SEATTLE U

Ticker: ATI
Company: Allegheny Technologies Inc.
Sector: Industrials
Analyst: Leonard Wong

Recommendation: Hold
Current Price: $23.01
Target Price: $24.15
Date: 11/15/2019

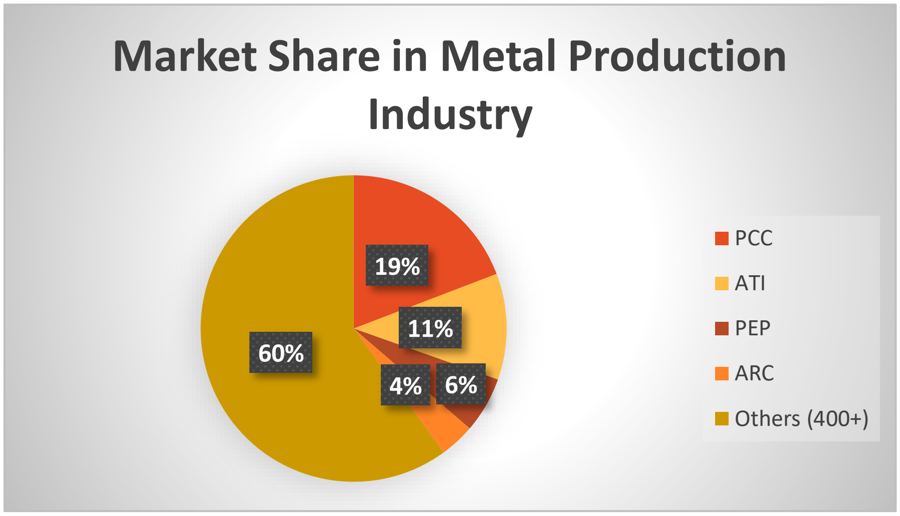
Market Snapshot	
Shares Outstanding (mn)	126.1
Market Cap (mn)	2400
52-week high	29.5
52-week low	17.03
TTM P/E	10.58
Beta	2.29

Investment Thesis

We issue a buy recommendation on ATI with a target price of $24.15, providing a 4.95% upside. Our opinion is based on a combination of an Intrinsic (FCFF) valuation with an 80% weighting and a Relative (Multiples) evaluation with a 20% weighting.

Diversification in Business Segment

ATI operates two main business segments 1) Flat-rolled products and 2) High Performance and Specialty Materials. In recent years, ATI has decided to focus on their High-Performance segment which currently accounts for 60% of their revenue which is up 20% from 4 years ago. The High-Performance segment is the main driver for their increased operating income. The products are highly specialized built primarily for next generation aircrafts and is currently a very nice sector with very little players.



Increased Spending in U.S Aerospace & Defense Industry

A&D is the leading net exporting industry in the U.S with a net trade surplus of $86 million dollars in 2017. The Trump administration has proposed an increase in military spending with a budget of $750 billion dollars in defense for next year. Increased tensions in Iraq and trade concerns put additional pressure for next generation military technology. A large supplier for this sector comes from manufacturing and industrials thus presenting a large opportunity for long-term growth. The 2018 Boeing Market Outlook has projected a $3.1 trillion-dollar demand for commercial aircrafts until 2028. An additional $2.5 trillion dollars is added on top of that as government plans to expand military systems and space programs. The current commercial aircraft backlog will continue to be a driving source of revenue for this industry. Passenger traffic and cargo traffic are growing at a rate of 4.6% and 4.2% respectively, with many new aircrafts needed to fulfill these accommodations. As of December of 2019, Boeing has announced that it will suspend production of its 737 aircraft starting January 2020 which will have a large effect on the short-term health of the industry.

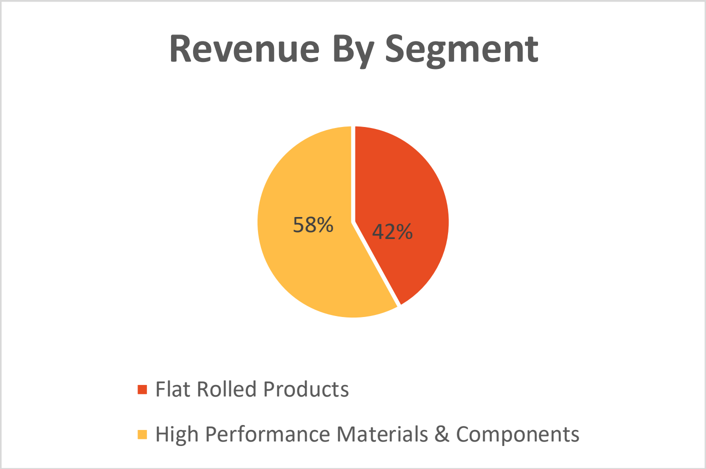
Business Description

Allegheny Technologies Incorporated was created in 1996 after a merger Allegheny Ludlam and Teledyne. Previously, Allegheny Steel of Pittsburgh and Ludlum Steel of New York had a merger in 1939 to create Allegheny Ludlam. Allegheny Technologies spun off several independent public companies in order to focus on its core business of metal and alloy production. ATI's mission is to Build the World's Best Specialty Materials & Components Company™. This vision hinges on one core value that they prioritize above all else: Never stop innovating. Creating Long-Term Value Thru Relentless Innovation® which is the epitome of their work ethic.

