



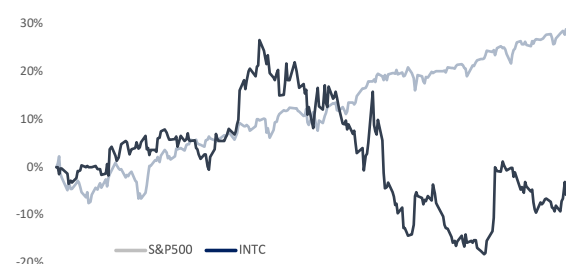
27 August 2021

**Analysts**

Kasikrit Chantharuang  
Jarold Ong Chu Chin  
Sivakumar Aadithya  
Nguyen My Binh An

**Basic Information of 27 August 2021**

Last Closed Price: US\$53.89  
Bloomberg Ticker: INTC  
GISC Sector: Information Technology  
GISC Sub-Industry: Semiconductors & Semiconductors Equipment

**1 Year Price VS Relative Index****Company Description**

Intel Corporation (INTC) is the world's largest semiconductor company by revenue. Intel designs, manufactures, and sells microprocessors for computer system manufacturers and offers non-platform or adjacent products comprising accelerators, boards and systems, connectivity products, and memory and storage products.

**Key Financials**

Market Cap US\$218.84B  
52-Week High-Low US\$43.61 - 68.49

(US\$b)	2Q2019	2Q2020	2Q2021
Revenue	16.5	19.7	19.6
Gr Rate (%)	(2.7%)	18.9%	(0.5%)
EBIT	28.0	28.9	28.3
Margin (%)			
ROE (%)	26.8	30.5	23.2
ROA (%)	15.3	16.6	12.3

**Key Personnel**

Patrick Gelsinger Chief Executive Officer  
Greg Lavender Chief Technology Officer  
Raja M. Konduri Senior Vice President & General manager

We are initiating coverage of Intel Corporation, ("INTC" or "Company") with a BUY rating in the long term.

**Competitive Forces Model**

- Extremely Low Threat of **Potential Entrants**
- Low Threat of **Substitutes** Goods/Services
- Moderate **Bargaining Power** of Buyers and Suppliers
- High Power of **Complementary** Goods/Services Providers
- High Intensity of Industry **Rivalry**

**Investment Thesis**

- **Accelerated Expansion of Fabrication Business** allows Intel to increase in revenue growth in the long term.
- **Huge Growth Potential for IOTG Segment** driven by increased EV sales trend in 3 major regions helps Intel to possibly ride the technological trend and boost its earnings.
- **A Strong Financial Position and Effective Recovery Plan** sets Intel up in a position to catch up with its peer swiftly.

**Investment Catalysts**

- **Governmental Support driven by Geopolitical Tensions** will boost Intel's standings significantly among its competitors.
- **Continual Demand Growth in the PC Market** driven by the continuation of lockdowns and shift of human behaviour around the world will continue to increase Intel's Client Computing Group (CCG) sales.

**Valuations**

We believe that INTC's stock is currently undervalued which is determined through the method of Relative Valuation using numerous valuation multiples such as P/BV and EV/EBITDA.

**Market Risks**

- **Geopolitical Tensions** between the US and China
- Investors' Increasing **Sentimental Adherence to Social Responsibility**

## Company Overview

Intel Corporation (INTC) is the world's largest semiconductor company by revenue based in California, the United States of America. Intel designs, manufactures, and sells microprocessors for computer system manufacturers and offers non-platform or adjacent products comprising accelerators, boards and systems, connectivity products, and memory and storage products.

Its revenue comes from five main segments:

### Computer Client Group (CCG)

CCG, which takes up around 55% of Intel's revenue, emphasises on platforms designed for notebooks, 2-in-1 systems, desktops, tablets, and smartphones. It also includes wired and wireless connectivity products and mobile communication components.

### Data Centre Group (DCG)

DCG, which takes up around 35% of Intel's revenue, focuses on building workload-optimized computing, storage, and network systems. Cloud service providers, corporate and government, and communications service providers are sub-sections among the DCG segment.

### Internet of Things Group (IOTG)

IOTG, which takes up around 5% of Intel's revenue, focuses on developing high-performance compute for targeted verticals and embedded markets. IOTG customers include retailers, manufacturers, healthcare providers, energy companies, automakers, and governments.

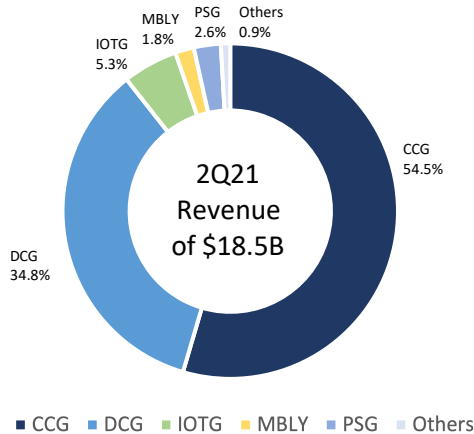
### Mobileye (MBLY)

MBLY, which takes up around 2% of Intel's revenue, develops self-driving cars and advanced driver-assistance systems ("ADAS"). The product utilizes a wide range of technology from computer vision to machine learning and data analysis.

### Programmable Solutions Group (PSG)

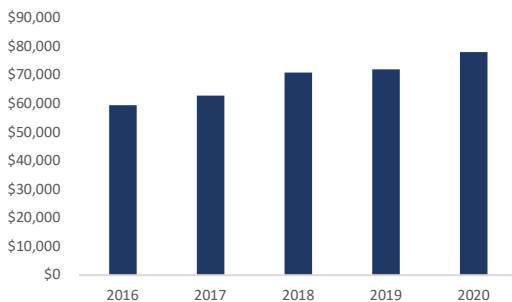
PSG, which takes up around 3% of Intel's revenue, manufactures programmable semiconductors, mainly FPGAs and structured ASICs, as well as associated products, for a variety of markets, including communications, data center, industrial, and military. PSG's product line includes FPGA accelerators that work in conjunction with Intel microprocessors.

