

NXP Semiconductors N.V.

Summary

NXP Semiconductors is a global semiconductor supplier with over 60 years of innovation, experience, expertise and operation. NXP is a world leader in secure connectivity solutions for embedded applications and specializes in creating solutions that integrate security and smart connection in market areas such as cars, cyber security, mobile (portables & wearables), industrials and the Internet of Things (IoT), and communication infrastructure. NXP was founded in 2006, but has a rich history dating back to 1961 and currently maintains its headquarters in Eindhoven, Netherlands. The firm operates in over 30 countries with 30K employees around the globe.

Investment Thesis

NXP is a market leader in several product categories between its four business segments. Automotive sales decline in the near future will be offset by favorable secular trends like increasing semiconductor device content from the proliferation of electronic devices. Industrials will improve as well from increased scaling efforts and automation. Increasing capital expenditure in wireless infrastructure in preparation of new cellular standards and technology—namely 5G, will have a net positive impact on NXP’s financial performance due to the firm’s RF technology giving it a strong position to benefit from IoT adoption and 5G rollout. Our optimistic outlook to 2020 growth expectations is partially based on the pending acquisition of Marvell’s Wi-Fi Connectivity business, which we believe will be highly complementary to NXPI’s existing offerings. NXP’s strong and diverse portfolio of products and expertise will enable the firm to continue delivering further innovation and offerings to secure connectivity solutions.

Investment Risks

- The semiconductor industry is highly cyclical
- The semiconductor industry is highly competitive and reliant on innovative intellectual property as a source of new technologies and products
- Product demand is heavily derived from demand for customer products
- International firms must comply with increasing laws and regulations

Portfolio Information	
Fund	OSU Student Investment Management Program
Report Date	November 5th, 2019
Fund Manager	Royce West
E-mail	west.47@osu.edu
Telephone	(614) 323-2834
Research Analyst	Wii Pham
Email	Pham.280@osu.edu
Mobile Number	(513) 340-1056

Company Description	
Equity Ticker	NXPI
GICS Sector	Information Technology
Sub-Industry	Semiconductor Devices
Market Capitalization	\$32,950.70
Diluted Shares Outstanding	328.61
Closing Stock Price as of 11/04/2019	\$117.88

Financial Fundamentals	
Historic Performance	
52 Week High (11/04/2019)	\$ 119.89
53 Week Low (12/26/18)	\$ 67.62
12 Month Total return	44.91%
YTD Return	62.26%
Dividend Yield	1.27%
Key Financial Data	
Revenue (2018)	\$ 9,410.00
Earnings (2018)	\$ 2,208.00
EPS (2018)	6.72
P/E (11/04/2019)	19.97
Beta	1.47

Analyst Recommendation	
Stock Rating	Buy
Price Target	\$145.04
Implied Upside	27.86%
Revenue Growth (2018)	2.00%
Earnings Growth (2018)	0.00%



Summary of Recommendation.....	1
Summary.....	1
Investment Thesis.....	1
Investment Risks.....	1
Company Overview & Description.....	3
Business Segments.....	3
Sustained Competitive Advantage.....	5
Market Data & Growth Drivers.....	7
News, Stock Price Influencers & Movers.....	9
Investment Thesis.....	10
Fundamental Drivers.....	10
Economic & Sector Conditions.....	10
Financials.....	12
Valuation & Price Target.....	13
Risks & Concerns to Recommendation.....	16
Conclusion.....	18
References.....	19



Company Overview & Description

Headquartered in Eindhoven, Netherlands, NXP is a Global Dutch semiconductor company within the information technology sector. Founded in 2006, NXP has expanded operations into over 30 countries and employs over 30K employees. NXP is an established supplier within the industry and known for creating innovative solutions enabling secure connections that simplify, improve, and protect lives. NXP is the world leader in secure connectivity solutions for embedded applications and drives innovation in the automotive, industrial & Internet of Things, mobile, and communication infrastructure markets. Until February 6, 2017, NXP was organized into two market oriented reportable segments, High Performance Mixed Signal (HPMS) and Standard Products (SP).

Effective January 1, 2019, NXP removed the reference to HPMS in its organizational structure in acknowledgment of the one reportable segment representing the entity as a whole. In addition, as of January 1, 2019, the Company will report its revenue across the following four end-markets – Automotive; Industrial & IoT; Mobile; and Communications Infrastructure & Other and no longer through the four business lines that are discussed below.

The company provides major high performance mixed signal (HPMS) solutions that leverage its combined portfolio of intellectual property, deep application knowledge, process technology and manufacturing expertise in the domains of cryptography—security, high-speed interface, radio frequency (RF), mixed-signal analog-digital (mixed A/D), power management, digital signal processing and embedded system design.

The company's product solutions are used in a range of end-market applications, including automotive, personal security and identification, wireless and wireline infrastructure, mobile communications, multi-market industrial, consumer and computing. The company engages with major original equipment manufacturers (OEM) worldwide and sells products in all major geographic regions.

The company focuses on developing products and system and sub-system solutions that allow its customers to bring their end products to market. The company's products, particularly its application system and sub-system solutions, help its customers design critical parts of their end products and thus help majority of them to differentiate themselves based on feature performance, advanced functionality, cost or time-to-market.

Business Segments

NXP's HPMS products portfolio consists of the following business lines that are no longer used to report earnings: Automotive, Secure Identification Solutions, Secure Connected Devices and Secure Interfaces and Infrastructure. The table below lists the applications and product categories from NXP's old business lines.

	Automotive	Secure Identification Solutions	Secure Connected Devices	Secure Interfaces and Infrastructure
Key Applications	<ul style="list-style-type: none"> • Car access & immobilizers • In vehicle networking • Car entertainment • ADAS • Telematics • ABS • Transmission/ throttle control • Automotive Lighting • Gateways • Battery Management • Sensors 	<ul style="list-style-type: none"> • Secure identity • Tagging 	<ul style="list-style-type: none"> • Secure transactions • Smartphone • Tablet • Personal computer • Smart buildings • White goods & home appliances • Medical/Personal Healthcare • Industrial/ IoT • Consumer/TV/Set top box 	<ul style="list-style-type: none"> • Wireless base stations • Networking • Satellite & CATV infra • Radar • Power supplies • Lighting • Smartphone • Personal computer • Pachinko machines

Source: 2018 NXP Semiconductors Form 20-F



Automotive

After completing an M&A deal with Freescale, NXP became the largest semiconductor supplier to the automotive industry, providing products for Car Entertainment, In-Vehicle Networking, Secure Car Access, Chassis & Safety and Powertrain. The combined portfolio with these products is highly complementary, enabling NXP to address a broader scope of complete and complex solutions for their automotive partners. For the full year 2018, NXP had High Performance Mixed Signal revenue of \$3,953 million in automotive applications, compared to \$3,762 million in 2017, which represents a 5.1% year over year increase. According to Strategy Analytics, the total market for automotive semiconductors was \$37.6 billion in 2017, and projects it will grow at a compounded annual growth rate of 7.5% between 2017 and 2021.

Secure Identification Solutions (SIS)

The SIS business is focused on delivering solutions to address the security and privacy requirements of three specific end market dynamics: (1) the increasing adoption of chip-based banking cards (“Banking”); (2) the increasing usage of high-volume, single-payment platform systems for urban transportation (“Transit—Access”); and (3) the increased need to provide government sponsored products to assure privacy and secure cross-border movement of people (“eGov”). For the full year 2018, NXP had High Performance Mixed Signal revenue of \$554 million in SIS, compared to \$523 million in 2017, which represents a 5.9% year over year increase. According to ABI Research, the market size for secure identification ICs was \$3.3 billion in 2017 and is expected to grow at a compounded annual rate of 1% to \$3.4 billion in 2021.

