Economic Framework for Scholarship Allocation Decisions

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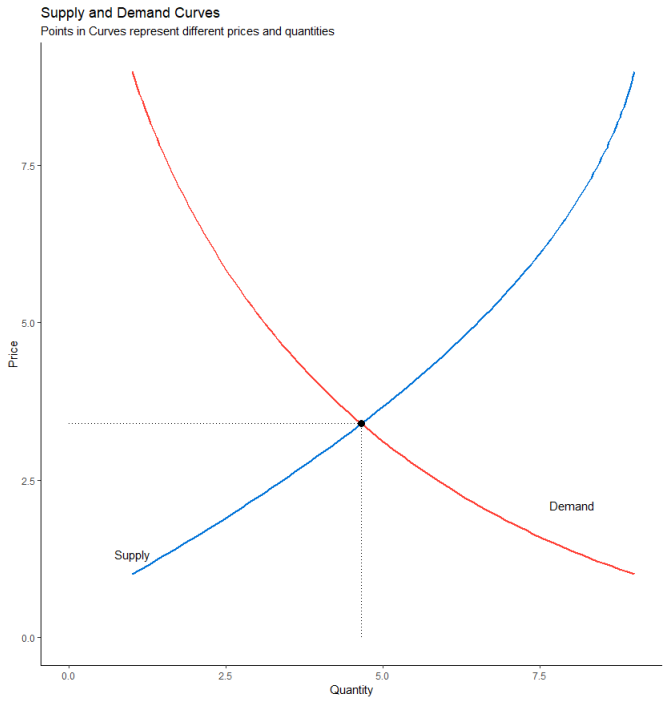
Economics Crash Course

Economics is the study of making decisions to satisfy unlimited wants with limited resources. Buyers and Sellers go to markets ready to buy and sell goods, services, etc… where price is a function of both buyer and seller preferences. Visually, Economics can be explained with supply and demand curves.



In the plot above, the blue curve represents the supply curve. This is the curve that reflects the profile of sellers. Moving up along the curve, as price (y-axis) increases, so will the quantities that producers are willing to supply. Rawlings will be more content (higher on the supply curve) selling 10 baseball gloves at $200 than $150. Sellers are always happy getting paid more for what the cost was to produce the good or service.

The red curve represents the demand curve. The demand curve reflects the profile of buyers. Moving down along the curve, as price (y-axis) decreases, quantity demanded will rise. If on the black market for Baseball gloves, buyers find Rawlings baseball gloves for $100, they will demand a lot more (higher on the demand curve) Rawlings baseball gloves than if they had to pay retail price of $200. Buyers are always happier getting more for what they paid for.

Demand (Buyers): Price ↑ Quantity Demanded ↓

Price ↓ Quantity Demanded ↑

Supply (Sellers): Price ↑ Quantity Supplied ↑

Price ↓ Quantity Supplied ↓

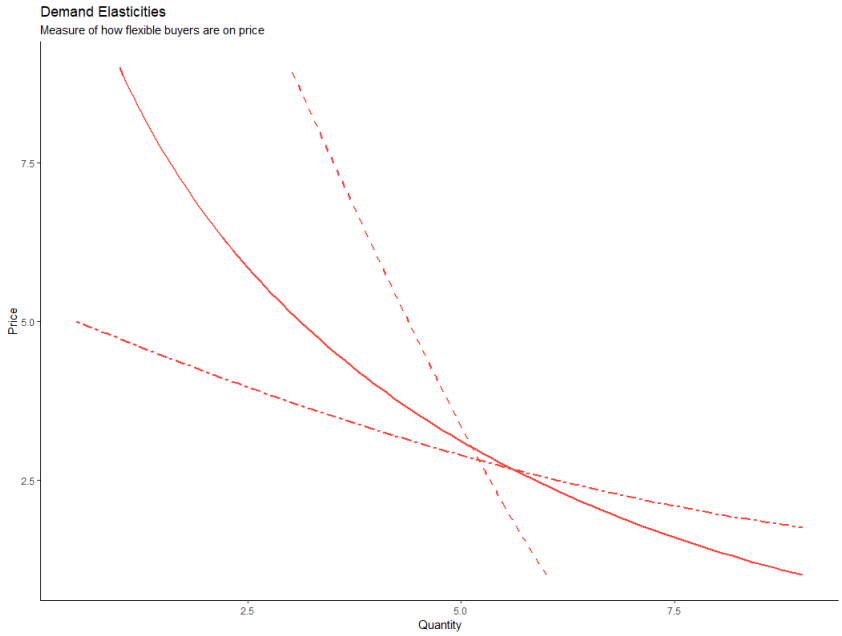
Buyers and sellers arrive at a point of intersection of the curves where a transaction for a specific price and quantity occurs. Supply and demand curves move, separately or both at the same time. In 2008, the national housing market crashed, and the available housing supply witnessed a never before seen housing shock. The supply curve for available housing shifted right to reflect the new quantities of housing on the market. When supply and demand curves move, so does the price. At the time it was difficult to back up your home's aggressive valuation with 10 houses in the neighborhood in default proceedings and the bank willing to sell them for pennies on the dollar.