ATI currently operates in two main business segments high-performance and specialty components and flat-rolled materials. It currently has over 8,800 employees and 53 office locations worldwide. The company currently receives 40% of its sales internationally and 60% domestically.

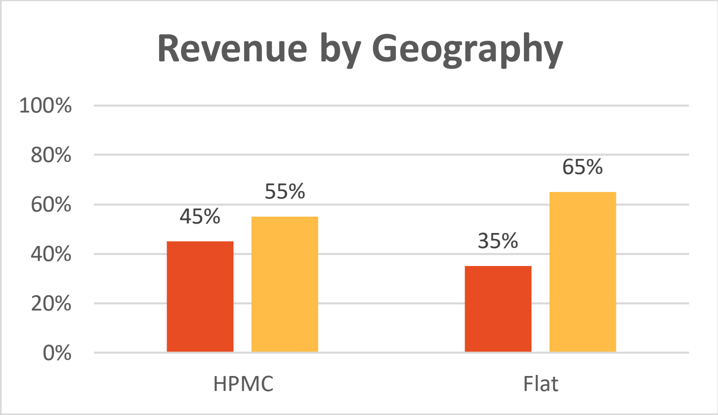
Over the past few years the company has accelerated its production and innovation in its High-Performance segment which is the differentiating factor between other companies in its industry. ATI also has an extensive network of processing and distribution centers with a vertically integrated supply chain that can meet complex supply chain requirements.

Flat-Rolled Products



This business segment consists of stainless-steel sheets, specialty plates, and specialty coils. The production is generated using a Hot Rolling and Processing Facility (HRPF) which is one of the most powerful mills in the world. The core mission for this segment is to work towards increasing asset utilization in a capital-efficient manner in order to provide both sustainability and profitability. Over the last few years, operating profit has nearly doubled. Key drivers for this included increased volumes of nickel, titanium, and Precision Rolled Strip product lines. The HRPF enables new products to maintain high strengths at high temperatures and increasing corrosion resistance compared to other vendors. The main consumers for this segment include oil & gas, aerospace & defense, and electrical energy markets. In 2018, ATI announced a 50-50 joint venture with A&T Stainless which now allows them to cover up to 40% of the flat-rolled sheet market in the U.S.

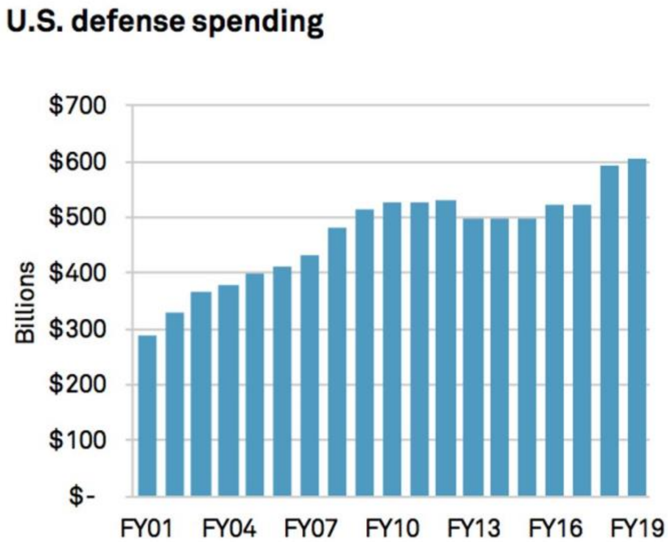
High Performance Materials & Components



This segment has earned a strong market position on next-generation jet engines. The core mission is to execute and become flawless leader in the aerospace industry in order to receive the first opportunities in supply and innovation. The product lines within this segment consist of Nickel-Based Alloys and Super Alloys, Titanium Alloys, and Specialty Steels. ATI has invested heavily in R&D for this segment in order to further alloy development, high-temperature and corrosion solutions, and metallurgical evaluation solutions. The company has also worked towards increasing long-term agreements, integrating their supply chain, incorporating next generation applications, optimizing material and product design, and maintaining state-of-the-art processes in metal manufacturing. This segment generated 36% year-over-year growth in its operating profit because of its improvement in product mix for next-generation engines and increased asset utilization to meet customer demands. The company has begun investing in a three-year $95 million expansion in their iso-thermal forging and heat-treating capacities in order to satisfy growing demands.