Secure Connected Devices (SCD)

The SCD business is focused on delivering solutions to enable the future of connected devices – also known as “Internet of Things” (IoT). NXP believes the future growth of secure connected devices requires the ability to deliver four fundamental functional capabilities: (1) embedded microcontrollers; (2) connectivity – short range RF and wireless technology (Bluetooth LE, Zigbee, Thread and NFC); (3) security; and (4) sensor. There are opportunities in end-markets and applications emerging in the area of Mobile Payments, Smart Home-Health, Smart Cities, Wearables and Smart Industrial. The SCD business has a broad portfolio of products which enables NXP to successfully compete and deliver all aspects of semiconductor-based technologies for connected devices including microcontrollers, secure mobile transactions solutions and various connectivity solutions. Post-Merger, NXP is one of the largest suppliers of broad based microcontrollers. By differentiating themselves versus their competitors with a broad portfolio of products addressing different processing power, connectivity standards, peripherals and security levels depending on customers evolving requirements. The overall High Performance Mixed Signal revenue in the SCD business was \$2,723 million in 2018, compared to \$2,587 million in 2017, which represents a 5.3% year over year increase. The worldwide market for Microcontrollers 32-bit was \$9.0 billion in 2017, and NXP expects a compounded annual growth rate of 6.0% between 2017 and 2021.

Secure Interfaces and Infrastructure (SI&I)

NXP is a significant participant in the communications infrastructure market. The firm is a major supplier in interface, power, authentication and high-performance analog products. NXP’s products address many interfaces and power standards and serve various applications across the mobile, computing, industrial, consumer and automotive markets. They have broad product portfolios including I²C/PC, GPIO, LED controllers, real-time clocks, signal and load switches, signal integrity products, wired and wireless charging solutions, DC-DC, AC-DC converters and authentication products. The company generates revenue by selling products to a very broad customer base, which is served through their distribution channel. NXP has successfully engaged with leading OEMs to drive custom and semi-custom products which in turn allow them to refine and accelerate their innovation and product roadmaps. They are engaged in development activities and standard setting initiatives with many of the innovation leaders in each of these markets. Overall revenue in these businesses was \$1,792 million in 2018 versus \$1,873 million in 2017, which represents a decrease of 4.3% year over year.



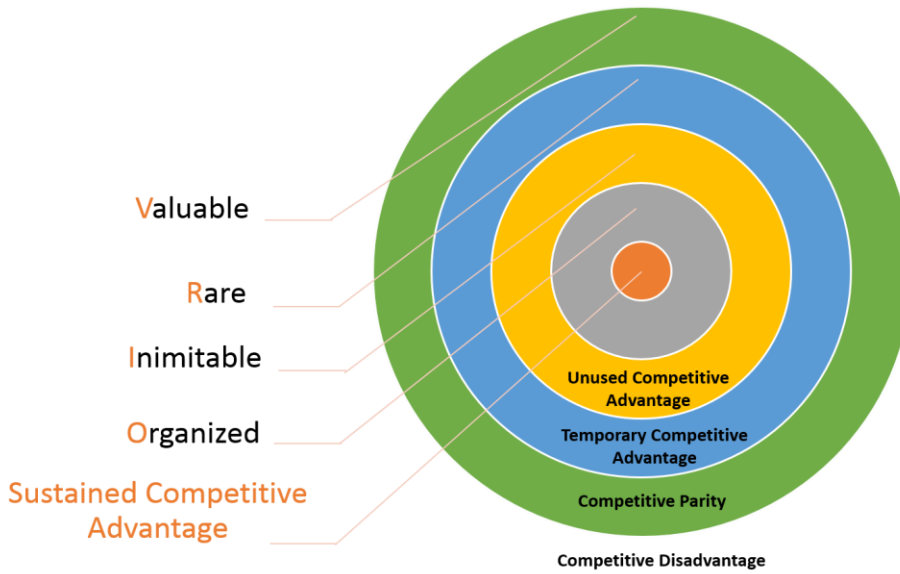
Sustained Competitive Advantages

Even though it was founded in 2006, NXP's history can be traced back to 1961. 60+ years of innovation, experience, expertise and operation has enabled NXP to become a world leader in providing secure connectivity solutions for a diverse range of embedded applications, among other comparative advantages. Decades of operation resulted in incumbent firms like NXP and its competitors streamlining their manufacturing processes to cut costs and steadily build up their reputation and relationship with many original equipment manufacturers and distributors, their customers. Evident in the high gross margin and NXP's customer base being not only large but also diverse. Many of them drawn to the breadth of products and services offered by NXP. These products and services were a byproduct of the innovative culture, efficient leadership, and operational expertise of the individuals that comprise NXP. According to the figure below, the value proposition of NXP—its DNA and distinguishing characteristics that are some of its competitive advantages—are indeed quality leadership, value creating business lines, innovative solutions orientation, and top-notch expertise.



Source: 2019 NXP Semiconductors 3Q19 IR Presentation

We'll use the VRIO framework to determine what characteristics are indeed sustainable competitive advantages and which ones provide competitive parity, temporary competitive advantage, or a disadvantage. The VRIO framework is a strategic analysis tool that helps uncover and measure valuable resources and capabilities that may provide an organization with a competitive advantage. Resources and capabilities that do not add value to the organization creates a disadvantage. If they are valuable but not rare, then parity is the best outcome. If they are valuable and rare, but not inimitable, then a temporary advantage exists. Finally, if a resource or capability is valuable, rare, inimitable, and organized to capture value then it provides a sustained competitive advantage.



VRIO Framework					
Characteristic	Valuable	Rare	Inimitable	Organized	Result
Technical Expertise	Y	Y	Y	Y	Sustained Competitive Advantage
Innovative Culture	Y	Y	Y	Y	Sustained Competitive Advantage
Solutions Core Competency	Y	Y	Y	Y	Sustained Competitive Advantage
Growth Strategy	Y	Y	Y	Y	Sustained Competitive Advantage
Leadership & Management	Y	Y	Y	Y	Sustained Competitive Advantage
Operational Processes	Y	N	N	Y	Competitive Parity
Reputation & Relationship	Y	Y	Y	Y	Sustained Competitive Advantage
Customers	Y	Y	Y	Y	Sustained Competitive Advantage
Products & Services	Y	Y	Y	Y	Sustained Competitive Advantage

Source: Explaining the VRIO Framework

The technical expertise at NXP resonates within each and every employee and is reflected within the company values and culture. Dedication, ingenuity, and creativity best describe the employees at NXP and drives the insightful, engaging, and inventive culture at NXP and upholds the firm’s commitment to excellence. Expertise is the very first building block of the company’s foundation and is heavily interconnected with the innovative culture—both of which a product of NXP’s long legacy. NXP adheres to the idea that they’re not creating products and services. Instead, they’re creating solutions through innovations that better society. At the heart of this innovation is the intellectual property that is the lifeblood of the firm. NXP has been recognized several times and ranked among the top 100 patent applicants in the world—further reinforcing the firm’s commitment to industry leadership in innovation. These characteristics interact to produce the products and services that give NXP the high reputation and many relationships it currently enjoys.

