

Domestic Demand for Lemons

studies indicate the increasing demand is influenced by income and temperature

G. M. Kuznets

Considerable evidence indicates that consumer demand for fresh lemons has gradually increased on a per capita basis in this country during the last 25 years.

During this period extensive advertising of lemons was carried on annually; new outlets and better marketing facilities were developed.

Since the demand for fresh lemons is known to be affected by somewhat different factors during winter and summer, separate analyses have been made for lemons marketed during the six months November through April—hereinafter referred to as winter lemons—and for those sold in May through October—summer lemons—of each marketing year.

The evidence for a rising trend in demand is, perhaps, more clear-cut for winter lemons. There are partial indications that the demand for summer lemons may have already reached a peak and is leveling off, if not actually decreasing.

The demand for fresh lemons, winter or summer—other factors remaining the same—varies directly with the level of consumer income. This relation obtains regardless of whether prices and income are expressed in constant or in current dollars.

The demand for summer lemons is greatly affected by temperatures prevailing during the summer months. This relation is also direct, that is, other factors remaining constant, the higher the temperature the greater is the demand for fresh summer lemons.

The effect of weather on the demand for summer lemons has long been observed by the trade. Since one of the principal uses of lemons is in cooling beverages, weather conditions affecting consumption of cold drinks may also be expected to affect the demand for lemons.

Future trend of demand for fresh summer lemons may be much influenced by the rapidly spreading consumer acceptance of frozen citrus concentrates and the development of various lemon base preparations.

Statistical studies have indicated that temperature during the winter months—December, January, February—also appears to be significantly related to the demand for fresh winter lemons. But here the relation is inverse, that is, the lower the temperature, other factors remaining the same, the greater is the demand. One

possible explanation of this relation is that the temperature variable may, in part at least, be a measure of the prevalence of mild respiratory infections, a factor which is mentioned in the trade literature as accounting for sporadic upward shifts of demand during the fall and winter months.

Elasticity of Demand

An important characteristic of demand for a given commodity is its elasticity, which may be defined as the ratio of the percentage change in quantity bought, to percentage change in price.

A change in the price of a commodity for which the demand is of unit elasticity—the coefficient of elasticity is minus one—brings with it no change in gross returns provided that other factors such as income remain unchanged. On the other hand, an increase in the price of a commodity with an inelastic demand—the absolute value of the coefficient of elasticity is less than one—leads to an increase in gross returns.

Statistical evidence has consistently indicated that the demand for fresh lemons, both winter and summer, is inelastic at all marketing levels within the observed range of prices and quantities.

Previous studies have revealed little or no differences in the elasticities of demand for winter and summer lemons.

A detailed study of domestic demand for fresh lemons was published in 1943. Since the war much attention has been given to revisions of the basic seasonal equations to take account of the postwar experience; to the development of weekly price forecasting equations; and, finally, to the testing out of newer statistical procedures—developed within the last five years—which appear to be better suited to the analysis of economic data.

The latest revisions are based on data within the period 1921–1949, omitting the years 1942–1946, during most of which price control was in operation.

This more recent work—using a somewhat different approach and more suitable statistical procedures—suggests that the demand for winter lemons may be considerably less elastic than the demand for summer lemons. This is in part brought out by the following tabulation which gives estimates of coefficients of

demand elasticity representative on the average of the period 1925–1941 at three marketing levels.

These calculations are based on the simultaneous fitting of a system of five equations to data for the period 1925–1941, separately for summer and winter lemons. The system of equations includes a consumer demand equation, a grower supply equation, two price equations relating retail, f.o.b. and on-tree prices, and an equation descriptive of the generation of disposable income of consumers.

Estimates of Coefficients of Demand Elasticity for Fresh Lemons
(Averages for the Period of 1925–1941)

Marketing stage	Winter lemons	Summer lemons
Retail	-.24	-.68
F.o.b.	-.14	-.50
On-tree	-.10	-.34

The finding that the demand at the on-tree level is less elastic than the demand at the f.o.b. level which, in turn, is less elastic than the demand at the retail level is not unexpected in view of the fact that marketing costs tend to be relatively rigid.

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