

Engel Curves and the Income Elasticity of Demand

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The 19th century German statistician Ernst Engel undertook pioneering studies of consumer behavior, focusing on the relationship between income and various categories of consumer expenditures. His work was published in 1857 and set a benchmark for subsequent studies in the field. Engel's finding that there is an inverse relationship between the consumption of certain commodities and income provided an important foundation for the modern theory of consumer behavior, in which goods may be classified according to whether they are superior (normal), inferior, or "Giffin" goods. Superior goods are those for which there is a direct relationship between income, the share of income devoted to the purchase of such goods, and the level of absolute expenditures. Inferior, or Engel goods, are those goods for which there is a direct relationship between the level of expenditures on a good and the level of income, but for which there is an inverse relationship between the share of income devoted to the purchase of the good and the level of income. Giffin goods, named after the Irish statistician Robert Giffin, are those goods for which there is an inverse relationship between the share of income devoted to the purchase of a good and the level of income as well as between the level of absolute expenditures and the level of income. What Engel curves enable us to see is a first order approximation to the classification of goods according to the level of income. This was later refined by Alfred Marshall, Eugene Slutsky, and John R. Hicks into the decomposition of income and substitution effects.

An International Profile of Consumer Expenditures

| Year | GNP per capita | Food Share | Cereals | Meat/Poultry | Fish | Dairy | Fats/Oils | Alcohol | Tobacco | Food&Clothing | Clothing | |
|----------------|----------------|------------|---------|--------------|-------|-------|-----------|---------|---------|---------------|----------|-------|
| Argentina | 1969 | \$2,063 | 35.60 | 4.27 | 9.97 | 0.50 | 4.66 | 0.82 | 1.89 | 2.40 | 45.40 | 7.40 |
| Australia | 1976 | \$9,062 | 19.50 | 2.10 | 3.70 | 0.39 | 2.25 | 0.74 | 3.82 | 2.20 | 29.60 | 7.90 |
| Austria | 1974 | \$6,247 | 26.50 | 2.28 | 7.13 | 0.48 | 3.47 | 0.77 | 1.96 | 1.40 | 40.20 | 12.30 |
| Bangladesh | 1974 | \$144 | 71.00 | 43.45 | 1.63 | 5.04 | 2.20 | 3.98 | 0.50 | 3.00 | 79.30 | 5.30 |
| Belgium | 1974 | \$6,111 | 19.50 | 2.42 | 4.27 | 0.68 | 1.62 | 1.05 | 2.11 | 1.00 | 29.80 | 9.30 |
| Brazil | 1974 | \$1,032 | 18.31 | 2.97 | 4.58 | 0.39 | 1.66 | 1.03 | 0.55 | 7.70 | 54.79 | 28.78 |
| Canada | 1976 | \$11,051 | 15.20 | 1.26 | 3.36 | 0.32 | 2.37 | 0.47 | 0.82 | 2.10 | 26.70 | 9.40 |
| Chile | 1978 | \$1,450 | 38.60 | 8.03 | 9.34 | 0.97 | 3.36 | 2.51 | 0.97 | 2.10 | 48.40 | 7.70 |
| Ethiopia | 1975 | \$108 | 39.70 | 9.85 | 5.48 | 0.24 | 6.39 | 1.39 | 3.06 | 1.70 | 48.10 | 6.70 |
| Finland | 1976 | \$8,131 | 25.70 | 2.82 | 3.71 | 0.72 | 2.79 | 1.35 | 1.35 | 1.40 | 33.80 | 6.70 |
| France | 1979 | \$8,083 | 25.42 | 2.37 | 7.17 | 0.72 | 2.50 | 0.86 | 2.02 | 2.40 | 59.08 | 31.26 |
| West Germany | 1978 | \$9,079 | 21.80 | 0.96 | 4.60 | 0.33 | 1.92 | 0.72 | 1.83 | 1.50 | 30.30 | 7.00 |
| Greece | 1974 | \$2,406 | 36.90 | 3.47 | 9.23 | 1.59 | 4.10 | 2.77 | 1.62 | 3.00 | 52.50 | 12.60 |
| Hong Kong | 1980 | \$4,634 | 39.10 | 2.85 | 6.06 | 3.32 | 0.94 | 0.63 | 0.82 | 1.20 | 48.10 | 7.80 |