Figure 1: Revenue per Segment (2Q2021)



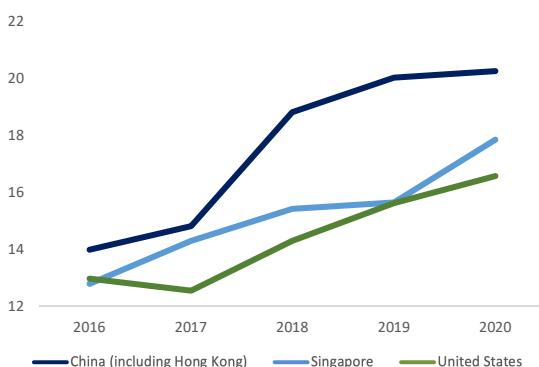
Source: Intel's 10-Q

Figure 2: Revenue Growth by Year



Source: Company Reports

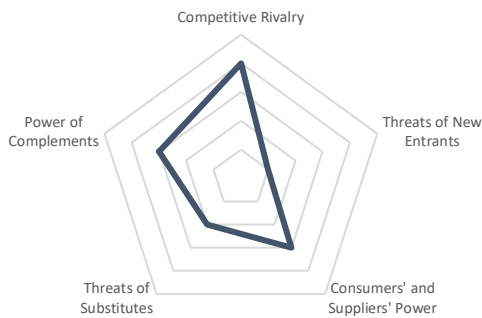
Figure 3: Revenue by Top 3 Regions



Source: Company Reports

## Competitive Forces Model

Figure 4: Competitive Forces Model

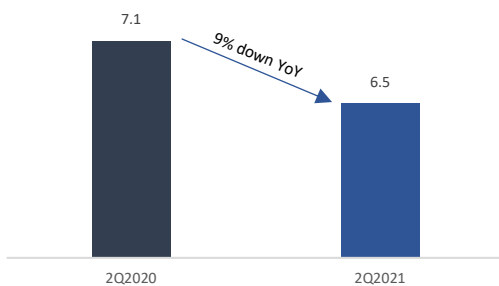


Source: Our Analysts' Estimates

We have condensed the company overview and industry overview into a Competitive Forces Model diagram. As such, we can conclude the following: competition within the industry is high due to constant technological need for R&D; threat of new entrants is extremely low due to high economies of scale; bargaining power of consumers and suppliers are moderate since competitors' products are marketed differently but Intel deals with only a few suppliers; threat of substitutes is moderately low due to high switching costs and differentiated products; and power of complements are moderately high since motherboards are required to work with semiconductor CPU chips.

### Intensity of Industry Rivalry - High

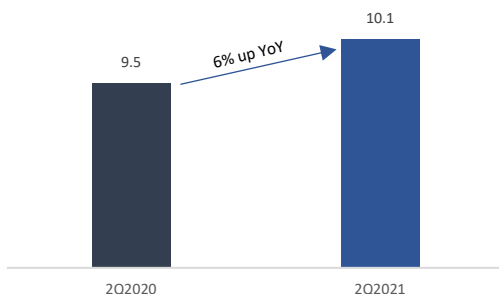
Figure 5: Intel's DCG Revenue (US\$b)



Source: Intel's 10-K

Intel faces fierce competition in the data-centric, PC-centric, memory, programmable semiconductor markets. In the data-centric market, AMD's Xilinx deal and NVIDIA's ARM deal show both companies' intention to compete with Intel's Data Centre Group (DCG), manifesting a 9% slump in DCG revenue YoY. Furthermore, Google and Twitter are now using EPYC Rome processors which demonstrates AMD's competitiveness. Intel also faces competition from ARM-based architecture. Several cloud providers, including the world's largest - AWS, are using Arm-based chips in their data centres. However, Intel can expect to hold a significant data-centric market share as changing instruction sets is resource-intensive. Windows Server for one is still straightjacket on X86 platforms, leading to 6% revenue growth of Computer Client Group (CCG) YoY.

Figure 6: Intel's CCG Revenue (US\$b)



Source: Intel's 10-K

The semiconductor, IOTG, AI, ML and especially self-driving car industries are expected to have strong continuous year on year growth for the next few years. Intel has forecasted a data-centric and PC-centric Total Addressable Market of approximately 230 billion and 70 billion respectively by 2024. Positive industry growth means that competitors are likely to engage in competitive actions as they would want to capture the maximum gains.

In addition, the semiconductor industry requires consistent R&D otherwise a firm will be overtaken by another due to superior performance.

Intel currently produces more x86 processors than any other company, producing one million dies per day. Given other chip manufacturers' constrained capacities, it would be unfeasible for the industry to digest Intel's incredible sales volume. That means that the industry depends largely on Intel. Hence, Intel will continue being a juggernaut in chip fabrication and rivals will have a hard time chipping away its market share in the short term so the rival intensity is a moderate force.

## Threat of Potential Entrants – Extremely Low

Figure 7: Cost of building a semiconductor fabrication plant over the years

Year	Cost (US\$b)
2004	2-3
2011	3-4
2020	7-20

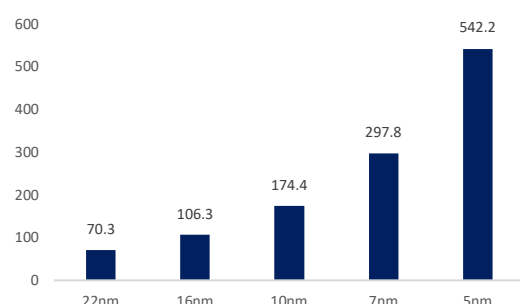
Source: McKinsey

In the semiconductor industry, its large incumbents take advantage of extensive economies of scale, which help them reap immense cost savings which prevent new, smaller entrants from coming into the market.