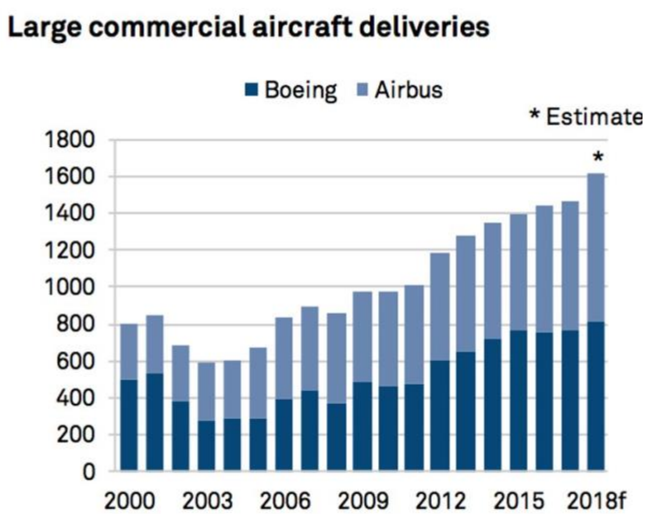
Industry Overview

U.S Defense Spending



America's military budget is set to grow for the fifth consecutive year to near-historic highs. The Trump administration has proposed a $750 billion-dollar budget for defense while cutting funding towards healthcare and education programs. This budget has been growing since 2015 when it was only $586 billion. Of the $750 billion, $718 billion is for the Defense Department and the military is the second largest budget after Social Security. This increase would be greater than at any time during World War II, except during a number of years during the war with Iraq. The purpose of this strategy-driven budget is to invest in next-generation technology, space, and cyber security. An increase in the Defense budget will continue to spur income into the Aerospace & Defense industry. ATI will benefit from the increase as 50% of their revenue from the Aerospace & Defense sector are products for the U.S military. Building long-term relationships with the government will also aid in creating new innovation and next-generation metals for aircrafts.

Commercial Aircraft Demand



Boeing has lifted its long-term forecast for commercial aircrafts as rising passenger traffic and airplane retirements drive up demand for new aircrafts. The company's annual forecast has claimed a 4.2% growth annually as economies around the world continue to grow and increase demand. In a twenty-year outlook, the total number of projected aircrafts are expected to double up to 48,000 planes creating a market value of $8.8 trillion dollars. The Asia-Pacific region will account for 40% of the airplane deliveries while North America and Europe will account for about 20% each. Passenger traffic, commercial usage, and military usage will all continue to increase as firms try to create significant investments in technology and infrastructure. Allegheny Technologies will benefit greatly from the increased traffic in the aircraft space as they will be a primary supplier for next generation parts and designs.

Commercial aircraft production

	2018 deliveries	2017 deliveries	Net orders	2018 backlog	2017 backlog
Airbus	800	718	747	7,577	7,265
Boeing	806	763	893	5,864	5,873

Competitive Positioning

Threat of New Entrants: Currently, Allegheny Technologies is the second largest player in this industry holding 11.2% of the market share behind Precision Corporation which holds 19.4% of the market. The rest of the market consists of a number of small players that typically specialize in a certain product type. Internal competition is steady with price being a major factor which allows larger players to remain at an advantage with their integrated supply chains. External competition is high because of increased production abroad due to many companies being supported or subsidized by their governments. Some product types also face issues of substitutes like plastic or ceramic; however, most nonferrous metals have distinct properties that make them essential in highly demanding applications.

Bargaining Power of Suppliers: Most companies in the nonferrous metal industry source their raw materials from many different vendors. Suppliers typically hold a more dominant position in because of the large number of buyers. Allegheny Technologies holds a medium level of risk with their suppliers. Increases in raw material prices may not have as large of an effect because of their long-term contracts and raw material surcharge prices. Smaller companies will feel the burden of increasing prices much more than a well-established corporation. The company focuses on building an efficient supply chain with multiple suppliers, experimenting with different resources, and creating long-lasting relationships with their suppliers.

Bargaining Power of Buyers: In this industry, customers hold a large amount of power and often demand a lot from the manufactures. Allegheny Technologies has a large customer base which will alleviate the pressure of the demand from smaller customer bases. The company's mission to continuously provide new innovations will force customers to rely on their products thereby lowering the bargaining power.

Threat of Substitute: Allegheny Technologies has a medium level for threat of substitutes in the Flat-Rolled Product segment. Many other companies produce similar products, but ATI remains a strong player because of their manufacturing power and ability to meet demand. For their High-Performance Materials the threat of substitutes is low because of their specialty materials required for next generation aircrafts along with their robust infrastructure and supply chain.

Competitive Rivalry: Due to the large number of players in this industry, there is a high level of competitive rivalry. Allegheny Technologies multiple partnerships will alleviate some of the pressure within this competitive space. As the second largest player in terms of total market share, ATI currently holds a strong advantage towards potential growth and customer retention. Smaller companies may compete between individual product lines, but ATI has created a strong reputation in the industry has the capability to continuously innovate in order to stay ahead of the competition. The ability to create a sustainable differentiation, scale of production, and collaboration all aid to tackle this competitive environment.

Valuation

We issue a buy recommendation for ATI with a target price of $26.09 representing a 13.37% upside from $23.01 per share on November 20th, 2019. Our target price consists of a relative evaluation model which established a price of $21.58 and an intrinsic model which established a price of $27.21. The relative model was weighted at 80% and the relative evaluation was weighted at 20%. We decided to weight the relative model at a lower percentage because of the lack of adequate comparisons for the business segments. The intrinsic model also allowed us to take into account global aircraft demand and growth within the defense sector which holds a large weight in our growth projections.

