

Mental Model: Supply and Demand

Supply and demand is a foundational economic mental model. Understanding it is instrumental in building a better picture of how the world works.

The law of demand states that there is an inverse relationship between the price of a good and the quantity of the good demanded. Demand can be influenced by: the income level of the buyer, the price of the good, the availability of substitutes.

The law of supply states there is a positive relationship between the price of a good and the quantity supplied. The price levels of the good, the costs of inputs to produce the good, and the technological costs to produce a good are all factors that influence the level of goods supplied. We can also consider wider factors which influence demand, such as:

- [Social proof \(https://fs.blog/2009/09/mental-model-social-proof/\)](https://fs.blog/2009/09/mental-model-social-proof/)
- [Envy and jealousy \(https://fs.blog/2016/08/mental-model-bias-envy-jealousy/\)](https://fs.blog/2016/08/mental-model-bias-envy-jealousy/)
- [Incentives \(https://fs.blog/2017/10/bias-incentives-reinforcement/\)](https://fs.blog/2017/10/bias-incentives-reinforcement/)
- [Feedback loops \(https://fs.blog/2011/10/mental-model-feedback-loops/\)](https://fs.blog/2011/10/mental-model-feedback-loops/)
- [Association \(https://fs.blog/2015/08/bias-from-association-why-we-shoot-the-messenger/\)](https://fs.blog/2015/08/bias-from-association-why-we-shoot-the-messenger/)
- [Commitment and consistency \(https://fs.blog/2016/08/commitment-consistency-bias/\)](https://fs.blog/2016/08/commitment-consistency-bias/)

In Principles of Microeconomics

http://www.amazon.com/gp/product/0538453044/ref=as_li_tf_tl?ie=UTF8&tag=farnamstreet-20&linkCode=as2&camp=217145&creative=399373&creativeASIN=0538453044),

Greg Mankiw offers the following introduction to Supply and Demand:

When a cold snap hits Florida, the price of orange juice rises in supermarkets throughout the country. When the weather turns warm in New England every summer the price of hotel rooms in the Caribbean plummets. When a war breaks out in the Middle East, the price of gasoline in the United States rises, and the price of a used Cadillac falls. What do these events have in common? They all show the workings of supply and demand.

Supply and demand are the two words that economists use most often—and for good reason. Supply and demand are the forces that make market economics work. They determine the quantity of each good produced and the price at which it is sold. If you want to know how any event will affect the economy, you must think first about how it will affect the supply and demand.

The terms supply and demand refer to the behavior of people as they interact with one another in markets. A market is a group of buyers and sellers of a particular good or service. The buyers as a group determine the demand for the product and the sellers as a group determine the supply of the product.

We assume (in this chapter) that markets are perfectly competitive. Perfectly competitive markets are defined by two primary characteristics: (1) the goods being offered for sale are all the same, and (2) the buyers and sellers are so numerous that no single buyer or seller can influence the market price. Because buyers and sellers in perfectly competitive markets must accept the price the market determines, they are said to be price takers.

The determinants of individual demand.

Consider your own demand for ice cream. How do you decide how much ice cream to buy each month, and what factors affect your decision. Here are some of the answers you might give.

Price: *If the price of ice cream rose to \$20 per scoop, you would buy less ice cream. You might buy frozen yogurt instead. If the price of ice cream fell to .20 per scoop, you would buy more. Because the quantity demanded falls the the price rises and as the price falls, we say that the quantity demanded is negatively related to the price. This is what the economists call the law of demand: Other things being equal, when the price of a good rises, the quantity demanded of the good falls.*

Income: *What would happen to your demand for ice cream if you lost your job one summer? Most likely it would fall. If the demand falls when income falls, the good is called a normal good. Not all goods are normal goods. If the demand for a good rises when income falls the good is called an inferior good. An example of an inferior good might be bus rides. As your income falls, you are less likely to buy a car or take a cab and more likely to ride the bus.*

Price of related goods: *Suppose that the price of frozen yogurt falls. The law of demand says that you will buy more frozen yogurt. At the same time you will probably buy less ice cream. When a fall in the price of one good reduces the demand for another good, the two goods are called substitutes.*

Tastes: *The most obvious determinant of your demand is your tastes. If you like ice cream you buy more of it.*

Expectations: *Your expectations about the future may affect your demand for a good or service today. For example, if you expect to earn a higher income next month, you may be more willing to spend some of your current savings to buy ice cream.*

* * *

In his speech, entitled 'Academic Economics Strengths and Faults after Considering Interdisciplinary needs (<http://www.tilsonfunds.com/MungerUCSBspeech.pdf>),' Charlie Munger said:

I have posed at two different business schools the following problem. I say, “You have studied supply and demand curves. You have learned that when you raise the price, ordinarily the volume you can sell goes down, and when you reduce the price, the volume you can sell goes up. Is that right? That’s what you’ve learned?” They all nod yes. And I say, “Now tell me several instances when, if you want the physical volume to go up, the correct answer is to increase the price?” And there’s this long and ghastly pause. And finally, in each of the two business schools in which I’ve tried this, maybe one person in fifty could name one instance. They come up with the idea that occasionally a higher price acts as a rough indicator of quality and thereby increases sales volumes.