The high switching costs further limits the intensity of this threat because it takes a long time and is difficult for Original Equipment Manufacturers (OEMs) to implement changes in their designs to their supply chain.

The fixed costs are high within the industries in which Intel operates. For example, ASML's microprocessor fabrication machines cost \$160 million and leading-edge factories might have 20 or more. So, the fixed cost for just fabrication units is 3.2 billion dollars at least which present a huge barrier to entry. In particular, Intel's 2 new chip plants cost 20 billion dollars.

Figure 8: Design Cost of Semiconductor Chips (US\$m)



Source: IBS

The CPU industry has extensive regulation when it comes to patents and IP Qualification laws. New competitors would have to design a CPU using new architecture from the ground-up, a new motherboard for it and all while sufficiently differentiating themselves from AMD and Intel so fixed costs of R&D will be exorbitantly high.

CPU manufacturing is a very delicate task that requires specialised technical experience that can only be accumulated from a decade's worth of experience in the CPU industry. New entrants will also have to contend with AMD and Intel's vast internal economies of scale that allow them to undercut any new entrant.

Furthermore, Intel's war chest of 90,000 patents worldwide and a track record of explosive innovation that decrease both ability and confidence of new entrants to enter the market. An example of such a patent is the high-voltage switch with an integrated well region.

## Bargaining Power of Buyers and Suppliers - Moderate

ASML manufactures photolithography systems that are essential for the semiconductor industry's expansion and progress as chipmakers require smaller and smaller transistors on their chips. ASML has a 100% market share in EUV and 88% in DUV Lithography markets. Combined with a large number of customers, the limited supply of and heavy reliance on photolithography machines allow ASML to command high bargaining power.

Most other products industry suppliers provide are fairly standardised and have low switching costs. Furthermore, there is a higher proportion of suppliers to players in the industry. Suppliers have limited ability to mark up the price of factor inputs so the bargaining power of suppliers is a moderate force.

There is a much higher proportion of consumers as to producers in the multiple industries Intel operates in. This means that buyers have fewer firms to choose from, and therefore, do not have much control over prices.

The product differentiation within the PC CPU market is high. However, this is mainly due to firms' marketing strategies which create a significant perceived difference despite relatively similar specifications such as transistor size, number of cores and clock speed. Buyers are hesitant to find alternative firms producing a particular product. This perceived switching makes the bargaining power of buyers a moderate force within the industry.

The quality of the products is important to the buyers, and these buyers make frequent purchases. This is especially true for gaming enthusiasts and those who require Intel's services and products for enterprise and work. This means that the buyers in the industry are less price sensitive. This makes the bargaining power of buyers a weaker force within the industry.

### Threat of Substitute Goods/Services - Low

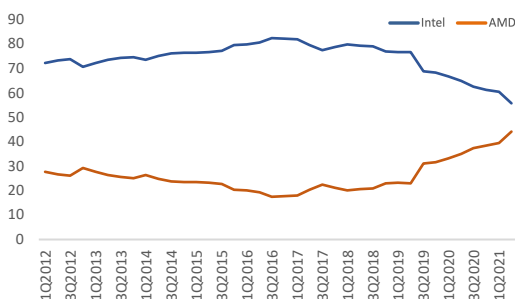
In the PC-centric market for CPUs, switching costs for consumers can be said to be very high. Consumers have to purchase a new motherboard if they wish to switch to a CPU from a competing brand on a desktop, which costs upwards of hundreds of dollars. On the other hand, laptop users would have to buy entirely new laptops that can cost up to thousands of dollars. This makes switching costs for most consumers unfeasible, instead opting to upgrade to a better lineup of CPUs from Intel, which can be advantageous for Intel since it can retain its customer base and make extra revenue at the same time. However, this may also be detrimental for AMD and Apple customers looking to switch to Intel CPUs, which could affect Intel's ability to capture market share from AMD.

Consumers also purchase CPUs based on their performance and attributes. Generally speaking, Intel CPUs have higher performance, whereas AMD CPUs are more power-efficient than Intel. Overall, AMD CPUs of a similar performance level to Intel's tend to cost lower, as a result, the market values AMD CPUs to have a better performance per dollar ratio. Therefore, competition may tend towards AMD for budget and mid-range CPUs, which are the more popular lines of CPUs. Ultimately, the threat of substitutes is moderately low as Intel has a notable difference from its competitors and that Intel still has the majority of the market share.

### Power of Complementary Goods/Services Providers - High

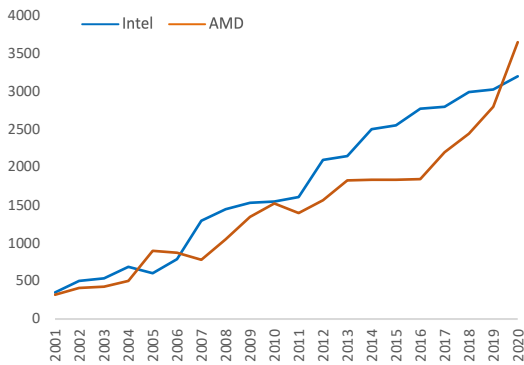
In the CPU market, a close complementary good would be the motherboards required to house the CPUs. AMD and Intel CPUs require different motherboards to operate on. As a result, the price of motherboards can affect the demand for CPUs to a limited

Figure 9: Worldwide CPU Market Share



Source: Statista

Figure 10: Passmark CPU Test, Single-Threaded



Source: ARS Technica

extent since it's a close complementary good. Intel does not produce their motherboards nor do they have significant partnerships, such as cost-sharing agreements with affiliated manufacturers, meaning they have little direct control of the prices and quality of proprietary motherboards. The market may opt more towards AMD CPUs if the price and quality of Intel motherboards are unsatisfactory, resulting in Intel losing market share due to the shortcomings of complementary providers.

