An economical concept of supply and demand: how does it work

Economics

“ Under ordinary competitive conditions, any long and serious maladjustment between supply and demand cannot last.”— George W. Stocking, Cartels in Action: Case Studies in International Business Diplomacy

The concept of supply and demand is arguably one of economics’ most fundamental concepts and is considered the foundation of a market economy. Its history is long and diverse, with Alfred Marshall being credited with the idea. It has evolved over the years in large part due to marginalism and its modern form is still utilized today as a tool of contemporary economic analysis. Through the annals of history, economists have asked themselves why people spend their money, and how. This is caused by the attempt to understand what drives a rational decision in an endeavor to fulfill needs and wants. The economist studies human actions, in particular human choice and utilization of resources. A number of economic theories have made their mark on history but perhaps none are as significant as the economic analysis of supply and demand. The main concept behind supply and demand is simple: the relationship between the two will determine the price of a service or good. However, this concept is also powerful: in a free market, the relationship between supply and demand is considered to be the driving force.

Market prices and production quantities may be determined by supply and demand, where buyers’ desires comprise the demand element of the market, and sellers’ desires comprise the supply element of the market. After observing the point at which supply and demand meet, prices and quantities can then be determined. This point of intersection is called equilibrium, which occurs when the quantity demanded equals the quantity

supplied. The price is determined by analyzing this juncture on a graph or numerically. One simple way to conceptualize this equilibrium is to consider a consumer who wants to buy 145 units for $45 and a business that wants to sell 145 units for $45.

Demand may be defined as a trifecta of three conditions: a desire, an ability to pay, and a willingness to pay for a commodity. This is because it isn’t enough to simply desire a good or service – realistically, there must also be an ability to pay and a willingness to pay. The conditions are all contingencies – if any of these three factors is not there, the demand is not considered real. A real life ramification of this definition is modern advertisements, who want to push consumers into action, turning their desires to a willingness to pay. There are several factors that alter a consumer’s desire, ability and willingness to pay for products, like consumer tastes, income, prices of similar products and complementary items to the product.

Supply is an important economic concept describing the total amount of an item or service that is available to buyers. Supply can describe the amount available at a specific price or the amount available across a scope of prices. Supply relates closely to demand for items and services at a particular price – the supply provided by sellers will increase if the price does too because firms strive to maximize profits. There are many factors that affect supply, one of the most important being the price of the good. In general, if the price of a good increases, so will supply. Price of related goods and inputs like raw materials, energy, and labor also have an affect on supply because they

increase the price of the item sold. Conditions surrounding the production of an item in the concept of supply is significant too – like when there is an advance in technology, a disruptive innovation, or government regulations like environmental laws.

Prices are key to the concept of supply and demand. If a consumer wants an item badly enough, the consumer will pay for it. If a supplier wants to sell goods or services badly enough they will lower their prices. Prices play a crucial role in economic life for a number of reasons. For one, they are used as signals to sellers and buyers. Prices convey an informational meaning to both. When prices are low, this signals " buy" to consumers who can now pay for the items they want. When prices are high, they signal " sell" to producers who can earn a profit now. Prices also encourage more efficient production. They cause suppliers to produce items at the lowest possible cost so that they can make more of a profit.

Surpluses and shortages are also important ideas presented to us through the analysis of supply and demand. A surplus occurs when the amount supplied exceeds the amount demanded. This shifts the market out of equilibrium. The current price will then be lowered for the market to reach equilibrium again. A shortage occurs when the amount demanded exceeds the amount supplied. This again shifts the market out of equilibrium, and the price must be raised for the market to achieve equilibrium again. In the supply and demand model, quantities and prices are the outputs, not the inputs. Additionally, the supply and demand model is only effective in the analysis of competitive markets – markets where there are many buyers and

sellers with a desire to buy and sell similar items. Finally, there are two laws behind the concept of supply and demand. The law of demand states that the higher the price of an item, the lower the demand for it will be, and the lower the price of an item, the higher the demand. The law of supply is the inverse. The higher the quantity supplied, the higher the price. The lower the quantity supplied, the lower the price will be.

The concept of supply and demand is credited to Alfred Marshall, who produced a graphical illustration of the idea, reconciling the relationship of supply and demand into one analytical framework in his book Principles of Economics in 1890. The idea behind supply and demand however, dates back much further than the 19th Century. From Medieval Times through the 17th Century, Adam Smith wrote about supply and demand in " The Wealth of Nations." He separated them into two different factors, however – one being the determinant of price in the short run, one of the long run.

John Stuart Mill expanded on past theories and married the ideas of supply and demand, suggesting the idea of an equilibrium. Hicks went on to explore demand price and supply price in " Value and Capital." Here, he argued that demand could be defined as how much an individual was willing to pay, and supply was a product of how much a producer must earn to produce an additional unit of units.

