

Market Assessment and Analysis Elasticity of Supply and Demand

Elasticity is the percentage change in one thing relative to a percentage change in another.

Supply and Demand Response and Elasticities

- The price elasticity of supply measures how responsive the market it is to price changes.
- The price elasticity of demand measures how responsive demand is to price changes.

Inelastic: If the supply of maize is very inelastic large increases in the price of maize will bring about only very small changes in the supply of maize, all other things being equal. If the demand for maize is very inelastic (steeper), a small increase in the price of maize will cause a very small reduction in demand.

Elastic: If supply of maize is very elastic (flatter), small changes in the price of maize will bring about a large increase in the supply of maize, all other things being equal. If the demand for maize is very elastic (flatter), a small increase in the price of maize will bring about a large decrease in the demand for maize.

Figures 1 and 2 illustrate how the elasticities of supply and demand have an affect on price. In figure 1 we compare a shift in demand given an elastic supply and an inelastic supply. The elastic supply could depict a situation where there are open borders and commodities can flow freely across the border. The inelastic supply could represent a situation where the border is closed and supplies are relatively fixed until the next harvest. Note that an outward shift in demand from D_1 to D_2 (e.g., a large-scale brewery opens and enters the market for local cereals) has a different effect on the price, depending on whether the supply is elastic (p_1) or inelastic (p_2). In both cases, prices increase due to pressure from additional consumers entering the market. However, when supply is elastic, prices rise less than when supply is inelastic.

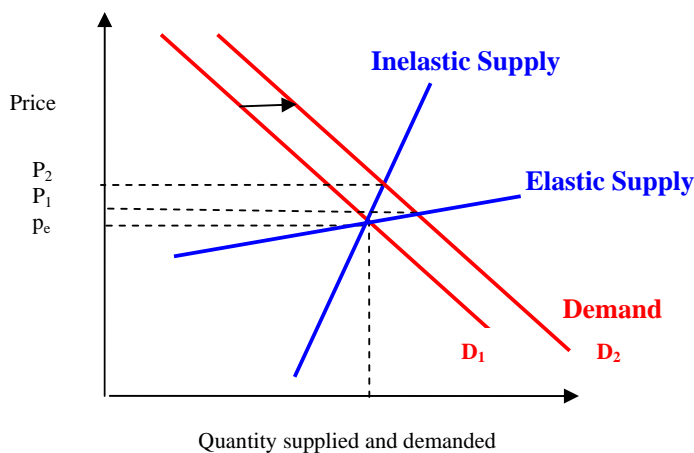


Figure 1: Elastic and inelastic supply

Figure 2 illustrates what happens when supplies shift back (a typical supply shock scenario), given an elastic and inelastic demand. In this example let us assume that the second harvest of maize was extremely poor. The elastic demand represents the case where:

- the harvest of other basic crops was excellent;
- households typically consume a variety of staples such as maize, millet, cassava and sweet potato; and
- they can easily substitute another commodity for maize.

The inelastic demand depicts the case where:

- households have a strong preference for maize;
- few other staples are produced or marketed; and
- households don't really have the choice of a substitute for maize.