In markets, for different sets of supply and demand, quantities demanded/supplied either change fast or slower for a movement in price. Supply and demand curves are either *Inelastic* or *Elastic*. Specifically:

$$Price\ Elasticity\ of\ Demand = \frac{\%\ Change\ In\ Quantity\ Demanded}{\%\ Change\ In\ Price}$$

$$Price\ Elasticity\ of\ Supply = \frac{\%\ Change\ in\ Quantity\ Supplied}{\%\ Change\ in\ Price}$$

Demand is *elastic* if the quantity demanded changes fast for a small change in price. Demand is *inelastic* if the quantity demanded changes very little for a small change in price. Visually, different demand elasticities are represented below:

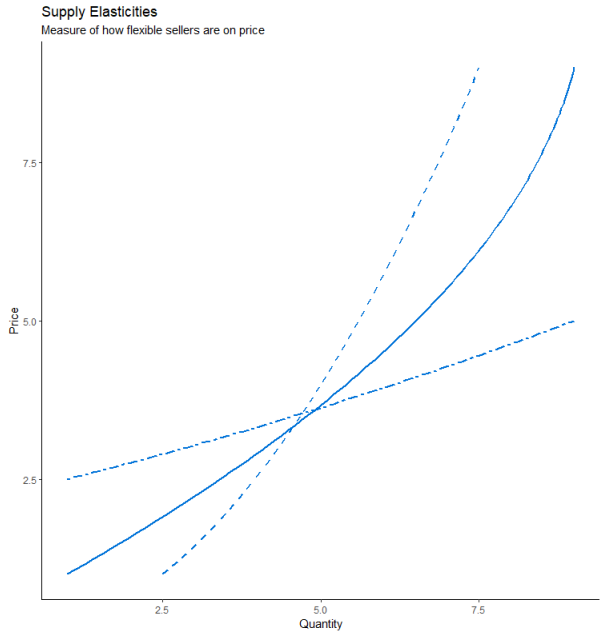


The flattest curve that is double dashed is the curve that represents *elastic* demand. On that curve for demand, any change in price on the y-axis results in a bigger change in quantity demanded on the x-axis. Goods that are highly substitutable fall in this bucket. When the price of Coca Cola changes a little bit, there will be a large change in quantity demanded, because consumers will make the switch to Pepsi.

The steepest curve that is single dashed is the curve that represents *inelastic* demand. On that demand curve, any change in price on the y-axis results in a smaller change in quantity demanded on the x-axis. Goods that are a necessity fall in this bucket. These are goods that must be bought, regardless of price. When the price of water increases, consumers will still pay whatever it takes to get water, and quantity demanded will change very little.

In the context of a roster, a staff putting together a roster has skillsets/player types in mind that they covet and will spend on regardless of the price. In this context, *inelastic* skillsets could be starting pitching (IP >70), defense up the middle, or power at the corners. These skillsets are *inelastic* because coaching staffs go out to recruit, believe these skillsets are a necessity to winning, and regardless of price (to an extent) do not change the quantity demanded. On the other hand, *elastic* skillsets are ones that a coaching staff believes can be substituted for easily or are not as necessary for winning. If the coaching staff is recruiting a player with an *elastic* skillset, and the player asks for an additional 5% in scholarship, the coaching staff would not demand that quantity of skillset for that price. They can find it somewhere else on the existing roster or for a cheaper price somewhere else in a recruiting market. This could be a player that has one tool that stands-out, but is weaker in all other parts of his game, or a player that is seemingly replacement level in every area of his game but not special at anything. He is a "guy".

