 0.701       | 0.698                  |
| Poland         | 0.798                                | 0.361                             | 0.666        | 0.388                        | 0.692       | 0.495                            | 0.617       | 0.615                  |
| Portugal       | 0.577                                | 0.217                             | 0.504        | 0.253                        | 0.519       | 0.371                            | 0.471       | 0.470                  |
| Qatar          | 0.648                                | 0.261                             | 0.561        | 0.295                        | 0.579       | 0.414                            | 0.523       | 0.522                  |
| Romania        | 0.812                                | 0.355                             | 0.689        | 0.388                        | 0.714       | 0.511                            | 0.640       | 0.638                  |
| Russia         | 0.873                                | 0.403                             | 0.712        | 0.428                        | 0.742       | 0.529                            | 0.657       | 0.655                  |
| Senegal        | 1.194                                | 0.536                             | 0.866        | 0.554                        | 0.914       | 0.642                            | 0.787       | 0.784                  |
| Sierra Leone   | 1.459                                | 0.571                             | 0.895        | 0.586                        | 0.957       | 0.659                            | 0.802       | 0.799                  |
| Singapore      | 0.556                                | 0.218                             | 0.483        | 0.249                        | 0.498       | 0.356                            | 0.451       | 0.450                  |
| Slovakia       | 0.759                                | 0.338                             | 0.639        | 0.366                        | 0.663       | 0.474                            | 0.593       | 0.591                  |

**Table 2 (continued): Income Elasticities for Food Subgroups for 114 Countries**

| <b>Country</b>         | <b>Beverages<br/>and<br/>Tobacco</b> | <b>Breads<br/>and<br/>Cereals</b> | <b>Dairy</b> | <b>Fats<br/>and<br/>Oils</b> | <b>Fish</b> | <b>Fruits and<br/>Vegetables</b> | <b>Meat</b> | <b>Other<br/>Foods</b> |
|------------------------|--------------------------------------|-----------------------------------|--------------|------------------------------|-------------|----------------------------------|-------------|------------------------|
| Slovenia               | 0.649                                | 0.277                             | 0.555        | 0.305                        | 0.574       | 0.411                            | 0.516       | 0.515                  |
| Spain                  | 0.580                                | 0.232                             | 0.503        | 0.263                        | 0.519       | 0.372                            | 0.470       | 0.468                  |
| Sri Lanka              | 0.963                                | 0.433                             | 0.805        | 0.466                        | 0.836       | 0.598                            | 0.746       | 0.744                  |
| St. Kitts and<br>Nevis | 0.734                                | 0.286                             | 0.639        | 0.328                        | 0.659       | 0.472                            | 0.597       | 0.595                  |
| St. Lucia              | 0.831                                | 0.352                             | 0.711        | 0.390                        | 0.736       | 0.527                            | 0.662       | 0.660                  |
| Swaziland              | 1.022                                | 0.461                             | 0.747        | 0.477                        | 0.788       | 0.554                            | 0.679       | 0.677                  |
| Sweden                 | 0.477                                | 0.197                             | 0.411        | 0.221                        | 0.425       | 0.304                            | 0.384       | 0.382                  |
| Switzerland            | 0.330                                | 0.112                             | 0.291        | 0.137                        | 0.300       | 0.214                            | 0.273       | 0.272                  |
| Syria                  | 1.028                                | 0.476                             | 0.791        | 0.496                        | 0.829       | 0.587                            | 0.723       | 0.721                  |
| Tajikistan             | 1.675                                | 0.602                             | 0.937        | 0.616                        | 1.008       | 0.688                            | 0.835       | 0.832                  |
| Tanzania               | 1.700                                | 0.619                             | 0.963        | 0.633                        | 1.035       | 0.707                            | 0.859       | 0.856                  |
| Thailand               | 0.922                                | 0.425                             | 0.755        | 0.451                        | 0.785       | 0.561                            | 0.697       | 0.694                  |
| Trinidad and<br>Tobago | 0.778                                | 0.342                             | 0.658        | 0.372                        | 0.682       | 0.488                            | 0.612       | 0.610                  |
| Tunisia                | 0.816                                | 0.379                             | 0.654        | 0.399                        | 0.683       | 0.486                            | 0.602       | 0.600                  |
| Turkey                 | 0.826                                | 0.364                             | 0.698        | 0.396                        | 0.723       | 0.518                            | 0.648       | 0.646                  |
| Turkmenistan           | 1.414                                | 0.567                             | 0.890        | 0.581                        | 0.950       | 0.656                            | 0.799       | 0.796                  |
| Ukraine                | 0.983                                | 0.458                             | 0.775        | 0.479                        | 0.810       | 0.576                            | 0.711       | 0.708                  |
| United<br>Kingdom      | 0.432                                | 0.169                             | 0.375        | 0.194                        | 0.387       | 0.277                            | 0.351       | 0.350                  |
| United States          | 0.134                                | 0.050                             | 0.117        | 0.059                        | 0.121       | 0.086                            | 0.110       | 0.109                  |
| Uruguay                | 0.759                                | 0.335                             | 0.642        | 0.364                        | 0.665       | 0.476                            | 0.596       | 0.594                  |
| Uzbekistan             | 1.172                                | 0.522                             | 0.839        | 0.539                        | 0.886       | 0.622                            | 0.761       | 0.758                  |
| Venezuela              | 0.905                                | 0.414                             | 0.748        | 0.442                        | 0.777       | 0.555                            | 0.691       | 0.689                  |
| Vietnam                | 1.103                                | 0.512                             | 0.856        | 0.534                        | 0.897       | 0.636                            | 0.784       | 0.781                  |
| Yemen                  | 1.522                                | 0.594                             | 0.930        | 0.609                        | 0.995       | 0.685                            | 0.833       | 0.830                  |
| Zambia                 | 1.513                                | 0.594                             | 0.930        | 0.608                        | 0.994       | 0.685                            | 0.833       | 0.830                  |
| Zimbabwe               | 1.217                                | 0.514                             | 0.814        | 0.529                        | 0.865       | 0.602                            | 0.734       | 0.731                  |

Source: USDA Economic Research Service