Consumers looking to change CPU brands extensively consider the features and performance of the proprietary motherboards as they can affect a CPU's performance and power consumption to a large extent. Motherboards that have more attractive features such as better optimisation and performance for dollar ratio may affect the final performance of CPUs even if the CPU itself does not have any significant differences in characteristics, which can heavily influence consumer preferences to a large extent. Hence in the CPU market, motherboard manufacturers have significant power in affecting the final demand and market share for Intel CPUs.



## Key Personnel

**Patrick Gelsinger** is Chief Executive Officer (CEO) of Intel and member of the board of directors of Intel Corporation, where he had spent the first 30 years of his career.

Gelsinger began his career in 1979 at Intel right after his high school. He was the architect of the 80286 processor and 80386 processor, a product that saved the company back then. At the age of 25, Gelsinger was given the reins of the 80486 project. Gelsinger went on to become Intel's first chief technology officer, and also served as senior vice president and the general manager of the Digital Enterprise Group. He managed the creation of key industry technologies such as USB and Wi-Fi, led 14 microprocessor programs and played key roles in the Intel Core and Intel Xeon processor families, leading to Intel becoming the preeminent microprocessor supplier.



With more than 30-year experience working for Intel, under Gelsinger's leadership, the company has made strong progress on its 7nm process technology. Gelsinger promised to help tackle the company's manufacturing issues and fight against growing competition from AMD, and he will push Intel to become the leader in chip manufacturing once again.

---



**Greg Lavender** is senior vice president, chief technology officer (CTO) and general manager of the Software and Advanced Technology Group (SATG) at Intel Corporation who joined Intel in June 2021.

As CTO, he is responsible for driving Intel's future technical innovation and research programs. He is also responsible for defining a singular artificial intelligence software stack to support Intel's range of business and hardware offerings. Greg will also be responsible for rapidly pulling together a singular AI software stack to support our range of business and hardware offerings. He will work collaboratively with software engineering leaders across the company to evaluate additional organizational alignments that will enable the best outcomes. He also sharpens the focus

and execution, accelerates innovation, and unleash the deep well of talent across the company.

---

**Raja M. Koduri** is senior vice president and general manager of the Accelerated Computing Systems and Graphics (AXG) Group at Intel Corporation. He leads a business unit chartered with delivering high-performance computing and graphics solutions for integrated and discrete segments across client, enterprise and data centre.

Koduri has shouldered several critical roles for Intel over the past few years. Koduri drove Intel's long-term architecture strategy. He also led the creation and execution of Xe, oneAPI, and several other key hardware and software technologies critical to high-performance computing and graphics.

Koduri has devoted his career to advancing visual and accelerated computing across a range of platforms, including PCs, game consoles, professional workstations and consumer devices. Koduri is an innovator in GPU computing technology.



## Financial Statements

### Income Statement

(In Million Dollars)	Six Month Ended		
	29 Jun, 2019	27 Jun, 2020	26 Jun, 2021
<b>Net revenue</b>	<b>32,566</b>	<b>39,556</b>	<b>39,304</b>
Cost of sales incl. depreciation & amortization	13,599	17,033	17,244
<b>Gross income</b>	<b>18,967</b>	<b>22,523</b>	<b>22,060</b>
Research and development	6,770	6,629	7,338
Marketing, general, and administrative	3,222	2,988	2,927
Restructuring and other changes	184	171	2,555
<b>Operating expenses</b>	<b>10,176</b>	<b>9,788</b>	<b>12,820</b>
<b>Operating income</b>	<b>8,791</b>	<b>12,735</b>	<b>9,240</b>
Gains (losses) on equity investments, net	604	156	663
Interest and other, net	(124)	(342)	(252)
<b>Pretax income</b>	<b>9,271</b>	<b>12,549</b>	<b>9,651</b>
Provision for taxes	1,118	1,783	1,229
<b>Net income</b>	<b>8,153</b>	<b>10,766</b>	<b>8,422</b>



## Balance Sheet

(In Million Dollars)	28 Dec, 2019	26 Dec, 2020	26 Jun, 2021
<b>Assets</b>			
Current assets			
Cash and cash equivalents	4,194	5,865	4,746
Short-term investments	1,082	2,292	3,014
Trading assets	7,847	15,738	17,097
Accounts receivable	7,659	6,782	7,460
Inventories	8,744	8,427	8,817
Assets held for sale	-	5,400	5,817
Other current assets	1,713	2,745	2,421
<b>Total current assets</b>	<b>31,239</b>	<b>47,249</b>	<b>49,372</b>
Property, Plant & Equipment	55,386	56,584	58,166
Equity investments	3,967	5,152	5,655
Other long-term investments	3,276	2,192	1,262
Goodwill	26,276	26,971	26,768
Identified intangible assets, net	10,827	9,026	8,018
Other long-term assets	5,553	5,917	5,356
<b>Total assets</b>	<b>136,524</b>	<b>153,091</b>	<b>154,597</b>
<b>Liabilities, temporary equity, and stockholders' equity</b>			
Current liabilities			
Short-term debt	3,693	2,504	3,695
Accounts payable	4,128	5,581	5,917
Accrued compensation and benefits	3,853	3,999	3,176
Other accrued liabilities	10,636	12,670	12,048
<b>Total current liabilities</b>	<b>22,310</b>	<b>24,754</b>	<b>24,836</b>
Debt	25,308	33,897	31,714
Contract liabilities	1,368	1,367	68
Income taxes payable	4,919	4,578	4,172
Deferred income taxes	2,044	3,843	3,271
Other long-term liabilities	2,916	3,614	5,329
<b>Total liabilities</b>	<b>58,865</b>	<b>72,053</b>	<b>69,390</b>
<b>Temporary equity</b>	<b>155</b>	<b>-</b>	<b>-</b>
Stockholder's equity:			
Preferred stock	-	-	-
Common stock	25,261	25,556	26,655
Accumulated other comprehensive income (loss)	(1,280)	(751)	(1,095)
Retained earnings	53,523	56,233	59,647
<b>Total stockholders' equity</b>	<b>77,504</b>	<b>81,038</b>	<b>85,207</b>
<b>Total liabilities, temporary equity, and stockholders' equity</b>	<b>136,524</b>	<b>153,091</b>	<b>154,597</b>