Although a number of great minds shaped the understanding of supply and demand in the 19th Century, Alfred Marshall's 1890 text " Principles of Economics" was considered the standard for its time. In this book he suggested on a graph that when a function of supply and a function of

demand intersect, an equilibrium occurs. The graph placed price on the Y axis and quantity consumed on the X axis. The demand curve was simply a function represented graphically, a one to one relationship between prices and quantities. The supply curve was also based on a function – the quantity level associated with a price. Marshall represented equilibrium by the intersection of the two curves. He explained that equilibrium occurs when the price equals the quantity demanded. As a result of equilibrium, the quantity of products supplied will equal the quantity of products consumed. In other words, equilibrium occurs when buyers want to buy a product for the same price as the producer wishes to sell for.

In his book, he explained that short term, demand set price, but in the long term, supply would adjust so that a free market would tend towards the lowest production costs. Most modern economists credit Alfred Marshall with setting the framework of supply and demand analysis. Supply and demand as a development occurred because there was a need to analyze the economy more efficiently. There is no doubt that historical developments created an urgency to understand markets and the method to their madness. By 1890, the time of Marshall's writing, the European economies had been in a down turn. In fact, British investors had to sell their United States Stocks for money in 1890. At this time in the United States, forty five percent of the work force lived in cities – a sign of the quickly changing times. The South was abandoning its dependence on cotton, signaling economic advancement. Finally, in 1880, the United States population exceeded fifty million. The world population as a whole was increasing,

country economies were changing, and there was an increased ability to produce capital.

Marshall’s economic analysis of supply and demand also in part is due to the inadequacies of economic analysis in the past. One notable example is the limitations of the invisible hand. Adam Smith, the man behind this idea, is commonly seen as the founder of contemporary political economy. He authored “ An Inquiry Into the Nature and Causes of the Wealth of Nations” at the same time as the industrial revolution which created wealth at a larger scale than ever before. Adam Smith was a proponent of a system of “ natural liberty” where individual effort produced social good. In a free market, everyone worked for the good of all. He also suggested that prices don’t present the true value of products and services. Indeed, Smith believed the true value of goods came from the amount of labor invested to make them. The invisible hand was a term that Adam Smith used to describe individually guided actions that unintentionally reap the greater good. He maintained that when individuals pursue their own interests, they may benefit society more than if they directly sought to benefit society.

Alfred Marshall’s supply and demand remains useful in situations Smith doesn’t account for, however. Yes, the concept of an “ invisible hand” works well when production and consumption lie in a free market, but when monopoly and oligopoly are factored in, this theory fails. He believed that the government should put limits on monopolies, but this of course did not turn out to be the case. Supply and demand is still an effective tool for analysis in these economic situations. When we look back on the history of supply and

demand, an absolutist account might be more relevant to our analysis. The law of supply and demand as it was, was rigid. Price would always be determined by the intersection of demand and supply. No other factors were taken into consideration in an ever changing and evolving complex society.

It was this absolutist approach that opened the door for modifications and refinements of the concept over time. The marginalist school of thought emerged during the late 19th century and expanded upon the supply and demand analysis. Major thought leaders of the movement like Stanley Jevons, Carol Menger and Leon Walras argued that in addition to supply and demand, price was set by a subjective value of a good. Marginalists explored rational decision by looking more thoroughly on both sides of the market – supply and demand. In economics, the term “ margin” means the next or additional unit. Marginalists argued that economic decisions were made at the margin. This groundbreaking theory of value shaped and improved supply and demand analyses.

The marginalist school of economic thought was founded in the 1870s by William S. Jevons, Karl Menger, Leon Walras, and Knut Wicksell. By the turn of the century, the marginalists had explored the process of rational decision making on both sides of the market—the demand side and the supply side more so than the first employment of supply and demand. Economic decisions, the marginalists argued, were typically made at the margin. In economics, “ margin” refers to the next unit or the additional unit. The groundbreaking work of the marginalists soon dominated supply and

demand analyses, the theory of value, and other topics related to decision making by market participants.

Marginalists developed the concept of utility on the demand side of the market and noted that changes in utility affect the price people are willing to pay for services or goods. In the 1870's they developed the " law of diminishing marginal utility" which stated that as a consumer buys additional units of the same good in a given amount of time, the marginal utility plummets. They also built on classical economic theory by examining the value of resources used in production on the supply side of the market. The supply side of the market is concerned with the actions and behaviors of the producer. By the 1890s, the marginal productivity theory was developed. According to this view, only when marginal revenues were greater than or equal to marginal costs should firms use additional resources in production.

Around the same time, another marginalist concept called derived demand emerged, which suggested that demand for resources originated from the demand for items that these resources yielded. In short, resources are valuable only when they can be utilized to produce items that consumers are willing to purchase. Marginalism reveals that there is more to the story when it comes to what influences human behavior driving supply and demand. Consider the widely used example of consumer behavior when it comes to water or diamonds. Little is more enormous in value in use and necessary to existence than water. Meanwhile, diamonds are luxury items, frivolous and are clearly not essential to purchase.

