Introduction

It is hard to believe that we are already in the 2020 election year, 3 years after the Trump administration took office. Since the election in 2016, the outlook for U.S. manufacturing has sharply increased and although still high, has tailed off a bit over the past year. The economy continues to grow and to keep it moving, the Fed has cut interest rates 3 times in 2019 to the current level of 1.75 percent. Although consumer sentiment has also declined a bit over the past few quarters, it has remained high. This has assisted in keeping the economy moving because with consumer sentiment high, individuals increase discretionary spending and make major purchases, such as automobiles and homes (automotive and housing being the top two markets that die casting serves). In addition, the 50-year record low unemployment rate of 3.6% has grown the pool of workers who spend money and spark the economy.

So what about our markets and die casting shipments? Automotive sales in 2019 have remained high although slightly less than the previous year. New housing starts were fairly strong in 2019 and slightly higher than the previous year. Overall shipments are forecast to be a few percent less in 2019 compared to 2018. The current outlook for 2020 is presented later in this article.

Let’s now review some of what has been going on in Washington under the current Administration and some macro-economics and the impact it has had on all of manufacturing and subsequently the die casting industry.

The Administration

Since the current Administration had taken office in 2017, focus areas have included tax reduction, healthcare reform, regulations reduction, trade balancing, infrastructure spending, defense spending, minimum wage revision, more favorable U.S. manufacturing climate, and immigration reform. Progress has been made in some areas, but little-to-no progress has been made in others. For instance, individual and corporate tax cuts have been made, there has been push-back on some regulations, tariffs have been imposed in an attempt to balance trade, military spending has increased, and manufacturing has a more positive outlook. However, there has been no real healthcare reform, no huge level of spending for infrastructure, and no immigration reform (just more border wall).

Having sight on U.S. Manufacturing, the Administration has recognized the need for education support and workforce development, and has been supportive in these arenas. The Strengthening Career and Technical Education for the 21st Century (CTE) Act reauthorizes the Perkins Career and Technical Education Act and allows States to set their own goals without the Secretary of Education’s approval. This $1.2B program is intended to provide funds for education and training of individuals at various education levels. A White House Task Force has been working on guidelines for an Industry Recognized Apprenticeship Program (IRAP). NADCA will be developing an IRAP for the die casting industry and is considering becoming a certifying entity for the IRAP. Potential funds for education that may be made available from States to assist in developing the incumbent and future workforce and a die casting industry specific IRAP can be highly beneficial for the die casting industry.

Figure 1 - Average tariff rates from December 2017 through September 2019 and projected through December 2019.

Figure 2 - U.S. trade deficit with China. Source: The Balance
OSHA may be making updates to the lock-out/tag-out standard which may be helpful as the level of disruption to operations caused by lock-out/tag-out is being taken into consideration. Just another sign of improved manufacturing friendliness.

One of the key trade related promises of the administration was a new North American Free Trade Agreement (NAFTA). Although a new agreement, known as the United States – Mexico – Canada Agreement (USMCA) was signed in late 2018 by all three countries, a vote in Washington has yet to take place to ratify the new deal, although at the time of this writing, it was anticipated that a vote may take place by the end of December 2019. Although there are several elements of the USMCA, one of the key elements targets to increase the North American content in passenger vehicles from 62.5% to 75% and to 70% in heavy duty trucks. Further attempts to balance trade have come in the form of tariffs. Under the 323 Investigation, a 25% tariff has been placed on specific steel products and 10% on specific aluminum products imported into the U.S. NADCA has opposed these tariffs as they shift harm to the U.S. die casters and supply base. The 301 China tariffs have placed a 25% tax on four lists of items totaling over 7,000 items imported from China into the U.S. with threats of increasing the tax to 30% if a better trade deal is not reached with China. Although it may be questionable whether the 301 tariffs are appropriate measures for balancing trade, at least some attempt has been made to deal with China and the trade deficit. It is doubtful that tariffs will go away soon and some surmise that even if the 2020 election goes in favor of the Democrats there will still be some level of tariffs continued.

**Macro-Economics**

The U.S. GDP quarter over quarter growth the rate for the 3rd quarter of 2019 was 2.1%. This beat the expectation for the third quarter of 1.6%. The forecast for all of 2019 is 2.2%. The GDP growth in 2016, 2017 and 2018 was 2.1%, 2.5%, and 3.0%, respectively. Hence, the U.S. GDP growth has slowed in 2019 as compared to 2018, but is forecast to still be higher than 2016. Canada’s GDP growth rate for the 3rd quarter of 2019 was 0.3%, falling from 0.9% in the second quarter of 2019, which was the highest growth rate in 2 years. Canada’s GDP growth rate in 2016, 2017 and 2018 was 1.1%, 3.0%, and 1.8%, respectively. The GDP growth rate forecast for 2019 is about 1.3%. Mexico had a GDP growth rate for the 3rd quarter of 2019 of 0.1%, exceeding 0% for the second quarter and -0.3% for the first quarter of 2019. Mexico’s GDP growth rate in 2016, 2017 and 2018 was 2.9%, 2.0%, and 2.1%, respectively. The GDP growth rate forecast for 2019 is about 1.8%.
Consumer sentiment remains high. With more people working and making money, consumer spending remains fairly high and consumer spending at present is especially needed to keep the economy moving as companies are currently investing less (in part due to trade uncertainties). Overall unemployment is at a 50-year low level of 3.5%. Over 5 million people have found a job since the beginning of 2017. Although the low unemployment rate is good for the economy, it contributes to the inability to find qualified workers for our industry. In light of the challenges of trade uncertainties and the inability to find qualified workers, as well as other challenges such as rising healthcare costs, manufacturing in general maintains a positive outlook and capacity use for all of U.S. manufacturing increased to 77.5% in the third quarter of 2019 from 75.5% in January of 2017.