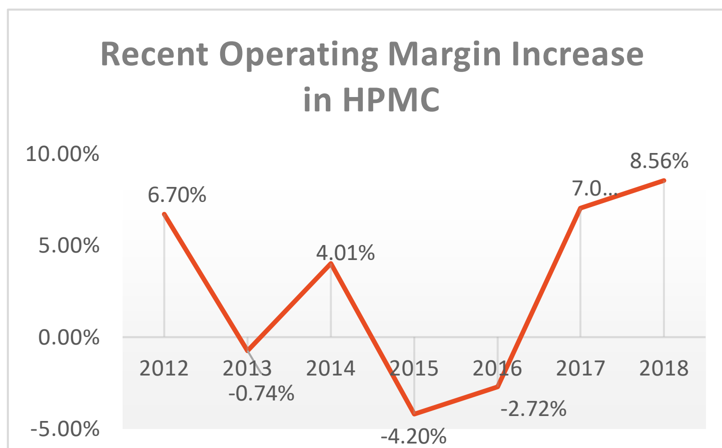
Year	2019	2020	2021	2022	2023	2024
Revenue Growth Industry	1.60%	1.80%	1%	1.10%	1.10%	1.10%
50% - 35% REV in Industry	0.80%	0.90%	0.50%	0.55%	0.55%	0.55%
50% - 65% REV in A&D	3.25%	3.58%	3.74%	3.90%	4.06%	4.23%
Growth Rate	4.05%	4.48%	4.24%	4.45%	4.61%	3.78%

Countries	China	France	U.S	India	Global Average
A&D Growth Est	9.00%	5.00%	5.00%	7.00%	6.50%
Rev Growth 50% - 65%	55%	57.50%	60%	62.50%	65%
3.25%	3.58%	3.74%	3.90%	4.06%	4.23%

Revenues: We forecasted ATI's revenue growth projection by taking into account the revenue growth in the industry as well as the growth in the A&D sector. We put a 50% weight for the projected industry growth as well as the A&D growth. ATI's continued investment in their High-Performance Material segment is more aligned with the growth rate of the aerospace sector Thus, the weighting of the two sectors will change by a 10% difference every year with the industry growth rate subjected to a 5% decrease and the aerospace sector growth rate increasing by 5%.

Margins

We expect Allegheny Technologies future margins to continue to increase as operational costs for production will begin to slow down once the technology is established to create their High-Performance segment efficiently. For the past 3 years, ATI has had strong operating margin growth because of the strong performance in this business segment. Next generation aircraft materials and products continue to be researched and will further add to this growth.



Taxes:

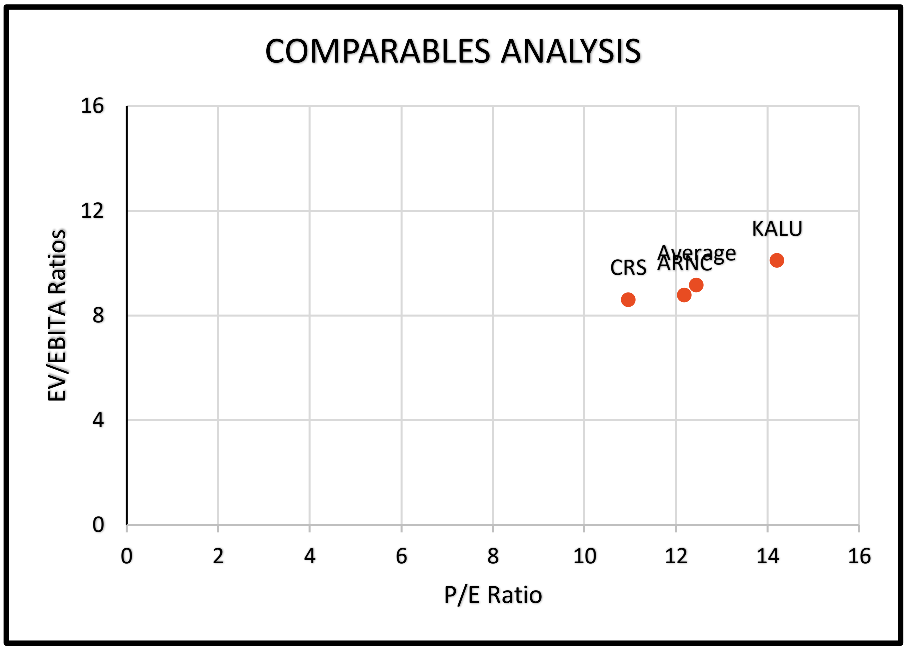
Allegheny Technologies operates around the globe with about 40% of their revenue generated internationally and 60% domestically. From their 10k, we gathered that their effective tax rate was reported to be 21% for the past couple of years and we can assume that this will stay constant in the future.

Terminal Growth Rate:

Our terminal growth rate is 3.78%. The terminal rate factors in the growth rate of real GDP at 2% as well as the population growth rate in the U.S at 0.7%. The terminal growth rate assumptions also include the industry growth rate for nonferrous metals and the long-term growth of the aerospace & defense sector which was determined to be 1%.

WACC:
We arrived at a WACC of 12.86 % for ATI. A detailed breakdown of our WACC is presented below:

ASSUMPTION	RATE	METHODOLOGY
Risk-Free Rate	2.53%	US 30-year Treasury Bond
Market Return	8.00%	S&P500 Average Return on Market
Beta (x)	2.29	Value Line
Cost of Equity	15.06%	Calculated via CAPM
Cost of Debt	8.68%	Estimated future borrowing rate of MSFT based on AAA Standard & Poor's Rating
Tax Rate	21.00%	Effective Tax Rate
WACC	12.86%	



Relative Valuation:
We identified 3 peers which have product lines operating in the nonferrous metal production industry. Similarly, these companies also supply and work with many firms in the aerospace and manufacturing sector. We were unable to find many other comparables firms as a large number of the players in this industry are either private or compete in niche parts of their business segments. We use P/E due to its common use in industries to determine a price and EV/EBITDA due to the high capital intensity nature of the industry

Financial Analysis

Focus on High-Performance Segment Increasing Margins
In the past three years, ATI has begun to shift their business strategy from a 50/50 split in Flat-Rolled Products and High-Performance Materials. In 2019 the company reported that the Flat-Rolled segment had contributed to about 40% of the total revenue generated. The High-Performance segment thus increased to 60% which consists of a majority of their specialty products and metals. The High-Performance segment also creates the largest operating margin as many of the products sold hold high value thereby increasing the cost of purchasing for customers.

