STAND point

Anna Rathbun, CFA, Director, Research

The Economy as the Forest of Decision Trees

BY ANNA J. RATHBUN, CFA, DIRECTOR, RESEARCH

During the first half of 2018, the capital markets experienced a bit of turbulence from general fears of a trade war. For the second half of the year so far, the capital markets on the whole have not responded substantively to the tariff announcements. In general, the effect of Trump's tariffs on the economy has been difficult to quantify, partly because of the current uncertain ambiance of policy-making à la "tweet," a governing style that may continue into the foreseeable future. More importantly, the overall uncertainty stems from the fact that while the policy may be set by the White House, the outcome is determined by many market participants making decisions independently.

As discussed in our September Standpoint, tariffs distort the equilibrium price of a good by adding a tax. Businesses can decide to deal with this tax as increased input cost, or the tax can be passed down to the consumers through final goods. Much of how these tariffs will affect the American economy and corporate margins depends on how the tax gets distributed among the various decision-making agents in the marketplace. In other words, how the decision trees of individuals branch out will determine the shape of the forest. Our October Standpoint illustrates the complexities of those decisions and discuss why it is difficult to determine the outcome of Trump's tariffs.

Hartland Continues to Bolster Team with New Talent

We are pleased to announce that we have added talent to the Private Client and Research teams with Caroline Lyu and Joe Nitting, respectively.

Caroline Lyu has joined Hartland as an Associate Portfolio Manager. Prior to joining Hartland, Caroline was a student at Ohio State University where she completed a MS in Finance. Caroline also holds a BS in Finance from Bowling Green State University.

Joe Nitting has joined Hartland as a Research Analyst and will be responsible for providing research coverage on domestic equity managers. Joe has spent the past 4 years as a Research Analyst with Capital Strategies Investment Group, located in Chicago. Joe holds a BS in Finance from the University of Dayton and is a CFA charter holder.

These changes underscore the firm's commitment to building its investment consulting practice, promoting the next generation of leadership, and maintaining a rigorous investment process.

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Producers as Decision-Making Agents

When a raw material or intermediate good is taxed, producers may have options on how they can deal with the tax. They may negotiate with their suppliers to take on all of the tax or to share the burden together. The ability to negotiate with suppliers is important, especially if the producer cannot pass down the tax to the consumers in order to remain competitive. As an example, Walmart competes on the price offered to the consumers, so raising prices of their goods would be an undesirable option. Instead, the company can use its large size as leverage to negotiate with its suppliers to drive the costs down as much as possible. The Walmart example also highlights the benefit of size as a negotiating lever. Smaller companies with less volume may not be in the position to pass on a portion of the tariff to their suppliers, and as a result, may have to pass it down to their customers or cut into their margins.

Another option for producers is to alter the supply chain by changing where they source their materials or intermediate goods. Many large American businesses have already diversified their suppliers over the last decade or so; in particular, businesses have reduced their exposure to China over the years due to rising costs of production and labor. The Children's Place Inc. (PLCE), as an example, has reduced its dependence on China from 40% ten years ago, down to the teens today, and they expect that exposure to be in the single-digits by the year 2020 . Companies whose production is not concentrated in China or in any one country can remain nimble to act when there is a threat of a trade war.

Some companies, however, may not have the flexibility to renegotiate terms with their suppliers. Take leather and textile, for example. China is, by a large margin, the largest and cheapest supplier of these goods. Furniture producing companies, such as La-Z-Boy Furniture and Hooker Furniture import a vast majority of the upholstery used in their products from China and may not be able to diversify their supply chain. These companies will have to pass down the impact of the tariffs to the consumers in order to keep their margins stable.

As you can see, how a business may respond to the implementation of tariffs is very company-specific, supply-chain-dependent, and industry-based. When companies are not able to pull levers to diffuse the burden of tariffs or take on those costs themselves, they end up transferring the duty down to the consumers.

Consumers as Decision-Making Agents

When companies pass the tax down to the consumers, the aggregate effect on the economy is an inflationary pressure on the price of goods, and at higher prices, consumers may demand less of those goods. In the case of the furniture companies described above, China's dominance on leather and textile exports affects the entire furniture industry, and it is likely that those tariffs would be passed down to the consumers. If this happens, prices for all leather and upholstered furniture would rise, theoretically, by the amount of the tariff.