	Automotive	Secure Identification Solutions	Secure Connected Devices	Secure Interfaces and Infrastructure
Key OEM and electronic manufacturing services (EMS) end customers	<ul style="list-style-type: none"> • Autoliv • Bosch • Continental • Delphi • Denso • Fujitsu Ten • Lear • TRW • Valeo • Visteon 	<ul style="list-style-type: none"> • Avery Dennison • Bundesdruckerei • China Vision Microelectronic • Chutian Dragon • Eastcompeace • Gemalto • Giesecke • HID • Linxens • Smartrac 	<ul style="list-style-type: none"> • Amazon • Apple • BBK • Bosch • Huawei • LG • Reliance • Samsung • Visteon • ZLG Electronics 	<ul style="list-style-type: none"> • Apple • Arris • Cisco • Ericsson • Huawei • Fujitsu • NEC • Nokia • Samsung • ZTE

Source: 2018 NXP Semiconductors Form 20-F



NXP has 26,000 customers, ranging from top auto suppliers like Autoliv, Bosch, and Delphi Technologies to leading consumer brands including Amazon and Apple. The relationship and reputation that NXP built over several years with their primary customers is not easily replicated. It is very rare and valuable because these relationships, driven by NXP's reputation, creates growth and investment opportunities for the firm. NXP's innovative track record is but one of many processes organized to capture value from this characteristic of NXP.

Leadership at NXP pulled the firm around after its less than stellar IPO where demand for its shares fell below expectations and the IPO price was slashed. Rick Clemmer, CEO of the firm at the time stayed convicted to proper management of the firm in order to create long-term, sustainable shareholder value. Clemmer created a strategic vision that was firm, yet fluid, allowing the company to dynamically adjust to the market and industry. Together, Clemmer and his executive team created an environment that diversified the company from a product, customer, end-product, and geographic standpoint. Clemmer focused on areas of business where the firm could maintain a leadership position while growing. "NXP intended to leverage existing category leadership in (then-nascent) areas of security, mobility and digital processing, and focus investments in significant, fast-growing long-term opportunities: specifically connectivity, security and networking." NXP supported this strategy by streamlining operations and reducing inefficiencies and then reinvesting retained earnings back into high-growth markets that positioned the company for the future. "NXP is a rare exception; the company has a proven track record of delivering on its long-term sales and earnings forecast, regardless of industry backdrop. Its business strategy dictates its financial strategy, which dictates its allocation of resources and strategic areas of focus. The result is delivering best-in-class products across an evolving range of high-growth, high-return, and highly enviable areas of interest. Or, as NXP says it, creating "secured devices in a connected world"."

We believe that the only capability listed above that doesn't provide an advantage to the firm is the operational efficiencies that the firm developed and learned over the course of its existence. Competitors can easily replicate the processes that reduce inefficiencies in manufacturing, for example, and learn to develop their own processes over time.

Market Data & Growth Drivers

	Automotive	Secure Identification Solutions	Secure Connected Devices	Secure Interfaces and Infrastructure
Selected market leading positions	<ul style="list-style-type: none"> #1 in Automotive semiconductors #1 Can/LIN/ Flex Ray in-vehicle networking #1 passive keyless entry/ immobilizers #1 automotive applications processors* #1 car radio #1 Chassis & Safety #2 Powertrain #2 automotive MCU #2 audio amplifiers 	<ul style="list-style-type: none"> #1 e-Government #1 Transport & Access management #2 Banking 	<ul style="list-style-type: none"> #1 NFC/Secure Element #3 I broad based MCU 	<ul style="list-style-type: none"> #1 in RF Power #2 in communication processors

Source: 2018 NXP Semiconductors Form 20-F

NXP's advancements in innovative solutions for secure connectivity has resulted in its dominance of the above product markets within its four business lines. The HPMS market is an attractive market due to the growth in excess of the overall semiconductor market, the high barriers to entry, the loyalty of the customer base, the relative pricing stability and lower long-term capital intensity. Growth in semiconductor sales to the global automotive market relies on global economic trends, the unit growth of automobiles manufactured and the growth in semiconductor content per vehicle which is being driven by the proliferation of electronic features throughout the vehicle. Semiconductor content per vehicle continues to increase due to government regulation for improved safety and emissions, the standardization of higher-end options across a greater number of vehicle classes as well as consumer demand for greater fuel efficiency, advanced safety and multimedia applications. Regulatory actions and consumer demand in both the developed and emerging markets should drive the increase in applications such as ADAS, electric and hybrid powertrains, vehicle gateway and secure connectivity, electronic safety, as well as stability control.



Semiconductor content per vehicle is also increasing to address applications such as engine management, fuel economy improvement, driver comfort, convenience and user interface. In addition, with the increase in overall semiconductor content in modern automobiles, the demand for secure in-vehicle networking continues to increase as various subsystems communicate within the automobile and with external devices and networks. Data integrity and security hardware features for safeguarding memory, communication and system data are also increasing in importance.

Since NXP, as of January 1, 2019, has been reporting its revenue across the following four end-markets – Automotive; Industrial & IoT; Mobile; and Communications Infrastructure & Other and no longer through the four HPMS business lines that are discussed above, we'll be looking at market data and growth drivers for the stock through the new business lines. Automotive growth is still heavily dependent on the proliferation of semiconductor devices built into vehicles, or the content. ADAS and the expected increasing trend of electrification of cars is also expected to drive growth for this business within the foreseeable future. Industrial & IoT growth is dependent on NXP's ability to provide scalable solutions to its customer base, including OEM's and distributors. Growth in the mobile business is heavily reliant on the proliferation of complementary devices and increasing consumer demand for more products and features through innovation. Growth is driven by the attachment rate of consumers to products. Growth for the communication Infrastructure & other business line is driven by increasing capital expenditure in wireless infrastructure and the secular trend of new cellular standards and technology—namely 5G.

NXP Addresses 4 Major End Markets



Automotive

ADAS + Electrification
System solutions innovation with OEMs
Increased content drives growth



Industrial & IoT

Fragmented customer base
Processing needs are transforming markets
Scalable solutions as a differentiator



Mobile

Large mobile and adjacent device market
Continued demand for features - innovation
Growth driven by increased attach rate



Communication Infrastructure & Other

Capex-driven wireless infrastructure market
Secular growth due to new cellular standard

4

NXP

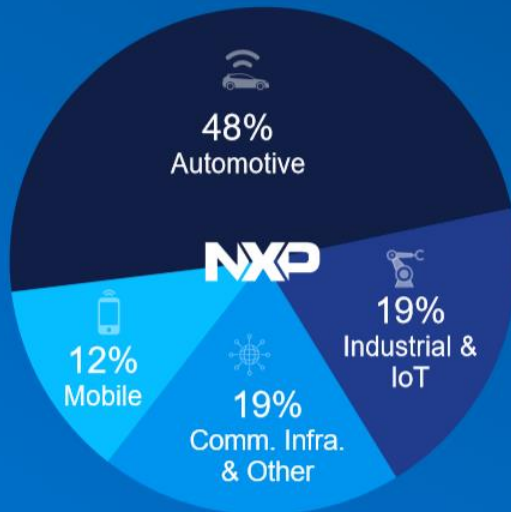
Source: 2019 NXP Semiconductors 3Q19 IR Presentation

Below is a figure depicting NXP's revenues as a percentage of each of the four new business lines in 2018. Automotive will compose of the largest percentage of revenue for NXP for the near future. Automotive revenue for 2018 was 48%. Mobile was 12% and industrial & IoT was 19%. Comm. Infrastructure was 19% of total revenue.



