Topic: Engel's Law and Engel's Curves

The family budget data are the collection through sample surveys covering households which are representatives of different classes of people with respect to income, family size, social class etc., and the expenditure on the different items of consumption like food, clothing, housing, power and fuel etc., during specified period of time. In order to study the influence of income level on the expenditure habits of the people, we use family budget data. It gives a detail of family budget showing expenditure on main items of family consumption together with family structure and consumption, family income and various other social, economic and demographic characteristics. Engel's Law is an economic theory developed in 1857 by Ernst Engel, a German statistician, stating that the percentage of income allocated for food purchases decreases as income rises. As a household's income increases, the percentage of income spent on food decreases while the proportion spent on other goods (such as luxury goods) increases. Ernst Engel (1821-1876) after a detailed and systematic study of the family budget of families, developed in 1895 the law, which is known as Engel's law. As the income increases the share of income spend on food decreases. In other words, the proportion of expenditure on food decreases as household expenditure increases. Hence as income increase the expenditure on different commodity have changing proportion devoted to urgent needs decreases while for luxuries and semi luxuries increases.

The graphical representation of the basic relationship between income and its expenditure on a particular commodity of consumption is known as Engel's curve. In general, the demand for any commodity among a class of people may be regarded as depending on the price of commodity and the income of people. Thus

$$d = f(\mu, p) \tag{0.1}$$

where μ = national income; p =price of commodity; d =demand of commodity. In general demand is an increasing function of income μ and decreasing function of price of price p, then we have

$$\frac{\partial d}{\partial \mu} > 0; \frac{\partial d}{\partial p} < 0. \tag{0.2}$$

Engel classified goods as superior and inferior tried to study the variation in consumption pattern of different type of goods as a consequence the variation in income level of the people.

Demand function d as a two parameters function of price p and income μ. It can be represented graphically by certain surface 'D' in the three dimensional space taking the three

variables d, p and μ along three rectangular coordinate axies Od, Op and Oμ. In particular if price is a fixed constant $p = p^*$ then demand function becomes

$$d = f(\mu, p^*) = f_1(\mu) \tag{0.3}$$

Demand d depends on single parameter μ. Hence for p=constant, the graph of demand function (0.3) by the curve of interaction of the surface with planes perpendicular to the axis Op. These curves are called Engel's curve for constant price in Figure (1). Similarly, when income is constant that is μ=μ^* then the demand function becomes (0.1)

$$d = f(\mu^*, p) = f_2(p) \tag{0.4}$$

That is demand d depends on single parameter p (price), its graph on the surface 'd' with plane perpendicular to axis Oμ. For constant price p, Engel's curve given by equation (0.3) is concave downwards i.e.

$$\frac{\partial^2 d}{\partial \mu^2} < 0; \tag{0.5}$$

This means that as income increases the rise in the demand is slower. There are two methods of drawing Engel's curve (0.3) for studying the dependence of demand (d) and income (μ) at constant price.