Figure 7 - Historic consumer sentiment from 2009 through the third quarter of 2019.

The National Association of Manufacturers (NAM) conducts a quarterly survey that NADCA follows. The survey is conducted for all manufacturing sectors. One portion of the survey asks CEOs of manufacturing companies to rate the challenges they face. Going into the 2016 election, the top 3 challenges cited were rising healthcare/insurance costs, unfavorable business climate (i.e. taxes, regulations), and a weaker domestic economy and sales for our products. There were 73.9% of the CEOs that indicated rising healthcare costs was their top priority. Unfavorable business climate was the 2nd biggest challenge as indicated by 73% of the respondents. In 3rd place was weaker domestic currency and sales for our products with 61.2%, indicating that this was a challenge. Results from the 4th quarter of 2017 show that attracting and retaining a quality workforce was the number one challenge (72.9% of the CEO’s). Rising health care costs dropped to 2nd place (72.3%) and unfavorable business climate dropped to 3rd place (48.0%). Today, the third quarter of 2019 results still show attracting and retaining a quality workforce as the top challenge (by 69.9% of the respondents), but now trade uncertainties has become the second largest challenge (by 63.4% of the respondents), and rising health care costs has dropped to 3rd place (by 51.8% of the respondents). Unfavorable business climate dropped all the way to 9th place with 19.9% indicating this as a challenge. So over the past few years under the current Administration, the challenges faced by manufacturing have changed fairly significantly.

Figure 8 - Top challenges rated by manufacturing CEOs in the third quarter of 2016. (NAM Quarterly Survey)

When asked how companies are addressing the shortage of skilled workers, the top challenge, it was found that 69.9% are creating or expanding internal training programs, 67.6% are working the existing workforce longer, 58.7% are utilizing temporary staffing services, and 55.0% are collaborating with educational institutions on certification programs. To a much lesser extent, some are encouraging older employees to retire later, working with local employment offices, and considering moving operations to another location. With the extremely low unemployment and not enough individuals being added to the workforce pool, the shortage of skilled workers is an issue that appears to have no near-term resolution. Perhaps this is the impetus for more automation and seeking additional ways to become more productive.

Figure 9 - Top challenges rated by manufacturing CEOs in the third quarter of 2019. (NAM Quarterly Survey)

As part of the quarterly survey, NAM produces a Manufacturing CEO Outlook Index. Through most of 2016, the index for small, medium and large size companies was relatively low with an index range from the low-30s to the mid-40s. Shortly after the 2016 election, the index rose to 60 and had stayed in the mid-50s to mid-60s range through the first quarter of 2019. Since the first quarter of 2019, the index has been declining and as of the third quarter is between 40 and 50. In the second quarter of 2016, 61.7% of the survey respondents were positive in their own company’s outlook. In 2018, the positive outlook reached a 20-
year all-time high of 92.4%. As of the third quarter of 2019, 67.9% have a positive outlook. Reasons for the decline include trade uncertainties, the workforce shortage, and a softening global economy. All considered, manufacturing still has a more positive outlook than it had in mid-2016.

Markets Served by Die Casting

Die casting serves several end markets including lawn and garden equipment, hand and power tools, telecommunication devices, computers and business equipment, plumbing, medical devices, sports and recreation equipment, aerospace, and others. The top 2 markets comprising about 75% of all shipments are automotive and housing. For aluminum die casting, automotive is the top market, followed by housing. For zinc die casting, housing is the top market followed by automotive. With automotive and housing comprising the bulk of die casting shipments, NADCA closely follows light vehicle sales and new housing starts.

According to Statista, plug-in electric vehicles comprised 1.2% of the U.S. market in 2018 and are projected to grow to only 7.6% by 2026, even though the number of electric vehicle models is projected to nearly triple from now through 2025. So, it appears that there will be quite some time before the powertrain driven vehicles are overtaken by the electric vehicles, unless a disrupter, such as a mandate, comes into play.

Figure 12 - Estimated growth in the number of non-gas automobile models through 2025. (WardsAuto Intelligence)

The SAAR for new privately-owned new housing starts was 1.31 million for October of 2019. In 2019, the low was an SAAR of 1.15 in February and the high was an SAAR of 1.38 in August. The forecast for 2019 is slightly more than 1.25 million new housing starts. There were 1.20 million new starts in 2017 and 1.25 million in 2018, therefore, only a slight growth in 2019 as compared to earlier forecasts of nearly 1.3 million units or about a 4% growth in 2019 over 2018. The forecast for 2020 by Freddie Mac is 1.28 million new housing starts. Low interest rates continue to be a contributing factor in maintaining a healthy housing market. Items such as appliances and lawn and garden equipment are items that individuals typically buy when they purchase a new home, so a good housing market assists in making for a good appliance and lawn and garden market as well.