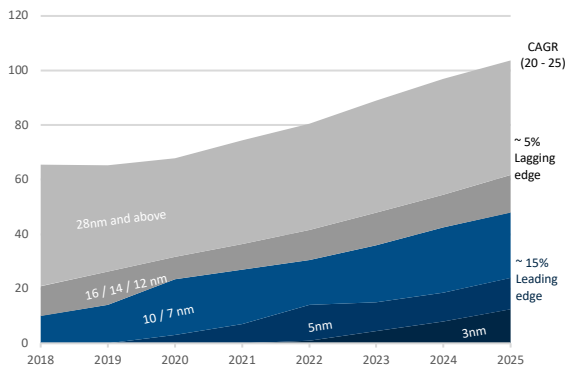
## Cashflow Statement

(In Million Dollars)	Six Month Ended		
	29 Jun, 2019	27 Jun, 2020	26 Jun, 2021
<b>Cash and cash equivalents, beginning of period</b>	<b>3,019</b>	<b>4,914</b>	<b>5,865</b>
<b>Cash flows provided by (used for) operating activities:</b>			
Net Income	8,153	10,766	8,422
Adjustments to reconcile net income to net cash provided by operating activities:			
Depreciation	4,379	5,248	4,862
Share-based compensation	859	941	1,044
Amortization of intangibles	800	865	897
(Gains) losses on equity investments, net	(100)	(92)	(555)
Changes in assets and liabilities:			
Accounts receivable	490	224	678
Inventories	(1,443)	(271)	(126)
Accounts payable	431	208	425
Prepaid supply agreements	(444)	(161)	(1,571)
Income taxes	(15)	1,203	114
Other assets and liabilities	(564)	(1,616)	1,460
Total adjustments	4,393	6,549	5,872
<b>Net cash provided by operating activities</b>	<b>12,546</b>	<b>17,315</b>	<b>14,294</b>
<b>Cash flows provided by investing activities:</b>			
Additions to property, plant and equipment	(6,875)	(6,676)	(7,574)
Additions to held for sale NAND property, plant and equipment	-	-	(682)
Purchases of available-for-sale debt investments	(1,721)	(4,558)	(2,000)
Maturities and sales of available-for-sale debt investments	2,031	1,303	2,126
Purchases of trading assets	(4,498)	(11,429)	(14,637)
Maturities and sales of trading assets	3,808	7,430	12,936
Other investing	1,245	(416)	380
<b>Net cash used for investing activities</b>	<b>(6,010)</b>	<b>(14,346)</b>	<b>(9,451)</b>
<b>Cash flows provided by (used for) financing activities:</b>			
Increase (decrease) in short-term debt, net	996	-	-
Issuance of long-term debt, net of issuance costs	601	10,247	-
Repayment of debt and debt conversion	(1,033)	(2,775)	(500)
Proceeds from sales of common stock through employee equity incentive plans	305	512	589
Repurchase of common stock	(5,579)	(4,229)	(2,415)
Payment of dividends to stockholders	(2,828)	(2,811)	(2,821)
Other financing	850	629	(815)
<b>Net cash provided by (used for) financing activities</b>	<b>(6,688)</b>	<b>1,573</b>	<b>(5,962)</b>
<b>Net increase (decrease) in cash and cash equivalents</b>	<b>(152)</b>	<b>4,542</b>	<b>(1,119)</b>
<b>Cash and cash equivalents, end of period</b>	<b>2,867</b>	<b>8,736</b>	<b>4,746</b>

## Investment Thesis

### Thesis 1: Accelerated Expansion of Fabrication Business

Figure 11: Foundry Market Size (US\$b)



Source: Intel

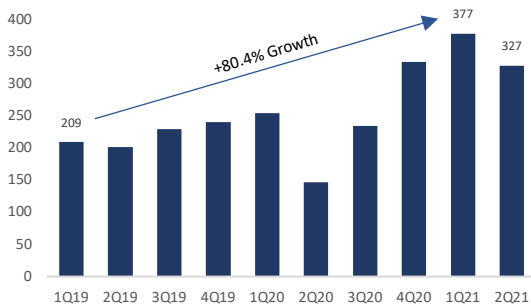
In 2021, Intel has decided to invest \$20 billion dollars in Arizona and \$3.5 billion dollars in New Mexico for their fab expansion. Moreover, Intel is seeing to set up Intel Foundry Services (IFS) which would position itself to be competing with the likes of TSMC in the long run. Foundry represents a nearly \$100 billion addressable market by 2025, with most of the projected growth coming from leading-edge computing. This should help Intel to increase their earnings to the far upcoming years.

In addition, Intel is appeared to be having talks to acquire Global Foundries which semiconductor research site TrendForce estimates that it holds a 7% share of the foundry market.

As such, Intel is doubling down on its main advantage over its competitors like AMD which is that they are one of the few semiconductor designers that manufacture their own chips. The majority of its rivals like AMD are chipmakers who rely on TSMC to manufacture the semiconductors they design. This decreases reliance on third parties and that Intel can process new innovation without fears of external factors that would affect its production line as seen during the 2020-2021 chip shortages by TSMC.

Its production difficulties with the 10nm processors have also seen positive signs as during the second-quarter earnings call, the company stated that over 50 million Tiger Lake processors have been shipped. Intel also estimates to ship several million Alder Lake processors late this year.