Focused Leadership – End Markets^{1,2,3}

NXP 2018 Revenue
by End-market Exposure



Broad end market exposure

- Long product life cycles
- High barriers to entry
- Application expertise

Recognized leadership in

- Automotive
- MCU and application processors
- Mobile transactions
- RF power solutions
- Secure identification, mobility, RFID

Note:

1. Please refer to the NXP Historic Financial Model file found on the Financial Information page of the Investor Relations section of our website at www.nxp.com/investor for additional information relative to our Non-GAAP Financial Measures
2. Chart excludes \$136 million of Manufacturing Service Agreement revenue recognized in 2018 reported revenue
3. See page 23 of this presentation for a mapping of the new End-Market representation from the previous Operating Segment representation

5

NXP

Source: 2019 NXP Semiconductors 3Q19 IR Presentation

News, Stock Price Influencers & Movers

On 10/29/2019, NXP's stock surged 5.3% higher. The move came after the company reported better-than-expected third-quarter 2019 results. Prior to this, the company received negative estimate revisions. Investor sentiment is still trading a middle ground between bullish and bearish due to several uncertainties and risk exposure facing the stock.

On May 29, 2019, NXPI announced its intent to acquire Marvell's Wi-Fi Connectivity business in an all-cash transaction valued at \$1.76 billion. The deal includes all related assets to MRVL's Wi-Fi and Bluetooth technology, which employs 550 individuals, and is expected to close in the first quarter of calendar year 2020, assuming it receives necessary regulatory approvals.

On October 27, 2016, QUALCOMM announced its intent to acquire NXP Semiconductors for \$110 per share in cash (\$47 billion total enterprise value). On February 25, 2018, QUALCOMM increased its offer to acquire NXPI to \$127.50 per share in cash and lowered its minimum tender condition to 70% (80% prior). However, the deal was terminated after China failed to approve the transaction by July 25, 2018. As a result, NXPI receives a termination fee of \$2 billion from QUALCOMM.

On June 14, 2016 NXP announced that it had reached an agreement to divest its Standard Products business to a consortium of financial investors consisting of Beijing Jianguang Asset Management (JAC Capital) and Wise Road Capital. The consortium will pay \$2.75 billion for the business. The transaction closed in the first quarter of 2017. On December 7, 2015, NXPI completed the Merger with Freescale in a stock and cash transaction. Each share of Freescale was converted into 0.3521 shares of NXP common stock and \$6.25 in cash.



Investment Thesis: Fundamental Drivers

The vast majority of NXP's revenue is derived from sales to manufacturers in the automotive, identification, wireless infrastructure, lighting, industrial, mobile, consumer and computing markets. Demand in these markets fluctuates significantly, driven by consumer spending, consumer preferences, the development of new technologies and prevailing economic conditions. In addition, the specific products in which semiconductors are incorporated may not be successful or may experience price erosion or other competitive factors that affect the price manufacturers are willing to pay. Such customers have in the past, and may in the future, vary order levels significantly from period to period, request postponements to scheduled delivery dates, modify their orders or reduce lead times. This is particularly common during periods of low demand. This can make managing NXP's business difficult, as it limits the predictability of future revenue. It can also affect the accuracy of the financial forecasts. Furthermore, developing industry trends, including customers' use of outsourcing and new and revised supply chain models, may affect revenue, costs and working capital requirements. Additionally, a significant portion of products is made to order.

NXP's success and future revenue growth depends, in part, on the firm's ability to protect their proprietary technology, products, proprietary designs and fabrication processes, and other intellectual property against misappropriation by others. NXP primarily relies on patent, copyright, trademark and trade secret laws, as well as nondisclosure agreements and other methods, to protect their intellectual property.

A substantial portion of NXP's revenue is derived from top customers, including their distributors. Uncertainty within the markets causes a situation in which they cannot guarantee that they will be able to generate similar levels of revenue from their largest customers in the future. If one or more of these customers substantially reduce their purchases from them, this could have a material adverse effect on NXP's business, financial condition and results of operations.

The semiconductor industry is highly competitive environment characterized by constant and rapid technological change, short product lifecycles, significant price erosion and evolving standards. Accordingly, the success of NXP's business depends to a significant extent on the firm's ability to develop new technologies and products that are ultimately successful in the market. Increasing R&D expenditure YoY is critical to the overall success of the firm, and from the income statement below, we do see that increase in spending year over year.

As a cyclical firm, NXP's main drivers for growth will be determined by the overall health of the global economy and realized benefits from secular trends and proprietary assets.

Economic & Sector Conditions

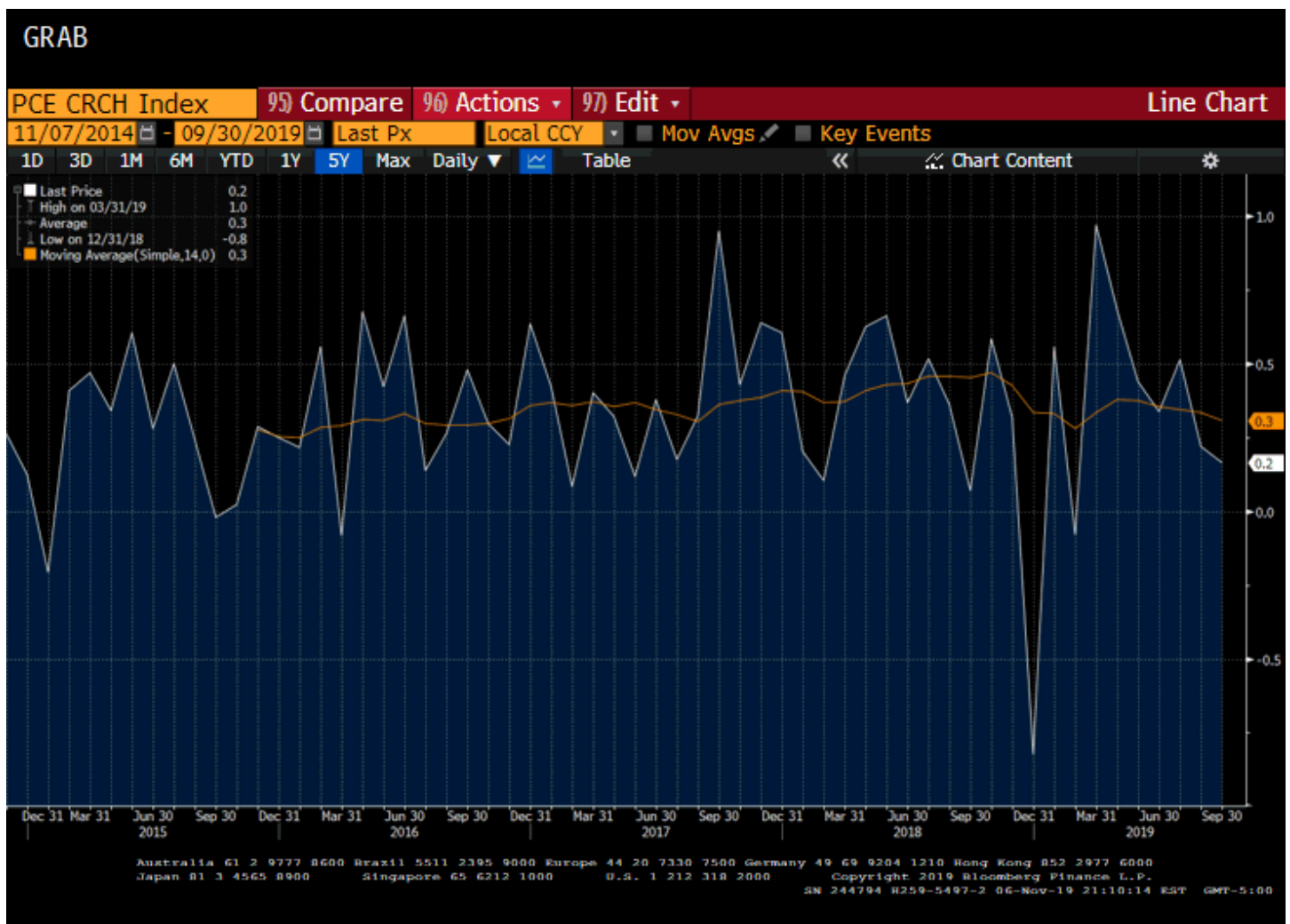
Demand for NXP's products and services is heavily reliant on consumer demand for NXP's customers. Consumer confidence and consumer spending can be a good measure and predictor of future demand for automotive and mobile technology products. Sales to OEMs in industrial and IoT would also benefit from strong demand and economic growth. Macro industry indicators such as the ISM manufacturing new orders index and S&P 500 Corporate CapEx are good predictors of performance for semiconductors since a large percentage of revenue for companies within this sector is derived from activity from OEM's and distributors.

