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MARKET VIBRANCE ON DEMAND AND SUPPLY CONCEPTS

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Abstract

Supply and demand is an economic model of price determination in a market. It postulates that, holding all else equal, in a competitive market, the unit price for a particular good, or other traded item such as labor or liquid financial assets, will vary until it settles at a point where the quantity demanded (at the current price) will equal the quantity supplied (at the current price), resulting in an economic equilibrium for price and quantity transacted. The imbalance of Supply and Demand is typically considered as the driving force of the markets. However, the measurement or estimation of Supply and Demand at price different from the execution price is not possible even after the transaction. An approach in which Supply and Demand are always matched, but the rate I = dv/dt (number of units traded per unit time) of their matching varies, is proposed. The state of the system is determined not by a price p, but by a probability distribution defined as the square of a wave function ψ(p).

Keywords: *Demand, supply strategies, relationship, market dynamics*

INTRODUCTION

The concept of Supply & Demand is the central concept of modern economy. With price increase the production rate increases and consumption rate decreases. The next step is to introduce the production rate (Supply curve S(p)) and the consumption rate (Demand curve D(p)) as two functions of price, see Fig. 1, then consider their balance S(p) = D(p) as a stationary condition. However, while the statement about production and consumption rate is mostly correct, the introduction of supply S(p) and demand D(p) curves poses severe limitation on a type of market dynamics and have been criticized from a number of points. Hans Albert [2], besides other problems, point to the tautology and interpretational problem with the approach, so called ceteris paribus (”all other things being equal”) problem, that “... theoreticians who interpret the clause differently de facto have different laws of demand in mind, maybe even laws that are incompatible with each other.”

Joan Robinson [3] point to a similar problem “Utility is the quality in commodities that makes individuals want to buy them, and the fact that individuals want to buy commodities shows that they have utility”. Another often discussed issues with classical type of theory is equilibrium structure, supply–demand interdependence [4] and adequacy to the real world markets [5]. The most interesting, the atonement process[6], as a mean to observe the supply/demand curves misses the whole aspect of market

dynamics[7]. In our initial approach[1] to build a dynamic theory based on observable variables the importance of execution rate I = dv/dt, the number of entities (e.g. equity shares) traded per unit time was emphasized, and the dynamic equation of the form "future price tend to the value maximizing the number of shares traded per unit time" was postulated and then, to some degree, observed experimentally.

The diagram shows a positive shift in demand from D_1 to D_2, resulting in an increase in price (*P*) and quantity sold (*Q*) of the product.