What is a consumer to do? Do you still buy and pay a higher price, or do you forego the product, perhaps find a substitution, or just do without it? The answers to these questions depend on what is called the price elasticity of demand. The concept of elasticity is demonstrated in the following chart.

**Chart 1: Elasticity of Demand for Good X**
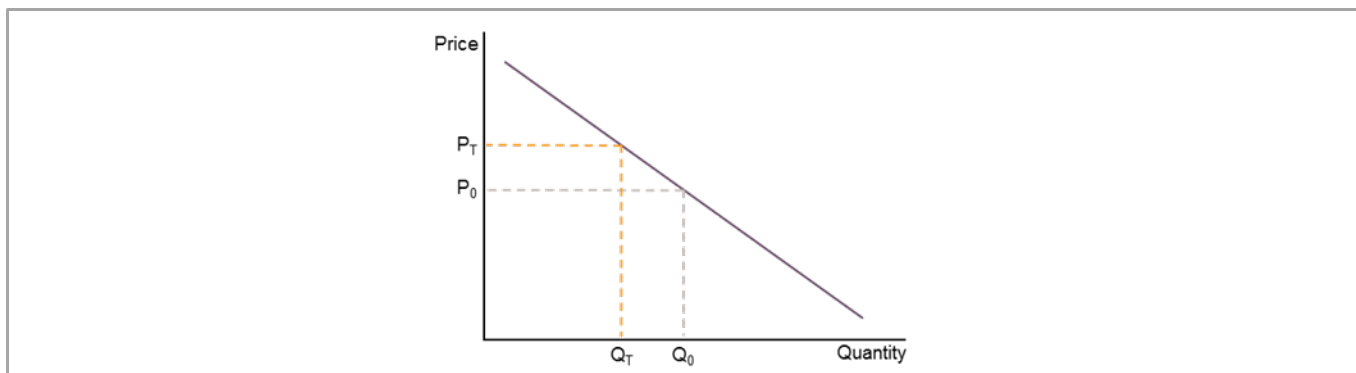
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For most goods, the demand curve is downward sloping because consumers will usually buy less of a good at higher prices (chart 1), and as price moves up from P_0 to P_T, the quantity demand falls from Q_0 to Q_T. Here, the elasticity of demand refers to the sensitivity of quantity demanded of that good to the change in price[2]. At theoretical extremes, a good can be either perfectly elastic (a horizontal demand curve) or perfectly inelastic (a vertical demand curve).

In real life, there is a wide spectrum of elasticity among goods consumed in the United States. Charts 2 and 3 below show the variability of elasticity. A more elastic demand in Chart 2 shows a significant decrease in quantity demanded, while Chart 3 shows a less elastic demand curve, where the same price increase results in a much smaller change in demand. Generally speaking, goods that are more discretionary tend to be more elastic, and therefore, passing on the tariffs to consumers may result in a meaningful decrease in demand for those goods. If tariffs on automobiles are implemented, cars could be driven another year or two before a replacement purchase is made, or a cheaper car could be purchased. On the other hand, goods that have less elastic demand tend to be less discretionary, essential to sustain life and/or lifestyle, such as food and gasoline, and are goods that do not have viable substitutes. In these cases, increase in price may not have a big impact on demand.