| India | 1974 | \$230 | 67.70 | 27.22 | 1.56 | 0.74 | 10.56 | 5.21 | 0.41 | 2.60 | 75.40 | 5.10 |
| Indonesia | 1978 | \$382 | 63.10 | 24.92 | 3.34 | 5.87 | 2.15 | 0.69 | 0.13 | 5.00 | 72.80 | 4.70 |
| Ireland | 1978 | \$4,165 | 34.80 | 3.55 | 8.39 | 0.56 | 3.20 | 1.32 | 5.39 | 3.10 | 46.10 | 8.20 |
| Israel | 1976 | \$3,996 | 18.50 | 1.05 | 2.63 | 0.72 | 1.87 | 0.56 | 0.43 | 0.90 | 25.70 | 6.30 |
| Italy | 1978 | \$5,448 | 41.00 | 4.84 | 9.72 | 1.23 | 4.92 | 2.21 | 5.95 | 2.00 | 52.20 | 9.20 |
| Japan | 1979 | \$8,578 | 31.90 | 4.08 | 3.38 | 3.89 | 1.63 | 0.22 | 1.60 | 0.66 | 42.76 | 10.20 |
| Kenya | 1975 | \$240 | 75.20 | 19.85 | 9.02 | 1.28 | 10.00 | 2.41 | 2.48 | 0.60 | 85.20 | 9.40 |
| S. Korea | 1980 | \$1,562 | 34.80 | 11.80 | 4.52 | 1.50 | 1.67 | 0.59 | 1.18 | 2.00 | 45.60 | 8.80 |
| Malawi | 1980 | \$158 | 29.38 | 5.91 | 3.78 | 3.08 | 2.09 | 1.52 | 3.08 | 2.79 | 59.38 | 27.21 |
| Mauritius | 1981 | \$980 | 45.20 | 6.70 | 4.60 | 3.70 | 2.50 | 2.20 | 3.30 | 5.31 | 73.52 | 23.01 |
| Mexico | 1977 | \$1,681 | 36.60 | 4.65 | 8.34 | 0.88 | 6.84 | 2.20 | 1.06 | 0.70 | 44.30 | 7.00 |
| Netherlands | 1975 | \$7,621 | 23.80 | 3.02 | 3.81 | 1.43 | 3.40 | 0.64 | 1.90 | 2.00 | 34.80 | 9.00 |
| New Zealand | 1983 | \$6,818 | 22.45 | 2.45 | 3.92 | 0.42 | 2.58 | 0.67 | 3.37 | 6.69 | 59.32 | 30.18 |
| Norway | 1976 | \$10,729 | 22.60 | 2.15 | 4.30 | 1.56 | 2.96 | 0.77 | 1.24 | 1.70 | 31.30 | 7.00 |
| Pakistan | 1979 | \$326 | 48.22 | 12.18 | 4.12 | 0.35 | 8.70 | 6.21 | 0.05 | 5.48 | 65.70 | 12.00 |
| Panama | 1972 | \$1,523 | 35.30 | 4.38 | 9.32 | 1.02 | 5.15 | 0.92 | 1.55 | 0.80 | 44.80 | 8.70 |
| Poland | 1976 | \$1,793 | 46.60 | 3.38 | 11.86 | 0.51 | 8.95 | 4.29 | 2.70 | 1.20 | 60.80 | 13.00 |
| Portugal | 1974 | \$1,378 | 51.63 | 6.23 | 10.38 | 5.34 | 2.83 | 5.71 | 6.41 | 1.84 | 71.25 | 17.76 |
| Senegal | 1975 | \$393 | 43.90 | 12.42 | 5.36 | 6.28 | 1.84 | 4.87 | 0.57 | 1.50 | 59.00 | 13.60 |
| Singapore | 1978 | \$4,443 | 49.80 | 5.58 | 6.42 | 7.22 | 2.29 | 1.10 | 1.00 | 2.80 | 58.20 | 5.60 |
| Somalia | 1977 | \$296 | 61.60 | 16.51 | 8.62 | 0.74 | 7.02 | 7.58 | 0.12 | 2.60 | 71.60 | 7.40 |
| Spain | 1981 | \$3,871 | 30.60 | 3.30 | 7.77 | 2.83 | 3.35 | 1.37 | 1.40 | 3.69 | 47.69 | 13.40 |
| Sri Lanka | 1977 | \$302 | 54.60 | 13.84 | 2.63 | 5.85 | 4.21 | 1.97 | 1.20 | 2.70 | 64.20 | 6.80 |
| Sudan | 1979 | \$298 | 52.49 | 9.66 | 12.92 | 0.31 | 5.26 | 3.08 | 0.25 | 3.01 | 61.46 | 5.86 |
| Thailand | 1976 | \$562 | 45.50 | 14.61 | 8.28 | 6.05 | 1.73 | 0.86 | 1.32 | 3.00 | 58.30 | 9.80 |
| Trinidad | 1976 | \$4,906 | 31.50 | 5.01 | 5.92 | 1.76 | 3.72 | 2.02 | 2.61 | 1.00 | 48.60 | 16.10 |
| Tunisia | 1975 | \$804 | 43.50 | 9.00 | 8.13 | 1.22 | 2.87 | 4.83 | 0.13 | 1.00 | 54.10 | 9.60 |
| Turkey | 1979 | \$926 | 43.85 | 7.36 | 6.95 | 0.50 | 4.18 | 3.03 | 0.49 | 5.93 | 82.80 | 33.02 |
| United Kingdom | 1983 | \$8,196 | 25.58 | 2.34 | 4.52 | 0.76 | 2.64 | 0.41 | 4.85 | 11.54 | 64.54 | 27.42 |
| United States | 1973 | \$13,633 | 21.30 | 1.85 | 5.07 | 0.92 | 2.51 | 0.40 | 1.47 | 3.40 | 32.30 | 7.60 |
| Yugoslavia | 1977 | \$1,501 | 41.30 | 3.30 | 10.70 | 0.45 | 5.04 | 1.45 | 2.15 | 2.60 | 54.90 | 11.00 |
| Zambia | 1975 | \$458 | 52.10 | 8.13 | 13.29 | 6.67 | 3.28 | 3.54 | 4.90 | 7.80 | 72.60 | 12.70 |
| Zimbabwe | 1969 | \$513 | 54.90 | 15.87 | 13.83 | 0.27 | 3.51 | 1.48 | 4.89 | 1.00 | 65.10 | 9.20 |

Source: Food and Agricultural Organisation, 1985