We expect current geopolitical conflict and trade tensions between nations create uncertain and unknown risk exposure. We note a slowing macroeconomic economy and decreasing interest rates with rate cuts from the FED may delay further economic contraction through U.S. consumer demand. While the direct impact from higher



tariffs will be minimal and note semiconductor sales from China to the U.S. are negligible, we think customers will be more prudent with increasing inventories amid rising uncertainty regarding employment and income. NXP maintains a strong list of customers and, over the years, the firm has leveraged its relationship with its client base to integrate many of its product and service solutions into their end-products. This, we believe NXP benefits from the high switching costs of its industry.

The semiconductor industry is likely to witness a cyclical decline in the second quarter and there are uncertainties on the magnitude of a cyclical recovery in 2020. We expect a recovery to occur over a year after the recession as most recessions since 1900 have lasted an average of 15 months. Growth is expected to be driven by greater demand in data centers as well as content growth within the automotive and industrial end markets. Increased spending on wireless infrastructure is also expected to contribute to earnings. Below is the US Personal Consumption Expenditures Index, tracking the change in the price of goods and services purchased by consumers. The index includes a broad set of goods and services and is a measure of inflation. The index is currently trending lower and below the 5 year moving average.



Source: Bloomberg

Industry orders are improving as next-generation product launches and secular opportunities across a host of end-markets support higher demand. The communications space is expected to see improving demand related to 5G investments in the coming years, albeit some uncertainty regarding Huawei, while unit demand for smartphones is anticipated to rebound in 2020 after another expected decline in 2019, reflecting extending replacement cycles. The



automotive segment has some favorable secular tailwinds, as content per vehicle grows, despite soft global trends. Industrials will improve as well from increased scaling efforts. Given the high exposure to this end market, analog semiconductors are particularly exposed to this trend. All of this is against the backdrop of the proliferation of semiconductors across a range of electronic products and markets. Industry margins continue to be a function of manufacturing utilization and inventory supply-demand imbalances. While companies that outsource manufacturing typically have more stability in gross margins (a trade-off for capped upside), others that have their own manufacturing see more variability. We think some companies, especially in analog, maintain higher inventory levels, reducing potential leverage. Companies in the industry seem more inclined to increase debt levels given their strong balance sheets and low interest rate environment. Healthy free cash flow generation will likely result in greater shareholder return via share repurchases and dividend increases.

Secular trends such as the increasing capital expenditure in wireless infrastructure in preparation of new cellular standards and technology—namely 5G, will have a net positive impact on NXP's financial performance due to the firm's RF technology giving it a strong position to benefit from IoT adoption and 5G rollout. NXP's strong portfolio of products and expertise will enable it to benefit from rising content in electronics and vehicles.

Financials

Overall, our income projections were a bit more bullish in terms of expected growth compared to consensus. We believe that NXP's ability to shift expertise and drive innovative solutions will provide a larger upside in terms of return to equity and that the proliferation of semiconductors within automotive and mobile products will increase with automotive volume decreasing as economic growth begins to contract. We adjusted for expected decreases in automotive sales volume and risk exposure from volatility in the international markets.

Comparable (2018)	NXP Semiconductors (NXPI)	Texas Instruments (TXN)	Maxim Integrated Products (MXIM)	Monolithic Power Systems (MPWR)	Analog Devices INC (ADI)
Revenue (MM)	\$9,410.00	\$15,784.00	\$2,314.30	\$582.00	\$6,200.90
Net Income (MM)	\$2,208.00	\$5,538.00	\$827.50	\$105.30	\$1,495.40
EPS (Diluted)	6.72	5.59	2.97	2.36	3.97
Gross Margin	51.57%	65.11%	64.84%	44.41%	68.27%
Operating Margin	28.81%	42.53%	32.28%	19.49%	30.35%
YTD Return	44.92%	28.81%	22.54%	34.17%	34.09%

Source: Bloomberg

While adjusted gross margins (excluding amortization and other non-cash items) cannot be described as industry leading (with competitors Texas Instruments, Maxim Integrated and ADI in the 60% range), the firm has delivered in the 50% range in the past two years, divested its more commodity-like Standard Products line (which included discrete semiconductors), and has reasonable expectations of increasing margins over the next three years.

However, the firm has prioritized investments to support ongoing growth rather than aiming for outsized gross margin expansion, which we believe is prudent if it wishes to protect its strategic advantage in the automotive and analog space.

Comparable (2018)	NXP Semiconductors (NXPI)	Texas Instruments (TXN)	Maxim Integrated Products (MXIM)	Monolithic Power Systems (MPWR)	Analog Devices INC (ADI)
P/E	19.77	21.23	18.75	67.90	19.13
P/B	3.31	12.60	8.97	10.80	3.73
P/S	4.11	7.37	7.23	11.79	6.78
P/EBITDA	8.23	15.16	19.51	54.02	15.68

Source: Bloomberg

Comparable (10Y)	High	Low	Median	Current
P/E	116.71	12.21	38.31	19.33
P/B	48.53	1.90	4.43	3.33
P/S	4.73	0.68	3.17	4.02
P/EBITDA	19.28	3.38	8.23	8.05

Source: Bloomberg

Moving on to comparable analysis, we see from the table above representing 2018 ratios between comparable companies that NXP's P/E ratio is around the average market value of 20.33 (Current) when using the S&P 500 as



the market benchmark. NXP's year to date return, however, is higher than most of the competitors above. This great return may be driven mostly by operational performance and news regarding financials and operations rather than speculation since the P/E ratio of NXP is below market averages. The almost 45% return YTD is also higher than the S&P 500 YTD return of 24.68% and information technology sector return of 38.70%. We believe NXP's strong position within certain product markets enables the firm to take advantage of secular changes and innovation within its business. NXP has a lower than average P/B, P/S, and P/EBITDA ratio compared to industry competitors. From a ratio comparable analysis, NXP appears to be undervalued by some ratios. The firm is a market leader within several product lines and has many sustainable competitive advantages that would allow it to capture changes and advancement in the industry.

From the 10-year historic ratios of NXP we compared them to NXP's 2018 ratios. We see that other than the P/B ratio NXP's P/E, P/S, and P/EBITDA ratios were larger than historic averages. We believe this is due in large part to solid performance and growth opportunity expectations within the automotive and industrial & IoT business segments as NXP is leveraging its R&D comparative advantages to provide industry leading products and services.