Chart 2: More Elastic Curve
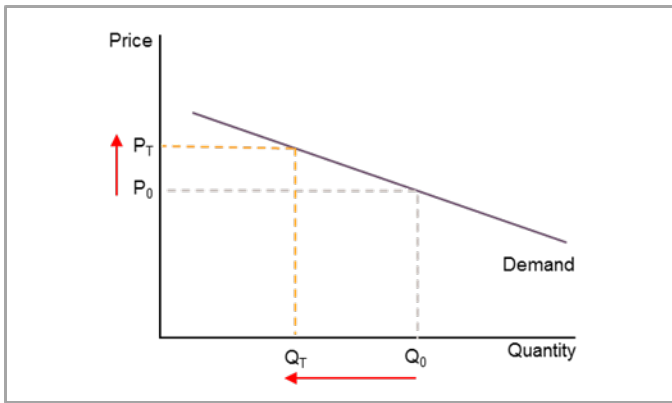
Chart 3: Less Elastic Curve
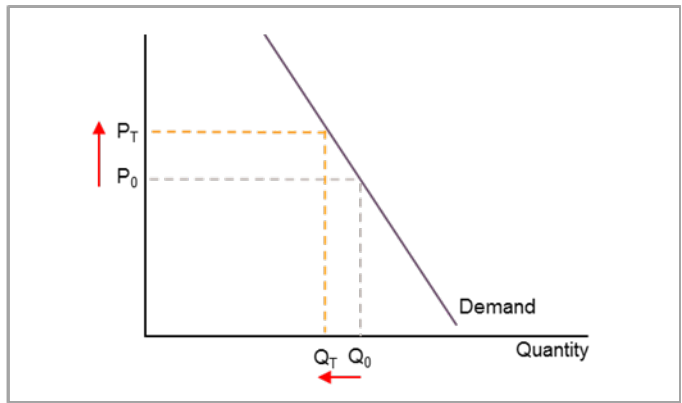
Remember the Tariffs on Washing Machines and Solar Panels?

If the economic theory is relatively straightforward, what has been the impact in practice? Back in January of 2018, before tariffs became part of the everyday conversation, the Trump administration implemented a 20% tariff on washing machines. These are widely used products that now have enough history to see how price and demand were affected after the taxes were levied.

Chart 4: Three-Month % Change in Price for Laundry Equipment, U.S. City Average
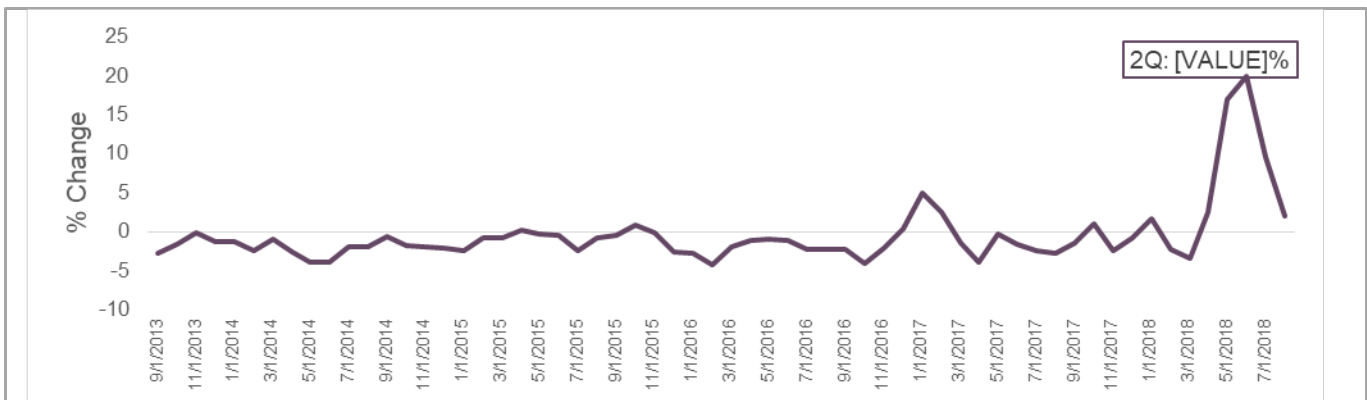
Source: Bureau of Labor Statistics

Chart 4 depicts what may be the most exciting thing that has happened to laundry in years. During the five-year time period shown in the above chart, the price change in laundry equipment has been rather muted. With the announcement of tariffs in January, the

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three-month % change in price, from February to May, jumped 17%, reaching its highest point of 19.9% change from April to June. That is a huge increase for a relatively mundane product.