Stabilization of Oil & Gas Prices
In 2015 and 2016, the company suffered major losses in revenue and operating profit because of the steep drop in oil prices. Many companies in the industrial sector faced a downturn during these years as U.S producers were unable to compete with the production capabilities of Saudi Arabia which was able to maintain low prices because of large surplus they controlled. In the last three years oil prices have begun to stay at a moderate level and have yet to show signs of much fluctuations. If this continues to be a trend the metal industry will benefit greatly from the low volatility.

Second Largest Market Share & Global Presence
Allegheny Technologies operates in over 90 countries with over 11,000 employees. There are multiple manufacturing facilities based in the U.S, Asia and Europe. A large portion of their facilities in the United States are located in the Southern and Northeastern regions with their headquarters located in Pittsburg. Their large-scale production capabilities and reach allow them to establish relationships with various customer bases.

Investment Risk

Manufacturing Slowdown
The Producer's Manufacturing Index dropped below 50 basis points in 2019 indicating a possible recession as many managers agree on a slowing economy in the manufacturing sector. Total output has dropped by 0.5% since last quarter with the automobile, mining, and electrical sector taking most of the blow. The Fed's latest industrial production report stated an annualized decline of 2.2% in factory output in Q2 compared to a 1.9% decline in Q1. Weak business spending reflects the decision of firms to hold back on investment opportunities amid political uncertainty.

Tariffs & International Trade
The U.S & China have agreed on a phase 1 trade deal which is set to be signed mid-January. Global tensions have been tight as political uncertainty between different countries have left the global economy waiting for a conclusive answer. While the phase 1 trade deal has already been a large step to the ongoing trade tensions it is uncertain just how far this will alleviate the current issues between the U.S and China. Both China and the U.S are large importers and exporters of goods with the industrial sector being heavily involved in global trade. Tariffs to both sides will show signs of impact to ATI's core business of metal production which is sourced from around the globe.

Boeing 737 Max Suspension and Backlog
Boeing's worldwide flight ban has been ongoing for the past 10 months. The company has also stated that starting January 2020 there will be a suspension of production for the 737 MAX without a clear timetable for return. The image of the company has been under constant attack and deliveries have been stopped hurting their revenue and cash reserves. The grounding has begun to slow demand and orders halted to a moderate pace as many are not sure when the issue will be resolves. Boeing currently has a backlog of almost 6,000 planes which is valued at $400 million dollars. Over 80% of the backlog consists of the 737 MAX and it is unsure when many of those orders will be fulfilled. The aircraft industry will no doubt take a large hit in the short-term while these issues continue but future prospects of air travel and demand for better technology will continue to spur investments into the A&D sector.

Environmental, Social and Corporate Governance

Environmental

Allegheny Technologies consider environmental compliance to be an integral part of the operations. The firm has created an environmental management and reporting program that focuses on all levels of environmental regulations and laws. So far there have not been any major issues regarding environmental liabilities, however, the company has been subject to various claims. As of December 2018, ATI holds a reserve of $20 million dollars for any potential liability that may be incurred because of environmental issues but based on current information there does not seem to be any reasonable cause for concern that an issue may occur. The firm recently established an acid regeneration system in order to reduce consumption and sludge generation. So far there have been major improvements with nitric acid, hydrofluoric acid, sulfuric acid, lime, and wastewater sludge being reduced by 57%, 30%, 25%, 35%, and 20% respectively. In 2018, the firm developed a process with different recyclers to produce briquettes from spent shotblast baghouse dust and scale and have been using it as raw material, thus reducing the amount of purchased material and eliminating excess waste by-products.

2022	2025	2030
Include all manufacturing facilities in metrics	↓ Reduce Energy Intensity 5%	↓ Reduce Energy Intensity 7%
All manufacturing facilities ISO 14001 and 45001 certified	↓ Reduce CO_2e/GHG emissions 5%	↓ Reduce CO_2e/GHG emissions 7%
	↓ Reduce freshwater intake 5%	↓ Reduce freshwater intake 8%
	↑ Increase recycled materials used in production to 80%	↑ Increase recycled materials used in production to 83%

**When using 2018 as baseline year.

Nitric acid	↓ 57%
Hydrofluoric acid	↓ 30%
Sulfuric acid	↓ 25%
Lime	↓ 35%
Wastewater Treatment Plant Sludge	↓ 20%

Social & Corporate

Every year ATI participates in multiple volunteer activities and works with many different charitable organizations. Community involvement and maintaining a close relationship is one of their core values. In 2018, ATI worked with Boys & Girls Club, H.O.P.E, United Day of Caring, YMCA, Toys for Tot, and Red Cross. ATI also donated $20,000 to various fire departments and emergency rescue units across the United States. The company also focuses on donating excess materials to schools and educational programs. Currently, 3 of the 12 directors are women and only 1 is a minority. The company has been recognized for 8 consecutive years of comprising their board with over 20% women. While the minority percentage is still low the company continues to strive for diversity and inclusion in all aspects of their working environment.