Valuation & Price Target

From the appendix below showing the DCF model we used to value and project NXP's future earnings and cash flows, we assume that NXP's revenue growth rate will eventually grow at the market rate of 4% as the industry further matures. Revenue growth rates are assumed to be 6.5% and increasing. We assume a 4% terminal growth rate because we believe that the global economy will experience high growth rates in Asia & Africa and moderate growth rates in Europe & the Americas after a period of economic downturn. Since NXP is exposed to cyclicity in its business segments, we chose an 11% discount rate. We opted to not use a higher discount rate for this scenario because we expect the firm will succeed in leveraging its strong position to take advantage of shifting trends and technological advancement to create growth opportunities in some of its product offerings—particularly the automotive, industrial & IoT business lines.

We opted to use a combination of valuation methods to estimate NXP's fair price value. Using the assumptions in in the sensitivity matrix below in scenario where expected economic contraction followed by a period of modest to strong economic growth characterized by new innovations and product solutions, we get to an implied equity value per share of \$144.80 at a 22.8% implied upside to its current price. If we consider the scenario we just conducted the DCF in as the moderate growth economy, then we can also conduct scenarios where the economy is weak and strong. In the following table, we've done just that using the sensitivity matrix to simulate the different scenarios and have the implied stock price for each scenario. We estimate the high-low price range for the stock to be between \$120.61 and \$187.16 respectively.

NXPI Stock Price Valuation				
Sensitivity Matrix				
Scenario	Terminal Discount Rate	Terminal FCF Growth Rate	Implied Stock Price	
Weak Growth	12.00%	3.00%	\$120.61	
Moderate Growth	11.00%	4.00%	\$144.80	
Strong Growth	10.00%	5.00%	\$187.16	

Taking the average of all three scenarios, we arrive at an average price valuation of \$150.86 using the DCF method with sensitivity analysis. In the table below, we used absolute valuation to determine the target price of NXP's stock base on its current multiples to target multiples.



Absolute Valuation	Current Multiple	Target Multiple	Target/Current	Target Price
P/E	19.74	24.50	1.24	\$ 146.30
P/B	3.46	4.43	1.28	\$ 150.93
P/S	3.70	4.60	1.24	\$ 146.55
P/EBITDA	14.50	17.50	1.21	\$ 142.27

In the table below, we assigned a weight to the DCF and absolute valuation methods used to calculate a target price for NXPI equity. We assigned a weight of 60% to the DCF and 40% to the absolute valuation. The final weighted target price is calculated to be \$145.04—an upside of 27.86% to the current stock price of 117.88.

Valuation Metric	Weight Assigned	Price Target
DCF	60%	\$86.88
P/E	15%	\$21.95
P/B	5%	\$7.55
P/S	5%	\$7.33
P/EBITDA	15%	\$21.34
Final Implied Price		\$145.04
Upside/(Downside)		27.86%

NXP Semiconductors (NXPI)											
Analyst: Wui Pham											
11/4/2019											
\$ in Millions											
Year	2019E	2020E	2021E	2022E	2023E	2024E	2025E	2026E	2027E	2028E	2029E
Revenue	8,833	9,407	10,141	10,800	11,502	12,192	12,802	13,442	13,980	14,539	15,048
% Growth		6.5%	7.8%	6.5%	6.5%	6.0%	5.0%	5.0%	+0%	+0%	3.5%
Operating Income	2,297	2,728	3,144	3,456	3,681	3,902	4,097	4,301	4,474	4,652	4,815
Operating Margin	26.0%	29.0%	31.0%	32.0%	32.0%	32.0%	32.0%	32.0%	32.0%	32.0%	32.0%
Interest Income	291	282	274	292	311	329	346	363	377	393	406
Interest % of Sales	3.3%	3.0%	2.7%	2.7%	2.7%	2.7%	2.7%	2.7%	2.7%	2.7%	2.7%
Taxes	40	122	201	222	236	250	263	276	287	298	309
Tax Rate	2.0%	5.0%	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%
Net Income	2,045	2,568	3,071	2,943	3,134	3,322	3,488	3,663	3,809	3,962	4,100
% Growth		25.6%	19.6%	-4.2%	6.5%	6.0%	5.0%	5.0%	+0%	+0%	3.5%
Add Depreciation/Amort	1,767	1,740	1,724	1,728	1,840	1,951	512	538	559	582	602
% of Sales	20.0%	18.5%	17.0%	16.0%	16.0%	16.0%	+0%	+0%	+0%	+0%	+0%
Plus/minus) Changes WC	233	(167)	246	262	279	296	311	326	339	353	365
% of Sales	2.6%	-1.8%	2.4%	2.4%	2.4%	2.4%	2.4%	2.4%	2.4%	2.4%	2.4%
Subtract Cap Ex	618	706	811	864	920	975	512	538	559	582	602
Capex % of sales	7.0%	7.5%	8.0%	8.0%	8.0%	8.0%	+0%	+0%	+0%	+0%	+0%
Free Cash Flow	3,426	3,436	4,230	4,069	4,333	4,593	3,799	3,989	4,148	4,314	4,465
% Growth		0.3%	23.1%	-3.8%	6.5%	6.0%	-17.3%	5.0%	+0%	+0%	3.5%
NPV of Cash Flows	24,095	51%									
NPV of terminal value	23,365	49%							Terminal Value		66,344
Projected Equity Value	47,461	100%									
Free Cash Flow Yield	8.85%								Free Cash Yield		6.73%
Current P/E	18.9	15.1	12.6						Terminal P/E		16.2
Projected P/E	23.2	18.5	15.5								
Current EV/EBITDA	11.5	10.5	9.6						Terminal EV/EBITDA		13.7
Projected EV/EBITDA	13.7	12.4	11.4								
Shares Outstanding	328.6										
Current Price	\$ 117.88										
Implied equity value/share	\$ 144.43										
Upside/(Downside) to DCF	22.5%										
Debt	10,840										
Cash	2,789										
Cash/share	8.49										