Transitioning to supply, supply is *elastic* if the quantity supplied changes fast for a small change in price. Supply is *inelastic* if the quantity supplied changes very little for a small change in price. Visually, different supply elasticities are represented below:



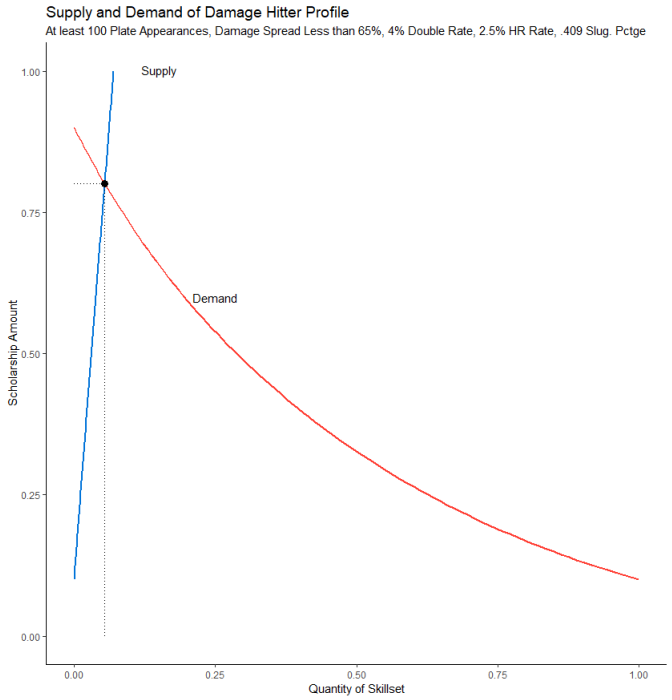
The flattest curve that is double dashed is the curve that represents *elastic* supply. On that supply curve, any change in price on the y-axis results in a bigger change in quantity supplied on the x-axis. For small changes in price, producers will adjust the quantity supplied faster. In San Francisco, rideshare drivers have the choice of driving for Lyft or Uber. For small changes in pay, drivers will supply more hours for the company that pays more.

The steepest curve that is single dashed is the curve that represents *inelastic* supply. On that supply curve, any change in price on the y-axis results in a small change in quantity supplied on the x-axis. Producers will produce fixed amounts of a good with an inelastic supply curve, for a small range of prices. It is important to note, goods with inelastic supply are often not plentiful, often fixed in quantities and rare in context. Land is an example of a perfectly inelastic supply. Humans are not making any more of it and no amount of quantity demanded can make any more land. In oil production in the Middle East region of the world, small changes in the price of oil will result in very small changes in the quantity supplied of oil.

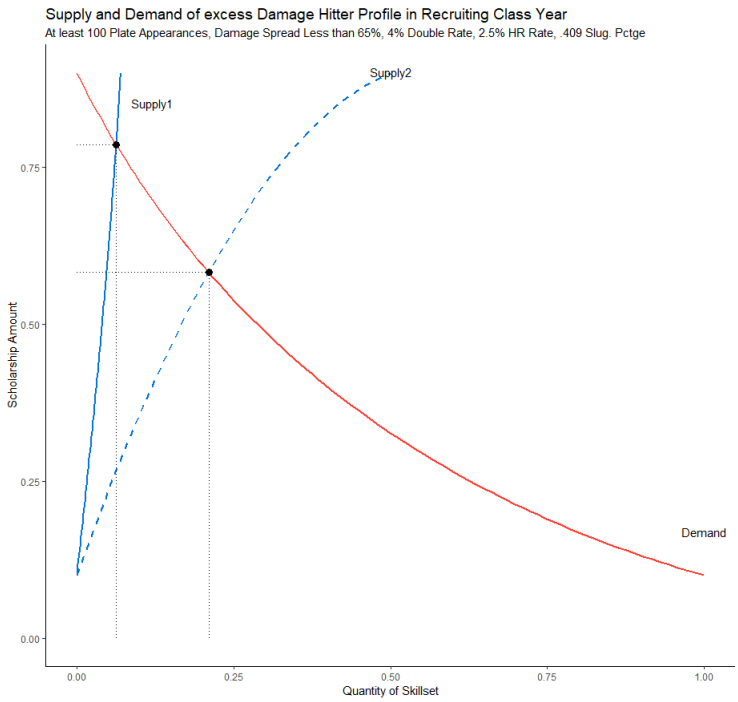
In the context of putting together a team, players act as suppliers or producers of skillsets that coaching staffs are looking for. Players producing *elastic* skillsets are the players that are plentiful. These players likely know this, and therefore are willing to supply a skillset for any price. These are also players that can afford to play (family income) for a cheaper price. Staffs can be conservative on price for these players. Players want to find themselves supplying inelastic skillsets. If a player was projected to steal 20 bases and hit 20 homeruns by his Junior year, that player brings a rare and positive skillset for winning. He can name his price that he will play for. What does the demand (coaching staff) side do?

