

Supply, Demand, Inventory

BY RUSSELL ROBERTS



Supply-and-demand analysis is the bread and butter of classroom economics. All over America as the leaves change color and college commences, professors of economics are shifting supply and demand curves and showing how the price of a good changes in response.

There are no supply and demand curves in the real world. Yet supply-and-demand analysis is a powerful framework for organizing one's thinking about how changes in behavior ripple through the economy, leading to changes in prices and in turn affecting the choices made by buyers and sellers.

F.A. Hayek, in his classic 1945 article from the *American Economic Review*, "The Use of Knowledge in Society" (available at www.econlib.org/library/Essays/hykKnw1.html), described how the change in price in response to a change in demand or supply conveys information and induces buyers and sellers to respond in ways that would be difficult if not impossible to achieve in a centralized, hierarchical situation:

Assume that somewhere in the world a new opportunity for the use of some raw material, say, tin, has arisen, or that one of the sources of supply of tin has been eliminated. It does not matter for our purpose—and it is very significant that it does not matter—which of these two causes has made tin more scarce. All that the users of tin need to know is that some of the tin they used to consume is now more profitably employed elsewhere and that, in consequence, they must economize tin. There is no need for the great majority of them even to know where the more urgent need has arisen, or in favor of what other needs they ought to husband the supply.

Yet out in that real world, do prices really play the role that Hayek and other economists claim?

People eat more pizza on Super Bowl Sunday than

on any other day of the year. I suspect people also eat more hot dogs and chili on that day. I'd also guess that beer sales are in the top five along with New Year's Eve, July 4, Memorial Day, and Labor Day.

But despite the massive surge in demand for pizza dough, hot dog buns, and beer on that single day, the prices of those items are no higher on Super Bowl Sunday. If anything, they're *lower* than usual as grocers and others try to attract customers.

How do we reconcile this phenomenon with the standard textbook understanding of supply and demand? Increases in demand should lead to increases in price.

The simple answer is that pizza dough and hot dog buns can be stored. The dough and the buns can be frozen with little loss of quality. If the price were high on Super Bowl Sunday, there would be an arbitrage opportunity, an opportunity to make money by storing supplies when demand is low and selling them when demand is high. This storage opportunity smoothes the prices so that the day before and the day after, they are roughly the same.

This story is okay as far as it goes, but it points to an insight about markets we frequently ignore in teaching supply and demand—the role of inventory in smoothing price fluctuations in the face of shifting supply and demand whether predictable or unpredictable.

My George Mason colleague Walter Williams says it better than I can: "Here's my relationship with my grocery store. I don't tell them when I'm coming. I don't tell them what I want to buy. I don't tell them how much I'm going to buy. But if they don't have what I want when I show up, I fire 'em."

This is our relationship with most suppliers in the modern American economy. We expect the shelves to be

Russell Roberts (roberts@gmu.edu) holds the Smith Chair at the Mercatus Center and is a professor of economics at George Mason University.

stocked, and they usually are. We pay a small ongoing premium for this availability. The carrying costs of those inventories aren't free. But we prefer paying that premium to finding empty shelves and incurring the time costs of finding the product somewhere else.

Inventories are a way sellers compete by providing the certainty of availability. As Williams's story illustrates, this form of competition doesn't confer a competitive edge. Rather, it becomes a necessity for a firm that wants to stay in the marketplace.

In recent years part of the success of big-box retailing is a story of the power of inventory and availability. Book lovers prefer the 100,000 titles carried by Borders and Barnes and Noble to the charm of the smaller independent stores. Home Depot and Lowe's have driven smaller independent hardware stores out of business with lower prices. But the range of available products is a huge part of their success as well.

So are all those professors wasting their students' time teaching them a tool, supply and demand, that is only a curiosity?

No—the ability to use inventory in response to changes in demand is limited by the costs of holding that inventory. For anticipated changes when inventory is relatively inexpensive, such as on Super Bowl Sunday, the increase in demand does not translate into an increase in price.

But when holding inventory is difficult, expensive, or impossible, the full impact of demand changes is reflected in the price. The price of roses on Valentine's Day or the day before is much higher than at other times of the year because flowers cannot be stored like beer or frozen like pizza dough.

Limited Role for Inventory

The price of houses in the Washington, D.C., area reflects the increase in the size of government as government employees and government office space drive up the price. The only role for inventory in such a situation is the building of housing in increasingly distant suburbs. Travel time reduces the ability of these expanded opportunities to meet the increase in demand. The price of housing rises in the areas closer to the city.

Travel time in a city such as Washington, D.C., is another example of how price rather than inventory clears the market. Because the roads are public property

not owned by anyone, time spent traveling caused by congestion is the price that clears the market rather than an out-of-pocket payment. It is physically impossible to add supply at peak times. You can't store extra lanes or freeze them. So traveling at rush hour takes longer than at other times. If someone did own the roads, the price would be

higher during peak travel times.

Over time, as more people move into metropolitan areas such as Washington, D.C., the time it takes to commute there also climbs inexorably. This time cost only falls when new roads are built or existing roads are widened. But if demand continues to rise, travel time for any particular commute will again begin to climb.

And prices matter even in a world where inventory is possible. They matter in the short run because not all markets can meet short-run fluctuations where inventory is costly. These fluctuations in price in turn induce innovation as a form of competition, to reduce both the cost of production and the cost of providing inventory.

Time spent understanding supply and demand remains time well spent.



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