N XPI	FY	FY	FY	FY	FY	FY	FY	FY	FY
\$ in Millions, shares in thousands	2021E	2020E	2019E	2015	2017	2016	2015	2014	2013
Consensus	9,922	9,360	8,830						
Net Sales	10,141	9,407	8,833	9,407	9,256	9,498	6,101	5,647	4,815
Cost of Goods Sold	4,766	4,610	4,593	4,556	4,637	5,429	3,314	3,007	
Gross Profit	5,375	4,798	4,240	4,851	4,619	4,069	2,787	2,640	
Research and Development	(2,434)	(2,070)	(1,767)	(1,700)	(1,554)	(1,560)	(890)	(763)	
Selling, General, and Admin Expense	(2,332)	(2,258)	(2,208)	(2,442)	(2,538)	(2,668)	(1,145)	(838)	
Other Operating Income Expense, Net	2,535	2,258	2,032	2,001	1,575	9	1,263	10	
Operating Income	3,144	2,728	2,297	2,710	2,102	(150)	2,015	1,049	
Interest Income, Net	274	282	291	335	366	453	529	410	
Income Before Income Taxes	2,870	2,446	2,005	2,375	1,736	(603)	1,486	639	
Provision for Taxes	201	122	40	(117)	536	862	113	(32)	
Net Income from Cont Ops	3,071	2,568	2,045	2,258	2,272	259	1,599	607	
Net Loss from Discnt ops	45	45	50	50	57	59	73	68	
Net Income (loss)	3,026	2,523	1,995	2,208	2,215	200	1,526	539	
EPS									
Basic	9.29	7.75	6.12	6.78	6.54	0.59	6.36	2.27	
Diluted	9.21	7.68	6.07	6.72	6.41	0.58	6.10	2.17	
Consensus - GAAP	8.90	8.70	7.59						
Guidance									
Shares Outstanding									
Basic	325,781	325,781	325,781	325,781	338,646	338,477	239,764	237,954	
Diluted	328,606	328,606	328,606	328,606	345,802	347,607	250,116	248,609	
# Diluted Shares in millions	328.61	328.61	328.61	328.61	345.80	347.61	250.12	248.61	
Tax Rate	7.0%	5.0%	2.0%	-4.9%	30.9%	-143.0%	7.6%	-5.0%	
D&A	1,724	1,740	1,767	1,987	2,173	2,205	517	405	
% of Sales	17.0%	18.5%	20.0%	21.1%	23.5%	23.2%	8.5%	7.2%	
CapEx	811	706	618	611	552	389	341	329	
% of Sales	8.0%	7.5%	7.0%	6.5%	6.0%	4.1%	5.6%	5.8%	
Receivables	608	611	662	792	879	1,033	1,047	593	542
% of Sales	6.0%	6.5%	7.5%	8.4%	9.5%	10.9%	17.2%	10.5%	
Inventory	1,470	1,336	1,237	1,279	1,236	1,113	1,879	755	740
% of Sales	14.5%	14.2%	14.0%	13.6%	13.4%	11.7%	30.8%	13.4%	
Payables	1,318	941	1,060	999	1,146	973	1,014	729	544
% of Sales	13.0%	10.0%	12.0%	10.6%	12.4%	10.2%	16.6%	12.9%	
Change in WC	246	(167)	233	(103)	204	739	(1,293)	119	
% of Sales	2.4%	-1.8%	2.6%	-1.1%	2.2%	7.8%	-21.2%	2.1%	
Sales	7.80%	6.50%	-6.10%	1.63%	-2.55%	55.68%	8.04%	17.28%	
Expenses as % of Sales									
Gross Margin	53.0%	51.0%	48.0%	51.6%	49.9%	42.8%	45.7%	46.8%	
Research and Development Exp	24.0%	22.0%	20.0%	18.1%	16.8%	16.4%	14.6%	13.5%	
Marketing, General, and Admin Expense	23.0%	24.0%	25.0%	26.0%	27.4%	28.1%	18.8%	14.8%	
SG&A	47.0%	46.0%	45.0%	44.0%	44.2%	44.5%	33.4%	28.4%	
Other Operating Income, Net	25.0%	24.0%	23.0%	21.3%	17.0%	0.1%	20.7%	0.2%	
Interest Income, Net	2.7%	3.0%	3.3%	3.6%	4.0%	4.8%	8.7%	7.3%	
Operating Margin	31.0%	29.0%	26.0%	28.8%	22.7%	-1.6%	33.0%	18.6%	



Risks & Concerns to Recommendation

The semiconductor industry is highly cyclical:

The high degree of cyclicity to the semiconductor industry has historically been caused by the relationship between supply and demand. Supply for the industry is partially impacted by manufacturing capacity. In the past, there were alternating periods of capacity additions and no to little additions. Incumbent firms within the industry tend to add capacity during periods of high expected demands and margins. Investments in new capacity can result in overcapacity, which can lead to a reduction in prices and margins. In response, companies typically limit further capacity additions, eventually causing the market to be relatively undersupplied. In addition, demand for semiconductors varies, which can exacerbate the effect of supply fluctuations. As a result of this cyclicity, the semiconductor industry has in the past experienced significant downturns, often in connection with, or in anticipation of, maturing life cycles of semiconductor companies' products and declines in general economic conditions. These downturns have been characterized by diminishing demand for end-user products, high inventory levels, under-utilization of manufacturing capacity and accelerated erosion of average selling prices. The foregoing risks have historically had, and may continue to have, a material adverse effect on business, financial condition and results of operations.

The semiconductor industry is highly competitive. Failure to introduce new technologies and products in a timely manner could adversely affect business:

The semiconductor industry is highly competitive and characterized by constant and rapid technological change, short product lifecycles, significant price erosion and evolving standards. NXP's success is heavily derived from their ability to develop new technologies and products that are ultimately successful in the market. The costs related to the research and development necessary to develop new technologies and products are significant and any reduction of their research and development capability could produce adverse effects on their competitiveness. Meeting evolving industry requirements and introducing new products to the market in a timely manner and at prices that are acceptable to customers are significant factors in determining competitiveness and success. Technologies and standards may change during development, potentially rendering products outdated or uncompetitive before their introduction. There are many incumbent firms within the semiconductor industry that are well-established, larger, and have greater resources than NXP. If these competitors increase the resources they devote to developing and marketing their products, NXP's may not be able to compete effectively. Consolidation among NXP's competitors could enhance their product offerings and financial resources, further strengthening their competitive position. In addition, some of the competitors operate in narrow business areas relative to NXP's, allowing them to concentrate their research and development efforts directly on products and services for those areas, which may give them a competitive advantage. As a result of these competitive pressures, NXP may face declining sales volumes or lower prevailing prices for their products, and they may not be able to reduce total costs in line with this declining revenue. If any of these risks materialize, they could have a material adverse effect on business, financial condition and results of operations.

The demand for NXP's products depends to a significant degree on the demand for NXP's customers' end products:

The vast majority of NXP's revenue is derived from sales to manufacturers in the automotive, identification, wireless infrastructure, lighting, industrial, mobile, consumer and computing markets. Demand in these markets fluctuates significantly, driven by consumer spending, consumer preferences, the development of new technologies and prevailing economic conditions. In addition, the specific products in which NXP's semiconductors are incorporated may not be successful or may experience price erosion or other competitive factors that affect the price manufacturers are willing to pay. Such customers have in the past, and may in the future, vary order levels significantly from period to period, request postponements to scheduled delivery dates, modify their orders or



reduce lead times. This is particularly common during periods of low demand. This can make managing business difficult, as it limits the predictability of future revenue. It can also affect the accuracy of financial forecasts. Furthermore, developing industry trends, including customers' use of outsourcing and new and revised supply chain models, may affect revenue, costs and working capital requirements. Additionally, a significant portion of products is made to order.

If customers do not purchase products made specifically for them, NXP may not be able to resell such products to other customers or may not be able to require the customers who have ordered these products to pay a cancellation fee. The foregoing risks could have a material adverse effect on business, financial condition and results of operations.

The semiconductor industry is characterized by continued price erosion, especially after a product has been on the market:

One of the results of the rapid innovation in the semiconductor industry is that pricing pressure, especially on products containing older technology, can be intense. Product life cycles are relatively short, and as a result, products tend to be replaced by more technologically advanced substitutes on a regular basis.

In turn, demand for older technology falls, causing the price at which such products can be sold to drop, in some cases precipitously. In order to continue profitably supplying these products, NXP must reduce production costs in line with the lower revenue they can expect to generate per unit. Usually, this must be accomplished through improvements in process technology and production efficiencies. If NXP cannot advance process technologies or improve efficiencies to a degree sufficient to maintain required margins, they will no longer be able to make a profit from the sale of these products. Moreover, NXP may not be able to cease production of such products, either due to contractual obligations or for customer relationship reasons, and as a result may be required to bear a loss on such products.

Global business needs to comply with laws and regulations in countries across the world and are exposed to international business risks that could adversely affect the business:

NXP operates globally, with manufacturing, assembly and testing facilities in several continents, and market products globally. As a result, they are subject to environmental, labor and health and safety laws and regulations in each jurisdiction in which they operate. They are also required to obtain environmental permits and other authorizations or licenses from governmental authorities. Complying with differing standards and varying practices of regulatory, tax, judicial and administrative bodies raises fees and administrative costs. The business environment is also subject to many economic and political uncertainties

The semiconductor industry is capital intensive:

To remain competitive, NXP must continue to invest in facilities and process technologies and carry out extensive research and development, each of which requires investment of significant amounts of capital. This risk is magnified by the firm's current level of debt and they are required to use a portion of cash flow to service that debt.