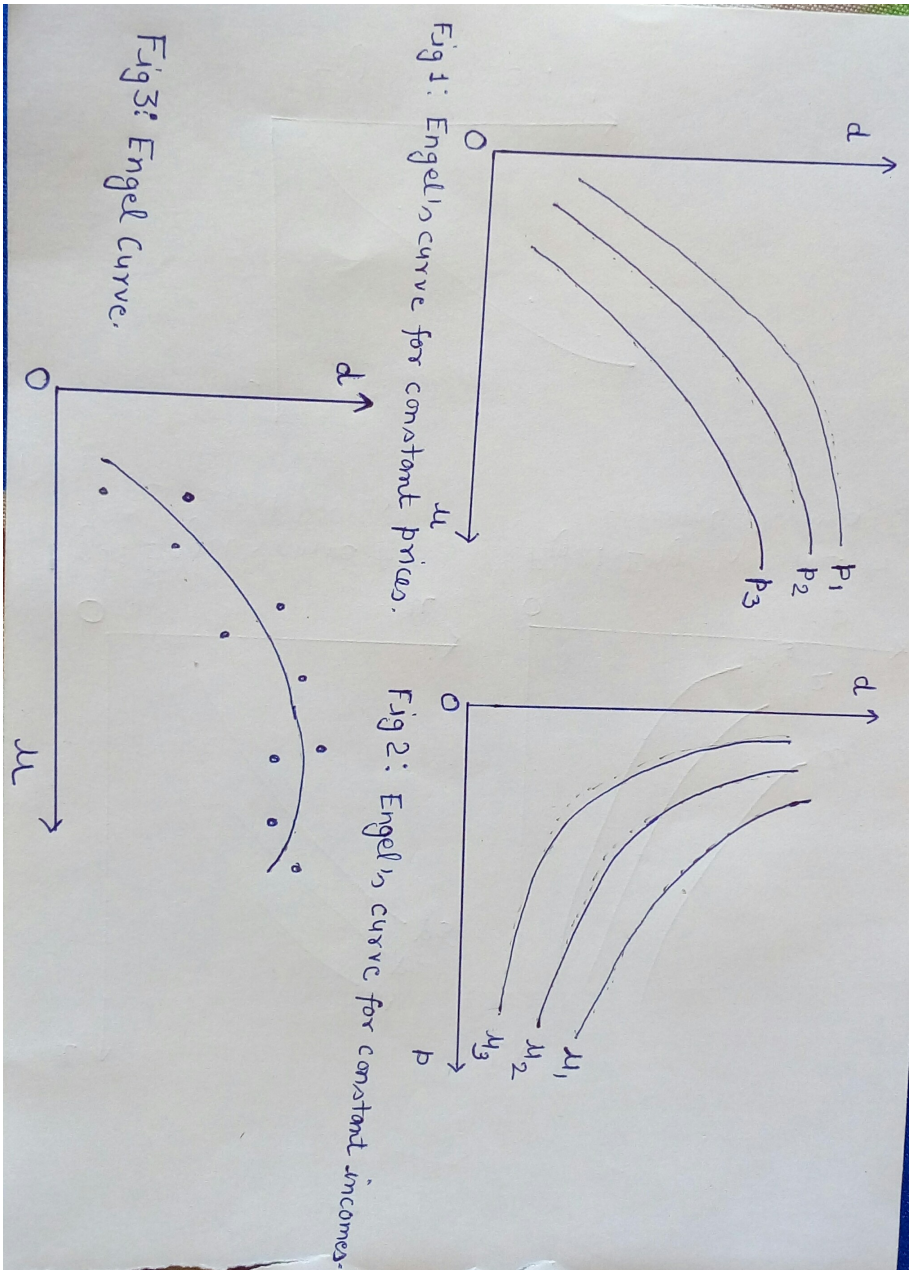
♣ It consist in comparing the budgets of the same family during different periods of time and studying their consumption pattern on different commodities of consumption as a consequence of variation in income. The drawback of this method is that the assumption $p = constant = p^*$ during this period under consideration it is not generally true. Hence this method can be recommended only in the situation when the prices of given commodity and the substitution and complementary goods remain more and less constant during the given period of investigation.

♣ This method consists in simultaneous study of the budgets different families with different income level. Let d_i be the demand for commodity at income level μ_i; i=1,2,...,n. The Engel's curve $d = f(p^*, \mu) = f_2(\mu)$, where p is constant, if It is obtained by using principle of least square in Figure (3).

This method assumes that the consumption pattern of families at different level of income is same. This assumption is for form reality, the requirement of families in different income group regarding the items of consumption and their quantities vary according to age group and poor and rich families. This drawback may be ever combined stratified the given population into relatively homogeneous group (stata) of more or less similar with respect to low income and middle income or agriculture workers, farmers.

Example A family that spends 25 percent of their income on food at an income level of Rupees 50,000 will pay Rupees 12,500 on food. If their income increases to Rupees 100,000, it is not likely that they will spend Rupees 25,000 (25 percent) on food, but will spend a

lesser percentage while increasing spending in other areas.



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References

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