So what does this do to consumer demand? Washing machines are a durable good that, at times, could be price inelastic (if your machine breaks, you need to buy one), but also somewhat price elastic (you might just be updating your appliances, or you could buy a Whirlpool instead of a Samsung). In the aggregate, The Conference Board's consumer survey of plans for buying a washing machine in the next 6 months shows that since the tariff went into effect, the willingness to buy has attenuated but not fallen too far from the five-year average (Chart 5). Consumers' six-month expectation does not seem to have changed as dramatically as the prices have over the last few months. Of course, beyond the price elasticity effect, the steadiness of plans to buy washers despite the higher prices may also be a reflection of an all-time high consumer confidence, supported by a strong economy at home.

Chart 5: Consumer Survey – Plans to Buy a Washing Machine Within 6 Months
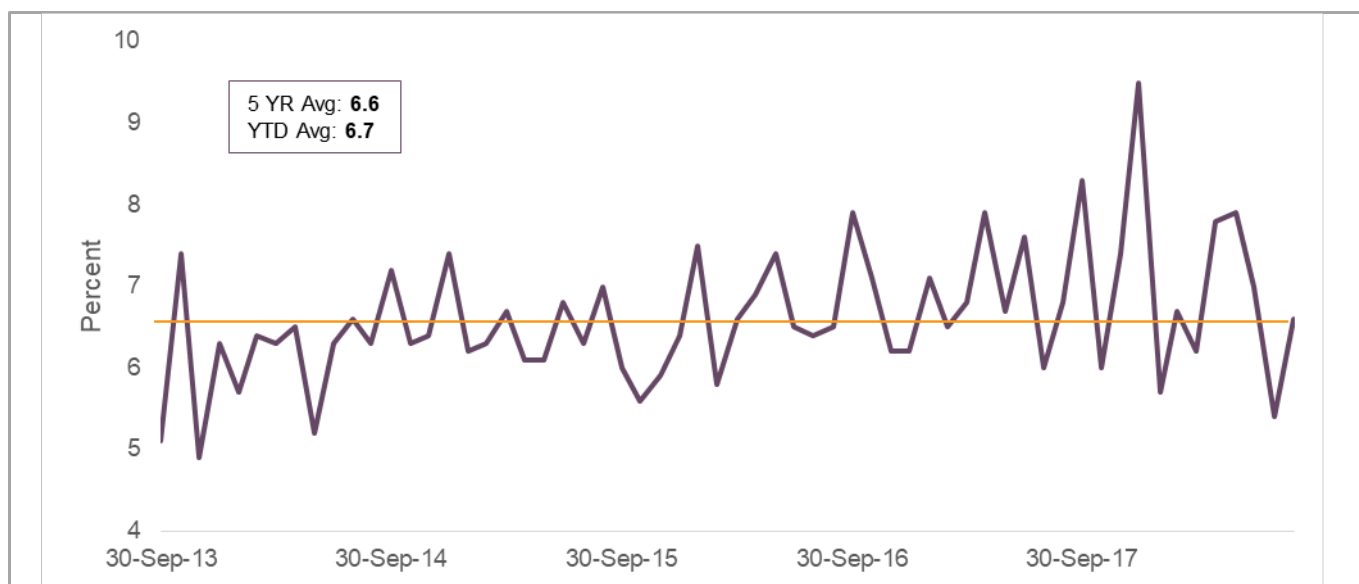
Source: The Conference Board – Consumer Confidence Survey, seasonally adjusted

Depending on the choices of American consumers, the inflationary effect of passing down the tariffs to the final user may have influence on the general consumer-based statistics, such as retail sales and consumer sentiment. We watch these figures closely to gauge the sentiment around spending because consumption is the main engine of the American economy. The consumer choices will not only depend on the elasticity of demand for those goods, but also on the strength of the labor market, healthy wage growth, and the general robustness of the domestic economy.

Market Forces at Work

The various decision trees of participants are a part of the market force, or Adam Smith's perhaps stifled Invisible Hand navigating around tariffs. A recent case with soybeans provides another good example of anticipated demand change from the tariffs and other market forces.