Proprietary intellectual property is the driver of growth and earnings. Protecting this intellectual property against improper use by competitors or others is not guaranteed:

NXP's success and future revenue growth depends, in part, on their ability to protect proprietary technology, products, proprietary designs and fabrication processes, and other intellectual property against misappropriation by others. They primarily rely on patent, copyright, trademark and trade secret laws, as well as nondisclosure agreements and other methods, to protect intellectual property.



Conclusion

The computerization of cars, factory automation, and the Internet of Things (IoT), among other uses, have caused a massive secular tailwind for leading chip suppliers in recent years. Our buy recommendation reflects our belief that fundamentals have likely witnessed a trough and see potential market share gains within the automotive space. We are optimistic about potential content increases in the automotive space, with nearly one-third of NXPI's exposure to that end market concentrated on high-growth areas (e.g. electrification and ADAS). In addition, we like gross margin expansion potential, which we think could support multiple expansions if executed.

We see upside to 2020 consensus growth expectations given the pending acquisition of Marvell's Wi-Fi Connectivity business, which we believe will be highly complementary to NXPI's existing offerings and immediately accretive. NXP significantly grew its position within the automotive market through its acquisition of Freescale Semiconductors in 2015. It also focused its firm on less commodity-like opportunities after selling its Standard Products division in 2017. Secured connectivity solutions that NXP specializes in is the trend now and in the foreseeable future as cybersecurity becomes more prioritized and data centers are increasingly built to process, analyze, and redirect the data that sensors and chips produce. Longer-term trends for connectivity, efficiency, and automation are favorable growth drivers for the firm and its industrial and IoT business segment. The firm's industrial and Internet of Things products where a combination of products supporting factory automation, improved media processing, and end-node connectivity will be the primary driver for growth.

Growth expectations for 2019 and leading into 2020 are expected to be lower due to decreasing automotive sales that represent 48% of revenue for NXP in 2018. Regulation hurdles regarding emission tests in Europe are a barrier to auto production as well. We are uncertain when sales growth will resume but expect the secular and cyclical trends above will enact a period of strong performance. The company had revenues of 9.40 billion in 2018 and is a market leader in many product categories across its automotive, mobile, industrial and IoT, and communication infrastructure business segments. With decades of operation experience and strong customer relations, NXP is in a great position to benefit from its leadership in many technologies. The firm possesses quality leadership, value creating business lines, innovative solutions orientation, and top-notch expertise and these factors have been crucial in its strong performance and driven innovation.

Our valuations for NXP produced an implied share price of \$145.04, an upside of 27.86% compared to the current market price of \$117.88. With 12 month returns at 44.91% and YTD returns at 62.26%, we believe NXP is currently capable of leveraging its strengths and expertise to drive strong performance and produce higher earnings moving forward.

Risks to our recommendation and target price include lower semiconductor growth due to cyclicality, greater-than-expected competitive pressures, unrealized benefits from intellectual property, sharp decline in automotive volume, and increased regulation and political uncertainty.



References

Angelo Zino. (2019). *NXP Semiconductors N.V.* Retrieved from CFRA website:

<https://www.capitaliq.com/CIQDotNet/Research/InvestmentResearch.aspx?CompanyId=934467&page mode=7>

Bloomberg. (n.d.). *Bloomberg Terminal*. Retrieved from

https://www.bloomberg.com/professional/solution/bloomberg-terminal/?utm_medium=Adwords&utm_campaign=Trmnl&utm_source=pdsrch&utm_content=trmnlsem&bbgsum=DG-WS-PROF-TRMNL-GP&mpam=20777&gclid=Cj0KCQiA-4nuBRCnARIsAHwyuPr3e_r9w-dS8Qi0mexUdWUoHMdsftwnBJXza7lFf5kXm3nQ7wJ61jEaAk30EALw_wcB

<https://www.capitaliq.com/CIQDotNet/KeyDevs/KeyDevelopments.aspx?CompanyId=934467&selDateRange>

Option=m6&chkSubs=1. (2019). Retrieved from

<https://www.capitaliq.com/CIQDotNet/KeyDevs/KeyDevelopments.aspx?CompanyId=934467&selDateRangeOption=m6&chkSubs=1>

Morningstar Investment Research Center. (2019). Retrieved from

<https://library.morningstar.com/stock/quote?t=NXPI@ion=USA&culture=USA>

Morningstar Investment Research Center: Autonomous Driving, 5G, Internet of Things Favorable Tailwinds

for NXP; Initiating With \$115 FVE. (2019, October 29). Retrieved from

<https://library.morningstar.com/stock/analyst-report?t=NXPI@ion=USA&culture=USA>

NXP Semiconductors N.V. (NasdaqGS:NXPI) Key Developments. (2019). Retrieved from

<https://www.capitaliq.com/CIQDotNet/KeyDevs/KeyDevelopments.aspx?CompanyId=934467&selDateRangeOption=m6&chkSubs=1>

NXP Semiconductors N.V. (NasdaqGS:NXPI) Long Business Description. (2019). Retrieved from

<https://www.capitaliq.com/CIQDotNet/Company/LongBusinessDescription.aspx?CompanyId=934467>



NXP Semiconductors N.V. (NasdaqGS:NXPI) Public Company Profile. (2019).

Retrieved from <https://www.capitaliq.com/CIQDotNet/company.aspx?companyId=934467>

NXP Semiconductors N.V. (NXPI) Stock Price, Quote, History & News. (n.d.). Retrieved from

<https://finance.yahoo.com/quote/NXPI?p=NXPI&.tsrc=fin-srch>

NXP Semiconductors. (2019, October 28). NXP 3Q19 Earnings Release. Retrieved from

<https://investors.nxp.com/financial-information/financial-information-0>

NXP Semiconductors. (2019). *NXP Corporate Overview*. Retrieved from NXP Semiconductors website:

<https://www.nxp.com/docs/en/supporting-information/NXP-CORPORATE-OVERVIEW.pdf>

NXP Semiconductors. (n.d.). About NXP. Retrieved from [https://www.nxp.com/company/our-company/about-](https://www.nxp.com/company/our-company/about-nxp:ABOUT-NXP)

[nxp:ABOUT-NXP](https://www.nxp.com/company/our-company/about-nxp:ABOUT-NXP)

NXP Semiconductors. (n.d.). Investor Relations. Retrieved from <https://investors.nxp.com/>

NXP Staff. (2019, July 24). NXP RANKS AMONG WORLD'S TOP 100 PATENT APPLICANTS. Retrieved

from <https://blog.nxp.com/nxp/nxp-ranks-among-worlds-top-100-patent-applicants>

NXPI Form 10-Q. (2019). Retrieved from Securities & Exchange Commission website:

<https://www.sec.gov/edgar/searchedgar/companysearch.html>

NXPI Form 20-F. (2019). Retrieved from Securities & Exchange Commission website:

<https://www.sec.gov/edgar/searchedgar/companysearch.html>

Silicon Valley Historical Association. (2008). NXP Semiconductors History. Retrieved from

<https://www.siliconvalleyhistorical.org/nxp-semiconductors-history>

Smith, R. (2019, September 23). Explaining The VRIO Framework (With A Real-Life Example). Retrieved

from <https://www.clearpointstrategy.com/vrio-framework/>