Figure 12: Mobileye Revenue (US\$m)

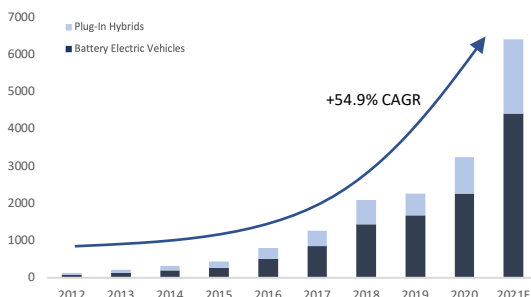


Source: Company Reports

### Thesis 2: Huge Growth Potential for IOT Segment

As Intel manufactures microcontrollers for Electric Vehicles and has been developing autonomous driving systems with Mobileye, an Intel company, Intel is setting itself up to reap the benefits of the trend of automation in the 2020's.

Figure 13: Global Plug-In Vehicle Sales (US\$m)



Source: EV Volumes

The global Advanced Driver-Assistance Systems ("ADAS") Market size is projected to expand from USD 27.0 billion in 2020 to USD 83.0 billion by 2030, at a CAGR of 11.9% according to Markets and Markets. Moreover, the global plug-in vehicles sales have expanded very quickly at 54.9% CAGR.

The Mobileye Revenue has also soared by 80.4% in the past 2 years. We foresee that the opportunity for Intel's earnings to expand from this segment is humungous.

### Thesis 3: A Strong Financial Position and Effective Recovery Plan

Figure 14: A Comparison of Financials of Intel to its Peers (US\$)

Name	Intel	AMD	NVIDIA
M. Cap	214.9B	129.1B	537.9B
EV	221.6B	123.8B	513.5B
Revenue	77.61B	13.3B	21.9B
EBITDA	34.65B	2.9 B	8.49 B
Net Income	18.56B	3.44B	7.08B
Cash Flow	32.36B	2.74B	7.9B

Source: Market Watch

Examples of comparable companies to Intel are Advanced Micro Devices, Inc. ("AMD") and NVIDIA Corporation ("NVIDIA") as they are in the same industry of semiconductor.

Intel is an established large company with a super healthy cashflow and a high net income when comparing to its peers. In terms of revenue, Intel has around 6 times of AMD and 3.5 times of NVIDIA.

This provides Intel with a safety cushion to the unexpected risks such as political uncertainties and the COVID-19 pandemic. Moreover, Intel is also able to use its robust cashflow to continuously make investments in segments where it deems profitable such as fabrication expansion and the IOTG segment where the projected CAGR is lucrative in the long run.

With the new structuring of the management team, Pat Gelsinger, the new CEO of Intel, had announced Intel's new roadmap to catch TSMC and Samsung technologically by 2024 and retake the technical lead by 2025. This would make Intel return to its competitive track where it was lagging behind due to manufacturing issues in the past few years.

An action that the new management team has made is to rebrand its products line for greater market appeal. For instance, it is renaming its 10nm chips to "Intel 7". From a technological standpoint, Intel's 10nm chips are actually on par with "7nm" labeled hardware from competitors such as TSMC or Samsung, since they use similar manufacturing processes and provide comparable transistor density. That applies to commercial hardware as well: Intel's current 10nm processors are still competitive with AMD's cutting-edge 7nm Ryzen chips, as we've seen.

Hence, we believe that the new management plans and strategies laid out by the new executives will help Intel to turn around and catch up with its peers swiftly which would in turn increase their market share and earnings accordingly.

### Investment Catalysts

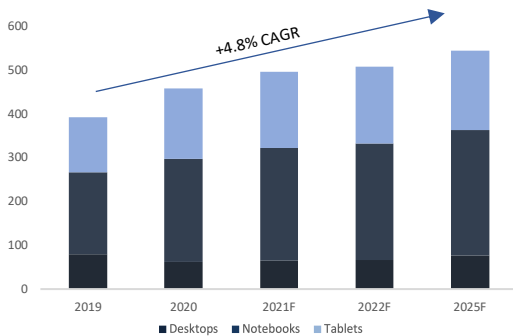
#### Catalyst 1: Governmental Support driven by Geopolitical Tensions

Rising tensions between the U.S. and China cause the US to approve the Innovation and Competition Act which would provide 52 billion dollars of subsidies to the US semiconductor industry. This would undeniably benefit Intel as the biggest semiconductor producer in terms of revenue. Furthermore, the company has

reported to establish a deal with the U.S. Department of Defense to build a domestic commercial foundry infrastructure which would boost its earnings.

The concerns of national security could also play into Intel's hands as trade wars may continue and the outsourcing of semiconductor manufacturing to TSMC may be affected.

**Figure 15: PC unit shipments worldwide (in US\$m)**



Source: Statista

## Catalyst 2: Continual Demand Growth in the PC Market

Since the breakout of COVID-19, many have been working from home and, although some may choose to return to offices, we foresee that the trend of working from home will continue to rise in the coming years since people have become used to the habit that they have experienced since lockdowns. As people's demand for PC's will carry on to rise, this will help to boost Intel's CCG revenue despite Intel's focus shifting to DCG.

**Figure 16: A Comparison of Valuation Multiples of INTC to its Peers**

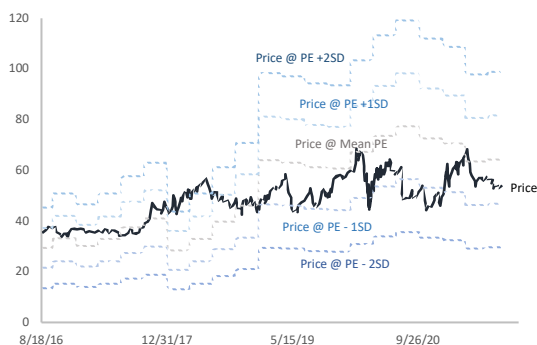
	INTC	AMD	NVDA
<b>M. Cap (US\$)</b>	218.75B	133.56B	507.52B
<b>P/BV</b>	2.57	18.90	27.03
<b>P/S</b>	2.82	10.18	25.84
<b>P/CF</b>	6.32	79.91	80.54
<b>EV/EBITDA</b>	6.05	76.79	88.00
<b>EV/Revenue</b>	2.95	9.89	25.53

Source: Yahoo Finance

Examples of comparable companies to Intel are Advanced Micro Devices, Inc. ("AMD") and NVIDIA Corporation ("NVIDIA") as they are in the same industry of semiconductor.