Yet the price of diamonds is much higher than the price of water. Traditionally, there was no distinguishing between total utility and marginal utility. Yes, the total utility of water surpasses the total utility of water. And yes, if faced with a choice, anyone would rather do without diamonds than water. However, when faced with a decision to win a prize of a diamond, or an additional bucket of water, almost everyone would choose the diamond. This is marginal utility at play. When human beings make rational decisions, they don’t ask themselves which gives more satisfaction in total, diamonds or water. They consider whether an additional diamond adds more additional satisfaction than one more bucket of water. Now the rational decision to value diamonds over water makes sense – although water is necessary, there is plenty of it. It logically follows that the usefulness of marginal units will decrease as people consume more and more of the items.

Marginalism can be seen in basic observations about the world around us. For example, in the south where the climate is warmer, there is a much lower portion of people who purchase space heaters than in northern states. Space heaters may cost the same from state to state, but a space heater will be much more useful in cooler climates. The story does not even end with basic observations. If consumers were forced to choose between health and recreation, anyone would agree that health is more important than recreation. Traditional economic theory did not factor proportion into the equation, focusing rather on rank.

It is not realistic to base decisions on weighing health in total with recreation in total. If one were to make decisions this way, then they might posit that all

sporting events must be stopped because a minority of people are hurt in sporting activities. A reasonable person would weigh the negative effects of sport injuries, the marginal value of stopping sporting events, with the pleasure that would be given up from stopping all sports – the marginal cost of stopping sporting events. People will make their decisions by comparing marginal value with marginal cost. Marginalism involves examining details and fully understanding what drives supply and demand. Price is not just contingent on the intersection or demand and supply. Rational people consider other factors when they make a decision to purchase an item or service. By understanding what drives these rational decisions in the endeavor to fulfill a need, marginalism becomes a useful improvement over traditional supply and demand.

That being said, economists now understand that there are many factors at play influencing supply and demand. On the supply side, changes in input prices, the number of producers, prices of related goods, technology or expectations can influence the current price of producing an item. On the demand side, changes in income, number of consumers, changes in prices of related goods, tastes, and changes in expectations may all shift the demand curve, changing the price. This improved outlook helps economists understand current social and economic situations. For example, David R. Henderson points out that although the total utility of child-care workers is likely much higher than the total utility of air conditioner repair men, air-conditioning repairmen earn more than most child-care workers.

But there are more child care workers than air-conditioning repairmen. If there were less children and more air conditioners, as well as a shortage of air-conditioning repairmen and a surplus of child-care workers, and they were paid the same wage, it would be rare that anyone would enter the air-conditioning profession. But by letting the larger group of child-care workers drive down their wage as the smaller group of air-conditioning men drive up their wage, the market works itself out, obtaining the right number of child-care workers and the right number of air-conditioning repairmen. Marginalism occurred because of an inadequacy of traditional supply and demand. The original model was too rigid, and did not examine the driving forces of supply and demand thoroughly enough. The market will still achieve equilibrium, and supply and demand guide the market, but marginal value and marginal cost are essential components of a firm grasp on what the groundwork is in a free market.

Supply and demand analysis continues to be relevant and helpful in contemporary economics analysis of current events. According to the Economist, dated January 16, 2016, “ lithium is the new gas” (Economist n. p.). As a demand for rechargeable batteries surges, producers are now rushing to obtain stores of lithium. Although lithium hasn’t had much value before, the price of 99% pure lithium carbonate that was imported to China more than doubled in two months. Across the world, businesses are scrambling to buy up lithium deposits to fill the supply they anticipate needing to power rechargeable batteries. Driving this anticipation is a rising demand. Major battery makers include Samsung, LG, Panasonic and Sony. Carmakers like Toyota are also beginning to use lithium batteries in cars like

the Prius. Finally energy storage is driving the need for lithium up, therefore driving the price for lithium up as well. It is clear that supply and demand is guiding the lithium market right now in a fundamental way.

In similar recent news, wheat prices hit a record ten dollars a bushel due to reduced world supplies and calls for help for poor countries that are running out of their food stockpiles. Grain prices have also skyrocketed in the past few months, with corn costing more than it did and soybeans priced at more in the past thirty years, while rice and dairy prices have also risen as well. The price of wheat has become so high for a number of reasons – like bad weather in exporting nations like Australia and a rise in demand from developing countries. Marginalism is at work here, explaining that demand is driving the market but market prices are also increasing for other reasons as well. These recent news items prove that supply and demand is still the driving force behind the market but also reveal that marginalist improvements upon the concept have also remained relevant as well.

In their pursuit of understanding the decision making of human beings, economists have offered the world much valuable insight about the economy and beyond. From microeconomics to macroeconomics, there are many useful theories that answer questions about behavior and consumption and other aspects of daily life. While the first credited instance of supply and demand is a graphical illustration, the concept itself paints a much more illustrative picture than simply supply and demand curves. Supply and demand delivers insight into personal decisions we make on a daily basis when the concept is used to its fullest capacity. It is no wonder then, that

this theory has been cultivated and discussed for hundreds of years, and continues to dominate economic analysis even to this day.