This happened in the case of my friend Bill Ballhaus. When he was head of Beckman Instruments it produced some complicated product where if it failed it caused enormous damage to the purchaser. It wasn’t a pump at the bottom of an oil well, but that’s a good mental example. And he realized that the reason this thing was selling so poorly, even though it was better than anybody else’s product, was because it was priced lower. It made people think it was a low quality gizmo. So he raised the price by 20% or so and the volume went way up.

But only one in fifty can come up with this sole instance in a modern business school – one of the business schools being Stanford, which is hard to get into. And nobody has yet come up with the main answer that I like. Suppose you raise that price,

and use the extra money to bribe the other guy's purchasing agent? (Laughter). Is that going to work? And are there functional equivalents in economics – microeconomics – of raising the price and using the extra sales proceeds to drive sales higher? And of course there are zillion, once you've made that mental jump. It's so simple.

One of the most extreme examples is in the investment management field. Suppose you're the manager of a mutual fund, and you want to sell more. People commonly come to the following answer: You raise the commissions, which of course reduces the number of units of real investments delivered to the ultimate buyer, so you're increasing the price per unit of real investment that you're selling the ultimate customer. And you're using that extra commission to bribe the customer's purchasing agent. You're bribing the broker to betray his client and put the client's money into the high-commission product. This has worked to produce at least a trillion dollars of mutual fund sales.

This tactic is not an attractive part of human nature, and I want to tell you that I pretty completely avoided it in my life. I don't think it's necessary to spend your life selling what you would never buy. Even though it's legal, I don't think it's a good idea. But you shouldn't accept all my notions because you'll risk becoming unemployable. You shouldn't take my notions unless you're willing to risk being unemployable by all but a few.

I think my experience with my simple question is an example of how little synthesis people get, even in advanced academic settings, considering economic questions. Obvious questions, with such obvious answers. Yet people take four courses in economics, go to business school, have all these IQ points and write all these essays, but they can't synthesize worth a damn. This failure is not because the professors know all this stuff and they're deliberately withholding it from the students. This failure happens because the professors aren't all that good at this kind of synthesis. They were trained in a different way. I can't remember if it was Keynes or Galbraith who said that economics professors are most economical with ideas. They make a few they learned in graduate school last a lifetime.

Warren Buffett on Supply and Demand

Our second non-traditional commitment is in silver. Last year, we purchased 111.2 million ounces. Marked to market, that position produced a pre-tax gain of \$97.4 million for us in 1997. In a way, this is a return to the past for me: Thirty years ago, I bought silver because I anticipated its demonetization by the U.S. Government. Ever since, I have followed the metal's fundamentals but not owned it. In recent years, bullion inventories have fallen materially, and last summer Charlie and I concluded that a higher price would be needed to establish equilibrium between supply and demand. Inflation expectations, it should be noted, play no part in our calculation of silver's value.

In the 1978 shareholder letter (<http://www.berkshirehathaway.com/letters/1978.html>), Buffett offered the following comment on supply and demand as it relates to commodity businesses earning a profit:

The textile industry illustrates in textbook style how producers of relatively undifferentiated goods in capital intensive businesses must earn inadequate returns except under conditions of tight supply or real shortage. As long as excess productive capacity exists, prices tend to reflect direct operating costs rather than capital employed. Such a supply-excess condition appears likely to prevail most of the time in the textile industry, and our expectations are for profits of relatively modest amounts in relation to capital.

In the 1982 annual letter (<http://www.berkshirehathaway.com/letters/1982.html>) to shareholders, Buffett wrote:

If, however, costs and prices are determined by full-bore competition, there is more than ample capacity, and the buyer cares little about whose product or distribution services he uses, industry economics are almost certain to be unexciting. They may well be disastrous.

Hence the constant struggle of every vendor to establish and emphasize special qualities of product or service. This works with candy bars (customers buy by brand name, not by asking for a “two-ounce candy bar”) but doesn’t work with sugar (how often do you hear, “I’ll have a cup of coffee with cream and C & H sugar, please”).

In many industries, differentiation simply can’t be made meaningful. A few producers in such industries may consistently do well if they have a cost advantage that is both wide and sustainable. By definition such exceptions are few, and, in many industries, are non-existent. For the great majority of companies selling “commodity” products, a depressing equation of business economics prevails: persistent over-capacity without administered prices (or costs) equals poor profitability.

Of course, over-capacity may eventually self-correct, either as capacity shrinks or demand expands. Unfortunately for the participants, such corrections often are long delayed. When they finally occur, the rebound to prosperity frequently produces a

pervasive enthusiasm for expansion that, within a few years, again creates over-capacity and a new profitless environment. In other words, nothing fails like success.

What finally determines levels of long-term profitability in such industries is the ratio of supply-tight to supply-ample years. Frequently that ratio is dismal. (It seems as if the most recent supply-tight period in our textile business – it occurred some years back – lasted the better part of a morning.)

In some industries, however, capacity-tight conditions can last a long time. Sometimes actual growth in demand will outrun forecasted growth for an extended period. In other cases, adding capacity requires very long lead times because complicated manufacturing facilities must be planned and built.

And In the 1991 letter (<http://www.berkshirehathaway.com/letters/1991.html>), Buffett wrote:

In contrast, “a business” earns exceptional profits only if it is the low-cost operator or if supply of its product or service is tight. Tightness in supply usually does not last long. With superior management, a company may maintain its status as a low-cost operator for a much longer time, but even then unceasingly faces the possibility of competitive attack. And a business, unlike a franchise, can be killed by poor management.

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