Figure 13 - Monthly seasonally adjusted annual rate of new privately-owned housing starts sales. Nov 2018–Oct 2019. (Source: Trading Economics)
Table 1 - Quarter over quarter shipment comparison from the NADCA business barometer survey.

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<th>Overall</th>
<th>Automotive</th>
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<th>Al</th>
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<tr>
<td>4th Q'19 vs 3rd Q'19</td>
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<td>3rd Q'19 vs 2nd Q'19</td>
<td>-4.02%</td>
<td>-3.86%</td>
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<td>2nd Q'19 vs 1st Q'19</td>
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<td>1st Q'19 vs 4th Q'18</td>
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<td>-0.65%</td>
<td>-2.16%</td>
<td>-2.04%</td>
<td>2.27%</td>
<td>9.91%</td>
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Table 2 - Quarter over quarter shipment forecast for 2019 vs 2018 from the NADCA business barometer survey.

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<th>Non-Auto</th>
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<tr>
<td>2019 Actual vs 2018</td>
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<tr>
<td>2019 vs 2018 Forecast (Q3)</td>
<td>-3.06%</td>
<td>-4.28%</td>
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<td>-1.80%</td>
<td>7.38%</td>
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<td>2019 vs 2018 Forecast (Q2)</td>
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<td>-5.05%</td>
<td>0.02%</td>
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<td>0.79%</td>
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<tr>
<td>2019 vs 2018 Forecast (Q1)</td>
<td>-0.31%</td>
<td>-0.98%</td>
<td>-0.10%</td>
<td>-0.83%</td>
<td>3.99%</td>
<td>No change</td>
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NADCA conducts its own quarterly survey to determine the current level of die casting shipments, a forecast for shipments, and indicators of future shipments (such as die builds and quoting activity). In addition, information on die casting shipments is obtained from the Aluminum Association. Die castings in the U.S. are produced by 404 die casting plants. There are about 40 die casting plants in Canada and an estimated 100+ plants in Mexico. In 2018, the U.S. die casting plants shipped 3.12 billion pounds of aluminum die castings and 379 million pounds of zinc die castings. Aluminum shipments were about 0.5% higher in 2018 compared to 2017 and zinc shipments were about 2.5% higher in 2018 compared to 2017.

The most recent results from the third quarter of 2019 NADCA survey indicate that overall shipments were down 4.02% from the second quarter of 2019. Automotive related shipments were down 3.86% and non-automotive related shipments were down 4.06% from the previous quarter. Segregated by alloy family, aluminum, zinc and magnesium shipments were down 3.24%, 1.80% and 7.38%, respectively from the previous quarter.
compared to 2018. Magnesium is forecast to be up 7.38% in 2019 compared to 2018. Capacity use in the third quarter of 2019 was 62.4% overall for die casting. Capacity use in automotive was 74.4% and capacity use in non-automotive was 57.6%. (The capacity use for all of manufacturing was 77.4% as mentioned above). At the end of 2018, the overall capacity use for die casting was 65%, with automotive at 76% and non-automotive at 60%. The slight decline in overall capacity use is consistent with the forecast lower level of overall shipments in 2019 versus 2018.

In the third quarter of 2019, quoting new jobs was up a slight 1.3% and new die builds were up a scant 0.8% compared to the third quarter of 2018. These low percentages indicate that there is no significant growth ahead and that the slight softening in the automotive market and level housing market forecast for 2020 may be correct.

**Figure 16** - Quoting of new jobs in the third quarter 2019 vs the third quarter 2018. Overall, quoting was up 1.3%.

**Figure 17** - New die builds in third quarter 2019 vs third quarter 2018. Overall, die builds were up a scant 0.8%.

**Conclusions**

Under the current Administration, progress has been made in tax reform, trade balancing and military spending, however, no real progress has been made in healthcare reform, infrastructure spending, and immigration reform. The overall outlook in U.S. manufacturing remains more positive than in mid-2016, but the all-time high positive outlook seen in 2018 has been eroded by the lack of qualified workers and trade uncertainties (cited as the top two challenges by CEOs), as well as softening of the global economy.

Light vehicle sales are forecast to hit 16.9 million units in 2019, which is 1.8% lower than the 2018 sales level of 17.2 million units. The forecast for 2020 and 2021 is further softening to 16.5 million units, which is still a reasonably strong level of sales. New housing starts are forecast to be slightly more than 1.25 million in 2019 as compared to 1.25 million units in 2018. The forecast for 2020 is slight growth to 1.28 million new housing starts.

Following the pattern for the top two markets of automotive and housing, overall die casting shipments are forecast to be down 3.06% in 2019 compared to 2018. It is estimated that shipments will be down a few percent from the 2019 level in 2020.