The valuation metrics most appropriate for comparing companies in the semiconductor industry are Price/Book Value (P/BV) and Enterprise Value/Earnings Before Interest, Tax, Depreciation, and Amortisation (EV/EBITDA) as there can be significant earnings fluctuation in this sector. We will avoid commonly used metrics like Price/Earnings and Free Cash Flow since they fail to account for several key nuances in semiconductor companies' valuations such as abnormally high financing costs, high depreciation expense, and special tax incentives which can cause earnings and free cash flow to fluctuate year to year for different companies.

**Figure 17: TTM P/E Band of INTC Stock**



Source: Company Reports

INTC's current P/BV of 2.95 is substantially lower than its peers – AMD at 9.89 and NVDA at 25.53. This is due to concerns about the company's manufacturing delay in the past few years. Intel's first 7nm chip, meant for personal computers, will not arrive until late 2022 or early 2023. Its first 7nm data center processor will not ship until the first half of 2023. In recent years, Intel has relied on booming growth in data centers that power cloud computing as PC sales generally declined, though both segments have grown as the pandemic prompted greater technology expenditure to facilitate working from home. As such, INTC stock has been relatively inexpensive to its peers.

Moreover, when comparing its own TTM P/E from the past five years, the average P/E ratio is 14.28 and the Standard Deviation is 3.85. INTC's current stock price of \$53.89 is trading at a P/E ratio of 11.98 which is 16.1% less than its average.

We believe that the market is overreacting to short-term issues is currently while overlooking the future potential of the company. With the new leadership team led by Pat Gelsinger as the new CEO and the outlined reasons, we believe that the company will be able to turn around and retake the lead of the industry.

As such, we believe that INTC is undervalued and is presenting a massively lucrative opportunity to buy at the current price of \$53.89.

## Market Risks

### Geopolitical Tensions between the US and China

Intel fuels global digitalisation efforts by providing the necessary infrastructures such as server racks, programmable semiconductors and non-volatile memory solutions. The ongoing trade war has stunted global digitalisation efforts which impacts the ecosystem Intel has fostered and depends on to drive up their demand.

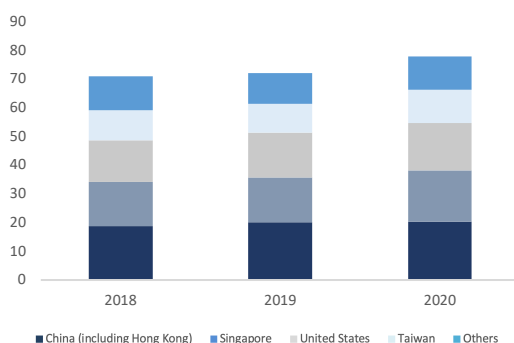
Intel produces raw chips at wafer fabrication plants. From there, chips go to assembly and test facilities. After which, they are sold to Intel's customers — large computer brands and contract manufacturers. Most of these entities are legally based in China, which explains how Intel booked revenue of \$20.3 billion from China in 2020, accounting for 26% of its total revenue. This shows that many of Intel's adjacent industries are concentrated in China.

In particular, the \$16.6 billion revenue from the United States is at risk. If Intel makes a chip at any of its plants, and sends it to China for low-level assembly work and then brings it back so it can be put into a device manufactured in the United States, the chip could be subject to tariffs. For example, in 2018, the Trump Administration imposed 25% tariffs on \$34 billion worth of Chinese imports, including semiconductors. If the trade war escalates, tariffs on essential products and resources for US-based operations could face similar or stronger tariffs so profit margins will be affected.

Furthermore, the trade war has resulted in lowered customer confidence as Intel is subject to sudden trade restrictions, additional or increased tariffs and export controls. This is due to slight delays in Intel's complex and heavily interdependent supply chain causing compounded effects down the supply chain.

For enterprise customers, such as AWS, that make up a large proportion of Intel's revenue, even the slightest of delays would result in acute losses. As it is hard to predict what trade-related actions governments may take and how it would affect the ability of final consumers to purchase products and services. Enterprise customers would be very sensitive to geopolitical changes such as an escalation of the US-China trade war. To lower risk, such customers would look to alternative brands that are less reliant on China or the US.

Figure 18: Revenue by Region



Source: Company Reports



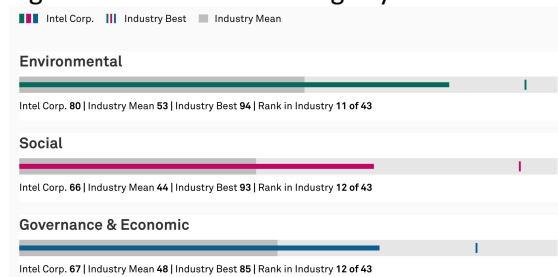
In response to sudden trade war escalations, Intel would be able to rely on its other foundries to alleviate the blow to a certain extent. Intel also has assembly and test centres in Costa Rica, Malaysia and Vietnam. Chips from non-Chinese wafer fabs sold to American companies that pass through those facilities would not be hit. Additionally, Intel only has one Chinese wafer fabrication plant. Its other 5 global plants could temporarily expand supply in case of trade war escalations where it is not physically or monetarily feasible to import chips from its Chinese plant.

Hence, INTC's stock price is subject to limited potential downside risks by the geopolitical tension between the US and China.