Application

Per the QST WCC player database, roughly 8% of hitters from 2011-2018 have amassed a stat line of at least 100 plate appearances, damage spread less than 65%, 4% double rate, 2.5% HR rate, and .409 Slugging Percentage. A recruit that is capable of producing this stat line is rare but attainable in the league. But this type of player supplies an inelastic skillset, so he will name his price and let demand come to him. This is represented in the hyper steep slope of the supply curve, meeting the demand curve fairly high on price (y-axis):



A decision may be made to allocate the amount (roughly 80%) to the recruit. The decision may be a good one, he projects to be a great player. But what alternatives do demand (coaching staff) have, instead of paying the steep price? If there was a way to centrally store information on recruiting classes (2019's, 2020's, 2021's, etc…), a staff may have an advantage on other staffs that fail to efficiently examine the future supplies of skillsets. With a centralized information base of different recruiting class information, a staff could better formulate a supply curve for skillsets in different recruiting classes. Coupled with demand curves that change according to what the team needs, and a club could identify prices more efficiently. A staff could identify price that is too aggressive by its internal price or flag a price that is advantageous and come in below its internal price. If the above hypothetical recruit was a 2019, but a staff had knowledge that the 2020 graduates had far more comparable players, price may look like this: (Where supply 2 intersects demand)



The staff could have paid 80%, or waited 1 year and paid 60%. The staff could split the difference on a JC stopgap player or towards more pressing demand items. This is assuming demand remains fixed in between years.

Spending on Problems, Safekeeping, and Making Decisions

Among a 35-player roster, there are inevitable mistakes to be made in spending decisions. Players do not develop at the rate initially believed to be possible, players get hurt perpetually, players don't gain weight, etc… . The response may be to throw large amount of money at problems, and that may work, but there may be a better framework. If a problem area of the club happened to have very inelastic supply in the next recruiting class, and that demand curve happened to be inelastic (steep) because there are problems, supply and demand would meet at the very top of the price axis. Problems could turn out to be very expensive and inefficient to just fix as soon as possible in the next recruiting class. The move may be to examine future classes, wait for that skillset supply to get a bit more elastic (plentiful), and weather the storm temporarily with complementary moves.

The world is not all doom and gloom. If the staff knew that a current recruiting class's supply was elastic in one skillset that has been historically inelastic, the move may be to purchase up and safe keep all the cheaper skillsets that may be expensive one year from now. Buyers love getting more than what they paid for.

Baseball teams have unlimited wants. No Baseball team has unlimited resources to fulfill those unlimited wants. Decisions are made every day in Baseball and in life with this framework in mind subconsciously. But people do these calculations in their head that are worse than on the back of a napkin, or emotion becomes too much of a factor. The move is to know as much as possible hard information and move accordingly with the correct framework in place.

Next Steps

I would like to know if there is a centralized spreadsheet or anything like that, that holds information on recruits. In addition, I would love to get the Trello app login, so that I can spend time forming my own analysis of supply for future classes. If I can develop a robust, centralized location for recruit information, I think that would help all of us. The scholarship spreadsheet is a very good start for forming demand curves for skillsets/positions. I will be on the Cape this Summer and this area will be one of the areas I perform deeper research on. There is more to come on this subject.