China is the largest importer of soybeans in the world, with much of their imports sourced from the U.S. and Brazil. When U.S. soybeans were threatened with 25% tariffs in April and then went into effect in early July, U.S. soybean futures fell in price, in anticipation of falling demand from China, the largest buyer of U.S. soybeans. Meanwhile, the price of soybean futures in Brazil increased upon implementation of these tariffs in anticipation of greater demand. In fact, Brazil's government recently raised its projections for soybean exports to a record 75 million tons this year, helped by the trade spat between China and the U.S.[3] The price movement for two different soybean markets is shown in the chart on the following page:

Chart 6: U.S. and Brazil Soybean Prices, USD per Metric Ton
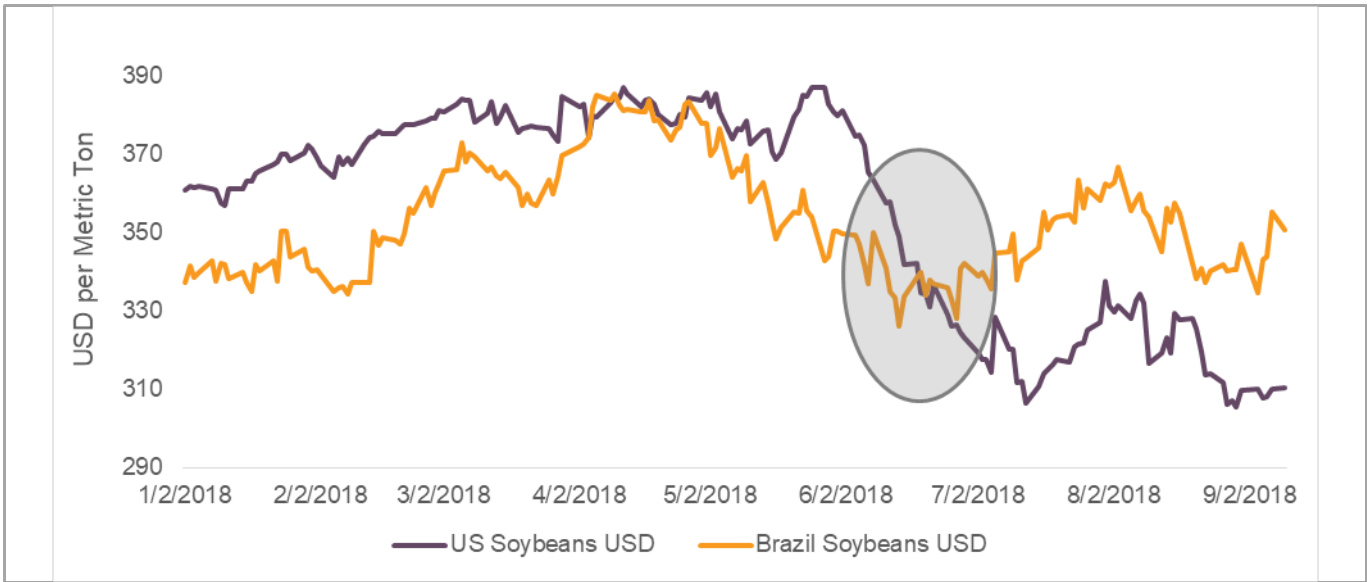
Source: Bloomberg, US Census Bureau, US Department of Agriculture (USDA)

After a small recovery, prices continued to fall during August due to an unexpected high yield in the crop this year (excess supply). With significant discount in soybean prices in the U.S., countries other than China have begun to take interest in buying soybeans from the U.S.