## Investors' Increasing Sentimental Adherence to Social Responsibility

In a world that is increasingly facing the worrying ramifications of ecological devastation coupled with a push for ethical business practices, investors are focusing on aligning themselves with companies that embody their shared values, instead of basing their decision making on profitability alone. Metrics such as Environmental, Social and Corporate Governance (ESG) aim to measure and incorporate this aspect into one's selection of investments that gauge to what extent do companies adhere to them.

Figure 19: INTC's ESG Ratings by S&P Global

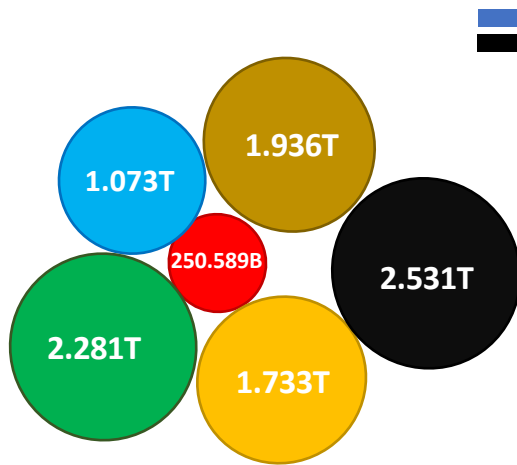


Source: S&P Global

Intel has adopted extensive initiatives that work in tandem with ESG such as its RISE (Responsible, Inclusive, Sustainable, Enabled) strategy to be more accountable and to attract investors focused on these principles. In an attempt to be more socially responsible, Intel, in their 2020-21 Corporate Responsibility Report, have stated they banned the use of prison labour and forced its suppliers to continually assess and address their use of forced labour, and sought to source minerals in a sustainable way that isn't ecologically damaging, adhering to OECD's guidelines. Intel has also strived to reduce its carbon and waste footprint and prioritise switching to more renewable and green sources of energy. In 2020, they achieved 82% renewable energy use and conserved 161 million kWh of energy, sent 5% of its total waste to landfills and applied circular economy practices to 63% of its manufacturing waste streams.

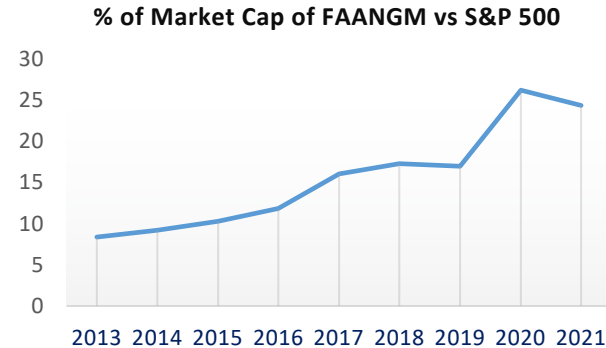
According to S&P Global, Intel has rating of 71 out of 100 and is ranked 11 out of 43 in the industry for adhering to ESG guidelines, making it one of the more socially responsible companies out there, consistently scoring high over the years. In this regard, Intel does not face significant risks in alienating this segment of investors. Investors can be more than assured that Intel falls in line with their principles and have full confidence in investing as a result. Therefore, Intel's stock is very less subjected to the downside risks of not complying with ESG standards.

## Giants in Tech Industry: FAANGM



Market Cap of FAANGM

(updated: 31 Aug 6pm)



### Facebook

World's largest **social network**, with over 1.11 billion users. It provides a place for connection via sharing photos, videos, and text updates. Users create personal profiles and establish relationships with people and companies

### Apple

Specializes in **consumer electronics**, computer software and online services. Apple Inc. designs, manufactures, and markets smartphones, personal computers, tablets, wearables, and accessories worldwide.

### Amazon

Amazon Inc. engages in the **online retail sale** of consumer products and subscriptions. It sells merchandise and content purchased for resale from third-party sellers through physical and online stores.

### Netflix

Netflix, Inc. provides **entertainment services**, e.g. TV series, documentaries, and feature films. The company provides members the ability to receive streaming content through a host of Internet-connected devices.

### Google

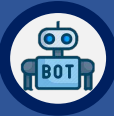
Alphabet Inc. provides **online advertising services**. It offers performance and brand advertising services. The Google Services segment provides products and services. The Google Cloud segment offers infrastructure and data analytics platforms, collaboration tools, and other services for enterprise customers.

### Microsoft

Microsoft Corporation develops **licenses and supports software, services, devices, and solutions worldwide**. It offers Productivity and Business Processes segment, a set of cloud-based and on-premises business solutions for organizations and enterprise divisions.

## Future Prospect – Trending Industries

### Autonomous Robotics



- Electrical vehicle sales to increase to 14M units in 2025
- Demand for Industrial Robots is expected to rocket
- Enterprise value for autonomous platform operators could scale up to \$3.8T by 2025
- Drone delivery platforms to reach \$275B in revenue by 2030

### FinTech



- Digital wallet users are surpassing traditional account holders by 2 times, up to 130M users
- Digital leaders such as Square Inc, PayPal, etc. are taking share from traditional banks
- In 2025, US digital wallet market would be worth \$4.6T

### Healthcare



- Demand for Humane Genome Sequencing to increase by 110% annually, reaching 105M in 2025
- DNA Sequencing Market to reach \$21B in 2024 at 43% annual rate
- TeleDoc Health. Inc, Pacific BioScience of Calif, etc. are holding 10% of the whole industry

### Space Exploration



- Satellites to bolster GDP growth by leveraging data for terrestrial business
- Satellite Broadband revenues will reach \$40B globally during the next 5-10 years
- Satellite connectivity market could approach \$100B annually over the medium term
- Market for Hypersonic Flight to reach \$270B in revenues annually

### Blockchain Technology



- Annual spending on blockchain to reach ~ \$16B by 2023
- Blockchain to be integrated into government agencies, e.g. national cryptocurrencies in Zimbabwe, Venezuela, etc.
- ~20% of IoT deployments enable blockchain services in 2019
- More companies use blockchain for transparency & security of business: e.g. Starbucks, Microsoft