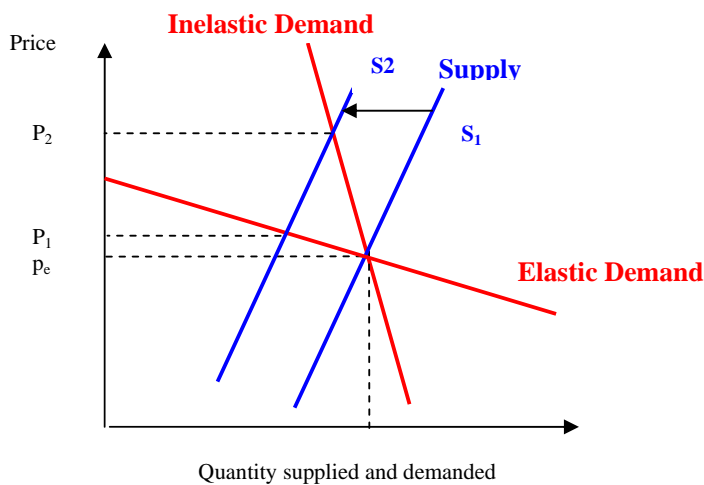


Figure 2: Elastic and inelastic demand

Implications of an Inelastic Supply of Food

Because agricultural production is generally seasonal with one or two harvests per year and moving commodities from one location requires some planning as well as significant costs, the supply of food commodities tends to be inelastic, at least, in the short to medium term. A more inelastic, and therefore less responsive, supply implies a greater rise in the price and a drop in the quantity when supply shifts back due to a production shortfall. It also means that the price will need to increase more, in order to bring more supplies onto the market.

Implications of an Inelastic Demand for Food

Basic food commodities are necessities, especially for lower income households. The demand for basic food commodities tends to be inelastic. As with supply, inelastic demand implies greater price rises when demand increases.

Characteristics of Supply and Demand and Elasticity

There are a number of characteristics that affect the elasticity of supply. If there are ample stocks of maize, no restrictions to trade, prices are relatively high and maize prices are expected to decline in the near future (reducing potential future returns), the

supply of maize is likely to be more elastic. Sellers are likely to take advantage of the high prices and bring supplies into the market hoping to sell before prices are expected to decline. If there are a few sellers, limited stocks, relatively low maize prices and maize prices are expected to rise in the near future, supply is inclined to be more inelastic and sellers will be less likely or slower to respond to an initial price increase with increased supplies. Thus, knowing something about the characteristics of supply and elasticity can help a food security analyst determine if a rise in a basic food commodity price will be followed by an inflow of food into the local market or not.

Similarly, there are a number of characteristics that affect the elasticity of demand. If households are indifferent about eating maize or millet, substantial supplies of millet are in the market and maize prices are rising, households will probably switch from buying maize to buying millet if the price of maize begins to rise. On the other hand, if households strongly prefer maize over other cereals and all other cereals are in short supply, households may forgo buying other goods in order to continue buying maize despite the higher price, or they may purchase less maize and reduce the size of their meals. Thus, the elasticity of demand can help a food security analyst determine how households will respond to a rise in basic food commodity prices.

In different places and at different times, supply and demand for a specific commodity can have any combination of these characteristics. A combination of characteristics will determine whether supply and demand are more or less elastic. Some of the standard characteristics and effects on elasticities are included in the following table.

What makes supply or demand elastic?	
More Elastic	
Demand	Supply
<ul style="list-style-type: none"> • Diverse preferences – people like to eat many different kinds of foods like cassava, millet and rice, not just rice • Availability of close substitute commodities for final consumption – maize is scarce but millet, sorghum and rice are plentiful • Availability of close substitutes for derived demand • The commodity is NOT a necessity • Higher incomes • Luxury commodities 	<ul style="list-style-type: none"> • Many close substitutes • Significant competition among sellers • More continuously produced – more of the commodity can be brought onto the market • Available stocks • Limited market barriers – few formal or informal fees and legal restrictions, etc • Good market infrastructure – good roads, telecommunications, etc • Significant excess or surge capacity • Expectations that prices will be decreasing • Adjustment period is longer – e.g., several months as opposed to a few days or a week
Less Elastic	
Demand	Supply
<ul style="list-style-type: none"> • Rigid preferences – people eat predominantly rice in Asia or predominantly maize in Southern Africa • Limited or no close substitute commodities are available for final consumption – maize, millet, sorghum and rice are all scarce • Limited or no close substitutes for derived demand • The commodity is a necessity • Lower incomes • Additive commodities 	<ul style="list-style-type: none"> • Few close substitutes • Lack of competition among sellers • Produced (harvested) infrequently • Limited or no stocks • Market barriers – formal and informal fees or restrictions, etc • Poor market infrastructure – poor roads, telecommunications, etc • Limited or no surge capacity • Expectations that prices will be increasing (speculation) • Short period of adjustment

Many of these characteristics stay relatively stable over a long period of time. For example, people's preferences for certain foods stay relatively the same over a long period of time. As a consequence, elasticities are relatively stable over time.