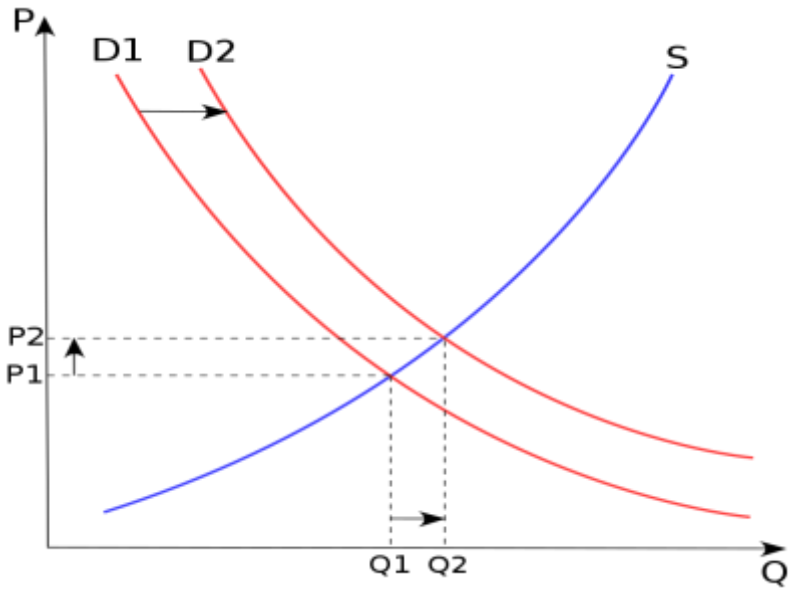

Figure 1 : Graph representing relation between demand and supply

SUPPLY SCHEDULE

A supply schedule, depicted graphically as a supply curve, is a table that shows the relationship between the price of a good and the quantity supplied by producers. Economists distinguish between short-run and long-run supply curve. Short run refers to a time period during which one or more inputs are fixed (typically physical capital), and the number of firms in the industry is also fixed (if it is a market supply curve). Long run refers to a time period during which new firms enter or existing firms exit and all inputs can be adjusted fully to any price change. Long-run supply curves are flatter than short-run counterparts (with quantity more sensitive to price, more elastic supply).

Under the assumption of perfect competition, supply is determined by marginal cost: firms will produce additional output as long as the cost of producing an extra unit is less than the market price they receive. A hike in the cost of raw goods would decrease supply, shifting the supply curve up, while a production cost discount would increase supply, shifting costs down and hurting producers as producer surplus decreases. Economists distinguish between the supply curve of an individual firm and the market supply curve. The market supply curve shows the total quantity supplied by all firms, so it is the sum of the quantities supplied by all suppliers at each potential price (that is, the individual firms' supply curves are added horizontally).

Common determinants of supply are:

1) Prices of inputs, including wages
2) The technology used, Productivity
3) Firms' expectations about future prices
4) Number of suppliers (for a market supply curve)

DEMAND SCHEDULE

The demand schedule is defined as the willingness and ability of a consumer to purchase a given product at a certain time. A demand schedule, depicted graphically as a demand curve, represents the amount of a certain good that buyers are willing and able to purchase at various prices, assuming all other determinants of demand are held constant, such as income, tastes and preferences, and the prices of substitute and complementary goods. According to the law of demand, the demand curve is always downward-sloping, meaning that as the price decreases, consumers will buy more of the good. Mathematically, a demand curve is represented by a demand function, giving the quantity demanded as a function of its price and as many other variables as desired to better explain quantity demanded. The two most common specifications are linear demand, e.g., the slanted line. Note that really a demand curve should be drawn with price on the horizontal x-axis, since it is the independent variable. Instead, price is put on the vertical, f(x) y-axis as a matter of unfortunate historical convention. Just as the supply curve parallels the marginal cost curve, the demand curve parallels marginal utility, measured in dollars.[1] Consumers will be willing to buy a given quantity of a good, at a given price, if the marginal utility of additional consumption is equal to the opportunity cost determined by the price, that is, the marginal utility of alternative consumption choices.

The demand curve is generally downward-sloping, but for some goods it is upward-sloping. As with supply curves, economists distinguish between the demand curve for an individual and the demand curve for a market. The market demand curve is obtained by adding the quantities from the individual demand curves at each price. Two such types of goods have been given definitions and names that are in common use: Veblen goods, goods which because of fashion or signalling are more attractive at higher prices, and Giffen goods, which, by virtue of being inferior goods that absorb a large part of a consumer's income (e.g., staples such as the classic example of potatoes in Ireland), may see an increase in quantity demanded when the price rises. The reason the law of demand is violated for Giffen goods is that the rise in the price of the good has a strong income effect, sharply reducing the purchasing power of the consumer so that he switches away from luxury goods to the Giffen good, e.g., when the price of potatoes rises, the Irish peasant can no longer afford meat and eats more potatoes to cover for the lost calories.

Common determinants of demand are:

5) Income
6) Tastes and preferences
7) Prices of related goods and services
8) Consumers' expectations about future prices and incomes

9) Number of potential consumers
10) Advertising

CONCLUSION

In the conclusion, it is clear that system state is determined by a probability distribution, from which all observable variable, including matching rate, can be calculated. An application of the theory is demonstrated on trading data. A conceptual difference between maximizing the trading volume and matching rate (trading volume per unit time) is shown. While the trading volume has maximal values about median price, the matching rate has a singularity–like behavior near the market tipping points, what make the approach much more suitable to risk measurement and market direction prediction.

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