WOMEN AND MINORITIES ACROSS ATI—2018

3 of 12 women directors

1 of 6 women on executive committee

1 of 12 minority directors

0 minority executives

APPENDIX 1: FINANCIAL RATIOS

Ratios	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	2019E	2020E	2021E	2022E	2023E	2024E
Gross Margin	13.40%	6.25%	8.96%	1.62%	5.18%	14.10%	15.58%	14.84%	14.84%	14.84%	14.84%	14.84%	14.84%
Operating Margin	6.70%	-0.74%	4.01%	-4.20%	-2.72%	7.06%	8.56%	8.28%	8.28%	8.28%	8.28%	8.28%	8.28%
Interest Burden	76.44%	172.77%	1.36%	129.96%	120.33%	-182.88%	71.04%	58.72%	63.33%	65.15%	65.99%	66.38%	66.65%
Tax Burden	50.66%	-515.05%	-1.54%	241.62%	752.23%	-36.91%	64.24%	47.21%	58.12%	63.30%	65.82%	67.02%	67.68%
Net Margin	3.39%	3.81%	-0.06%	-10.16%	-20.45%	-2.61%	5.50%	3.91%	4.81%	5.24%	5.45%	5.55%	5.60%
Asset Turnover	75.92%	61.52%	62.71%	60.37%	57.40%	68.08%	75.73%	72.02%	69.49%	69.39%	69.46%	69.55%	69.07%
Return on Assets	2.54%	2.23%	-0.04%	-6.57%	-12.40%	-1.77%	4.04%	2.66%	3.27%	3.56%	3.71%	3.77%	3.82%
Financial Leverage	2.415	2.304	2.415	2.619	3.578	2.811	2.763	2.546	2.494	2.450	2.412	2.374	2.496
Return on Equity	6.12%	5.14%	-0.10%	-17.20%	-44.36%	-4.98%	11.17%	6.76%	8.16%	8.72%	8.94%	8.96%	9.54%
Current Ratio	2.88	2.44	2.76	2.72	2.49	2.69	2.68	2.73	2.75	2.76	2.75	2.75	2.77
Quick Ratio	1.12	1.34	1.12	0.87	1.03	1.04	1.24	1.12	1.13	1.13	1.13	1.13	1.13
Debt/Equity	57.21%	65.02%	55.71%	68.09%	129.91%	83.53%	77.43%	65.66%	64.33%	63.20%	62.22%	61.24%	64.40%
Net Debt/Equity	45.44%	30.74%	45.80%	61.27%	114.02%	75.85%	58.25%	54.78%	53.67%	52.74%	51.91%	51.09%	53.69%
Effective Tax Rate	21%	21%	21%	21%	21%	21%	21%	21%	21%	21%	21%	21%	21%