Chart 7: Accumulated U.S. Soybean Exports per Marketing Year[4]
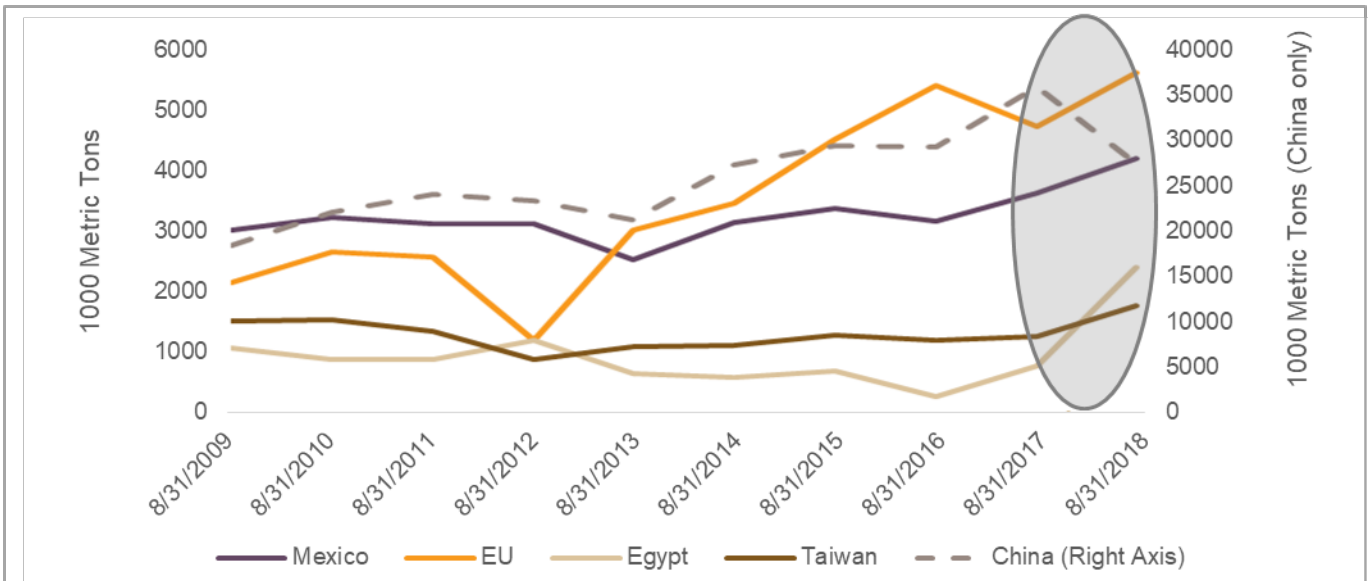
Source: Bloomberg, US Census Bureau, USDA

Chart 7 shows the accumulated exports (physical shipping) of soybeans from U.S. to the countries specified. The grey dotted line depicts China's import volume of U.S. soybeans, falling dramatically from August of 2017 to 2018. This decrease is mitigated by increase in imports by other countries, such as Mexico, Taiwan, Egypt, and the E.U. On the whole, the USDA forecasts 56,000

metric tons of soybeans exported worldwide from the U.S. during the 2018-2019 marketing year, only a 3.3% decrease from the 2017-2018 marketing year export volume, not far from the five-year average, and a good margin above the ten-year average (chart 8).[5]

Chart 8: Historical U.S. Soybean Exports Actual and 2018-2019 Forecast
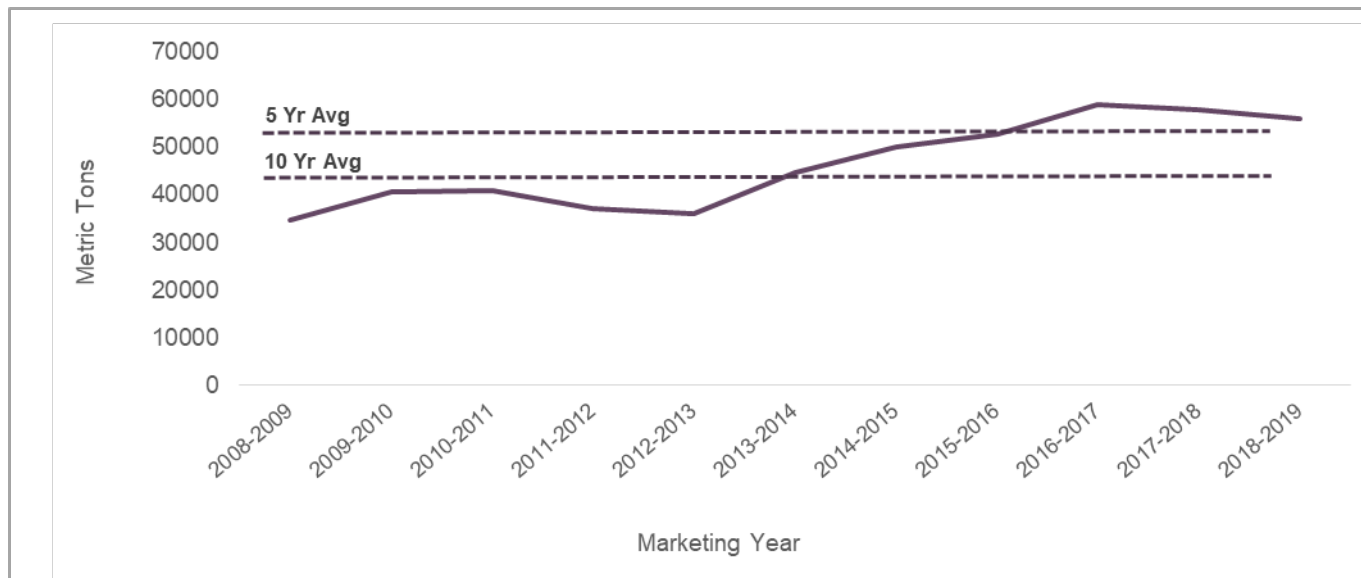
Source: Bloomberg, USDA

Adding to the complexity of demand pattern changes is the supply picture. In the U.S., excess supply is expected, and, in Brazil, shortage is expected due to the China tariffs. Soybeans are not like widgets that one can produce quickly in a factory. The commodity has to be planted, grown, harvested, and processed, all of which takes time. With such high demand for Brazilian soybeans from China, it is possible that Brazil may run out of soybeans for this season and may have to import the commodity from somewhere else[6]… perhaps even from the U.S.!

Conclusion

The tariff landscape continues to change from week to week. With each additional round of the tariffs, the list of taxed goods grows, and the impact of tariffs become more wide spread. For now, we can rely on the inventory of goods already purchased before the tariffs went into effect, but in 2019, companies will have to restock their goods, and a bulk of the forward agreements will expire. But the concepts discussed in this article will still apply, even if more tariffs are levied: much of how the tariffs affect the economy will depend on how much corporations can absorb this tax, perhaps negatively impacting their earnings, and how much will be passed down to the consumers… and, in turn, how much the consumers can bear the resulting inflationary pressures. All of this will depend on whether or not the U.S. economy can sustain the momentum it has built, already ten years into the expansion and against the headwind of a rising rate environment.

Sources:

(1)   Q2 Earnings Call Transcript, August 23, 2018.

(2)   Price elasticity of demand is calculated as the percentage change in quantity demanded divided by percentage change in price (% change in Q / % change in P).

(3)   Bloomberg, https://www.agriculture.com/markets/newswire/update-1-brazil-raises-soy-export-projection-end-stocks-lowest-on-record.

(4)   Marketing Year begins September 1 and ends August 31 of the following year.

(5)   United States Department of Agriculture, World Agricultural Supply and Demand Estimates (USDA WASDE) projection, September 12, 2018.

(6)   Bloomberg, https://www.agriculture.com/markets/newswire/update-1-brazil-raises-soy-export-projection-end-stocks-lowest-on-record.

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MARKET BENCHMARK RETURNS

October 31, 2017		1M	3M	12M	YTD
US Large Cap	S&P 500	2.3%	4.8%	23.6%	16.9%
US Small Cap	Russell 2000	0.9%	5.8%	27.8%	11.9%
Developed Intl	MSCI EAFE	1.5%	4.0%	23.4%	21.8%
Emerging Intl	MSCI Em Mkt	3.5%	5.4%	26.5%	32.3%
Real Estate	NAREIT	-0.1%	-0.1%	8.8%	6.6%
Core Fixed	BarCap Agg	0.1%	0.5%	0.9%	3.2%
Short Fixed	BarCap 1-3Yr	0.0%	0.1%	0.7%	1.0%
Long Fixed	BarCap LT G/C	0.4%	1.7%	2.5%	8.1%
Corp Debt	BarCap Corp	0.3%	1.0%	3.2%	5.4%

Source: Bloomberg

The performance data shown represent past performance. Past performance is not indicative of future results. Current performance data may be lower or higher than the performance data presented.