APPENDIX 2: INCOME STATEMENT

In Millions of USD except Per Share	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	Forecast					
12 Months Ending	12/31/2012	12/31/2013	12/31/2014	12/31/2015	12/31/2016	12/31/2017	12/31/2018	2019	2020	2021	2022	2023	2024
Revenue	**4,666.9**	**4,043.5**	**4,223.4**	**3,719.6**	**3,134.6**	**3,525.1**	**4,046.6**	**4,210.5**	**4,398.9**	**4,585.3**	**4,789.4**	**5,010.3**	**5,149.3**
+ Sales & Services Revenue	4,666.9	4,043.5	4,223.4	3,719.6	3,134.6	3,525.1	4,046.6						
- Cost of Revenue	4,041.4	3,790.9	3,844.8	3,659.3	2,972.1	3,028.1	3,416.3						
+ Cost of Goods & Services	4,041.4	3,790.9	3,844.8	3,659.3	2,972.1	3,028.1	3,416.3	3,585.8	3,746.2	3,905.0	4,078.7	4,266.9	4,385.3
Gross Profit	**625.5**	**252.6**	**378.6**	**60.3**	**162.5**	**497.0**	**630.3**	**624.7**	**652.7**	**680.3**	**710.6**	**743.4**	**764.0**
+ Other Operating Income	0.0	0.0	0.0	0.0	0.0	0.0	0.0						
- Operating Expenses	312.8	282.5	209.4	216.7	247.7	248.0	284.1	276.2	288.6	300.8	314.2	328.7	337.8
+ Selling, General & Admin	297.8	276.4	272.5	238.8	247.7	248.0	268.2	286.6	299.5	312.2	326.0	341.1	350.6
+ Research & Development	23.8	—	—	—	—	0.0	0.0						
+ Other Operating Expense	-8.8	6.1	-63.1	-22.1	0.0	0.0	15.9	-10.4	-10.9	-11.4	-11.9	-12.4	-12.7
Operating Income (Loss)	**312.7**	**-29.9**	**169.2**	**-156.4**	**-85.2**	**249.0**	**346.2**	**348.5**	**364.1**	**379.5**	**396.4**	**414.7**	**426.2**
- Non-Operating (Income) Loss	71.6	63.5	104.6	108.6	121.6	184.1	114.4	121.9	127.4	132.9	138.8	145.2	148.8
+ Interest Expense, Net	71.6	65.2	108.7	110.2	124.0	133.8	101.0	112.9	117.9	123.1	128.5	134.4	137.8
+ Interest Expense	*72.4*	*66.0*	*109.8*	*111.4*	*125.4*	*134.9*	*102.1*	*113.9*	*119.0*	*124.2*	*129.6*	*135.5*	*138.9*
- Interest Income	*0.8*	*0.8*	*1.1*	*1.2*	*1.4*	*1.1*	*1.1*	*1.1*	*1.1*	*1.1*	*1.1*	*1.1*	*1.1*
+ Foreign Exch (Gain) Loss	0.0	0.0	0.0	0.0	0.0	0.0	0.0						
+ (Income) Loss from Affiliates	—	—	—	—	—	—	—						
+ Other Non-Op (Income) Loss	0.0	-1.7	-4.1	-1.6	-2.4	50.3	13.4	9.0	9.4	9.8	10.3	10.7	11.0
Pretax Income (Loss), Adjusted	**241.1**	**-93.4**	**64.6**	**-265.0**	**-206.8**	**64.9**	**231.8**	**226.6**	**236.7**	**246.6**	**257.7**	**269.5**	**277.4**
- Abnormal Losses (Gains)	8.8	61.4	63.1	213.0	527.2	151.4	-15.9	66.1	33.0	16.5	8.3	4.1	2.1
Pretax Income (Loss), GAAP	**232.3**	**-154.8**	**1.5**	**-478.0**	**-734.0**	**-86.5**	**247.7**	**160.6**	**203.7**	**230.1**	**249.4**	**265.4**	**275.3**
- Income Tax Expense (Benefit)	72.4	-63.6	-8.7	-112.1	-106.9	-6.8	11.0	16.8	21.4	24.1	26.2	27.9	28.9
+ Current Income Tax	100.0	-129.8	-42.1	-51.7	13.4	4.1	10.3	33.7	42.8	48.3	52.4	55.7	57.8
+ Deferred Income Tax	-27.6	66.2	33.4	-60.4	-120.3	-10.9	0.7	-16.9	-21.4	-24.2	-26.2	-27.9	-28.9
Income (Loss) from Cont Ops	**159.9**	**-91.2**	**10.2**	**-365.9**	**-627.1**	**-79.7**	**236.7**	**177.4**	**225.1**	**254.3**	**275.6**	**293.3**	**304.2**
Income (Loss) Incl. MI	**167.8**	**161.6**	**9.6**	**-365.9**	**-627.1**	**-79.7**	**236.7**	**177.4**	**225.1**	**254.3**	**275.6**	**293.3**	**304.2**
- Minority Interest	9.4	7.6	12.2	12.0	13.8	12.2	14.3	12.9	13.5	14.0	14.6	15.3	15.7
Net Income, GAAP	**158.4**	**154.0**	**-2.6**	**-377.9**	**-640.9**	**-91.9**	**222.4**	**164.53**	**211.62**	**240.24**	**260.93**	**277.94**	**288.49**

Source: Bloomberg

APPENDIX 3: BALANCE SHEET

In Millions of USD except Per Share	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018
12 Months Ending	12/31/2009	12/31/2010	12/31/2011	12/31/2012	12/31/2013	12/31/2014	12/31/2015	12/31/2016	12/31/2017	12/31/2018
Total Assets										
+ Cash, Cash Equivalents & STI	708.8	432.3	380.6	304.6	1,026.8	269.5	149.8	229.6	141.6	382.0
+ Cash & Cash Equivalents	708.8	432.3	380.6	304.6	1,026.8	269.5	149.8	229.6	141.6	382.0
+ ST Investments	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
+ Accounts & Notes Receiv	392.0	545.4	709.1	613.3	528.2	603.6	400.3	452.1	545.3	527.8
+ Accounts Receivable, Net	392.0	545.4	709.1	613.3	528.2	603.6	400.3	452.1	545.3	527.8
+ Notes Receivable, Net	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
+ Unbilled Revenues	—	—	—	—	—	—	—	—	—	51.2
+ Inventories	825.5	1,024.5	1,384.3	1,536.6	1,322.1	1,472.8	1,271.6	1,037.0	1,176.1	1,211.1
+ Other ST Assets	71.3	112.9	95.5	56.1	73.7	136.2	45.9	47.8	52.7	74.6
Total Current Assets	**1,997.6**	**2,115.1**	**2,569.5**	**2,510.6**	**2,950.8**	**2,482.1**	**1,867.6**	**1,766.5**	**1,915.7**	**2,246.7**
+ Property, Plant & Equip, Net	1,907.9	1,989.3	2,368.8	2,559.9	2,874.1	2,961.8	2,928.2	2,498.9	2,495.7	2,475.0
+ Property, Plant & Equip	3,223.2	3,414.8	3,937.2	4,299.8	4,575.3	4,781.6	4,759.1	4,358.2	4,473.8	4,505.9
- Accumulated Depreciation	1,315.3	1,425.5	1,568.4	1,739.9	1,701.2	1,819.8	1,830.9	1,859.3	1,978.1	2,030.9
+ LT Investments & Receivables	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
+ Other LT Assets	440.5	389.2	1,108.6	1,177.3	1,073.6	1,127.8	955.9	904.6	774.0	780.1
Total Noncurrent Assets	**2,348.4**	**2,378.5**	**3,477.4**	**3,737.2**	**3,947.7**	**4,089.6**	**3,884.1**	**3,403.5**	**3,269.7**	**3,255.1**
Total Assets	**4,346.0**	**4,493.6**	**6,046.9**	**6,247.8**	**6,898.5**	**6,571.7**	**5,751.7**	**5,170.0**	**5,185.4**	**5,501.8**
Liabilities & Shareholders' Equity										
+ Payables & Accruals	557.2	626.5	797.3	822.9	774.4	863.8	682.6	596.9	700.4	751.8
+ ST Debt	33.5	141.4	27.3	17.1	419.9	17.8	3.9	105.1	10.1	6.6
+ Other ST Liabilities	33.9	23.1	37.2	31.5	16.7	16.1	0.0	6.7	2.1	78.5
Total Current Liabilities	**624.6**	**791.0**	**861.8**	**871.5**	**1,211.0**	**897.7**	**686.5**	**708.7**	**712.6**	**836.9**
Current Ratio										
+ LT Debt	1,037.6	921.9	1,482.0	1,463.0	1,527.4	1,498.2	1,491.8	1,771.9	1,530.6	1,535.5
+ Other LT Liabilities	594.2	651.3	1,131.5	1,326.2	1,165.4	1,454.4	1,376.9	1,244.6	1,097.7	1,137.8
Total Noncurrent Liabilities	**1,631.8**	**1,573.2**	**2,613.5**	**2,789.2**	**2,692.8**	**2,952.6**	**2,868.7**	**3,016.5**	**2,628.3**	**2,673.3**
Total Liabilities	**2,256.4**	**2,364.2**	**3,475.3**	**3,660.7**	**3,903.8**	**3,850.3**	**3,555.2**	**3,725.2**	**3,340.9**	**3,510.2**
Total Equity	**2,089.6**	**2,129.4**	**2,571.6**	**2,587.1**	**2,994.7**	**2,721.4**	**2,196.5**	**1,444.8**	**1,844.5**	**1,991.6**
Total Liabilities & Equity	**4,346.0**	**4,493.6**	**6,046.9**	**6,247.8**	**6,898.5**	**6,571.7**	**5,751.7**	**5,170.0**	**5,185.4**	**5,501.8**

APPENDIX 4: INTRINSIC VALUATION

In Millions of USD except Per Share 12 Months Ending	FY 2010 12/31/2010	FY 2011 12/31/2011	FY 2012 12/31/2012	FY 2013 12/31/2013	FY 2014 12/31/2014	FY 2015 12/31/2015	FY 2016 12/31/2016	FY 2017 12/31/2017	FY 2018 12/31/2018	2019E 12/31/2019	2020E 12/31/2020	2021E 2/31/2021	2022E 2/31/2022	2023E 2/31/2023	2024E 2/31/2024
Cash from Operating Activities															
Net Income	70.7	214.3	158.4	154.0	-2.6	-377.9	-640.9	-91.9	222.4	164.5	211.6	240.2	260.9	277.9	288.5
Depreciation	141.5	174.4	194.0	189.9	176.8	189.9	170.3	160.8	156.4	172.7	172.7	172.7	172.7	172.7	172.7
Deffered Income Taxes			-27.6	66.2	33.4	-60.4	-120.3	-10.9	0.7	-16.9	-21.4	-24.2	-26.2	-27.9	-28.9
Change in Non Cash Working Cap			7.40	-621.50	601.90	-283.60	-203.10	233.30	-33.70	108.32	59.65	51.31	54.90	59.57	43.63
Cash Flow from Operations			332.2	-211.4	809.5	-532.0	-794.0	291.3	345.8	428.7	422.5	440.0	462.3	482.3	475.9
Capital Expenditures			-382.0	-612.7	-225.7	-144.5	-202.2	-122.7	-139.2	-261.3	-261.3	-261.3	-261.3	-261.3	-261.3
Interest Expense * (1-Tax Rate)			56.6	51.5	85.9	87.1	98.0	105.7	79.8	89.2	93.2	97.2	101.5	106.2	108.9
FCFF			6.8	-772.6	669.7	-589.4	-898.2	274.3	286.4	256.5	254.4	276.0	302.5	327.2	323.4
Discount Rate			12.86%	12.86%	12.86%	12.86%	12.86%	12.86%	12.86%	12.86%	12.86%	12.86%	12.86%	12.86%	12.86%
Time Amount										0.126027	1.126027	2.126027	3.126027	4.126027	5.126027
PV of FCFF										$252.82	$222.02	$213.39	$207.24	$198.61	$173.93

FCFF	Values
Total PV of FCFF	$3,044.67
PV of Terminal Value	$1,776.66
Add Cash	382
Less Debt	1542.1
Equity Value	$1,884.57
Number of Shares	126.08
Current Price	23.01
Target Price (FCFF)	$24.15
Margin of Safety	4.95%

FCFF	Price	Weight
Intrinsic (FCFF)	$24.15	80%
Relative	$ 21.58	20%
Target Price (Final)	$23.63	100%
Upside	2.71%	

APPENDIX 5: RELATIVE VALUATION

Ticker	Company Name	P/E	EV/EBITA
ARNC	Arconic	12.19	8.76
CRS	Carpenter Tech Corp	10.96	8.6
KALU	Kaiser Aluminum Corp	14.21	10.08
Average		12.45	9.15

Multiples	Weight	Price Target
P/E	50%	$ 22.29
EV/EBITA	50%	$ 20.86
Target Price		$ 21.58