



International Market Equities Pitches

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All information sourced from Bloomberg or JFC Estimates unless otherwise noted.

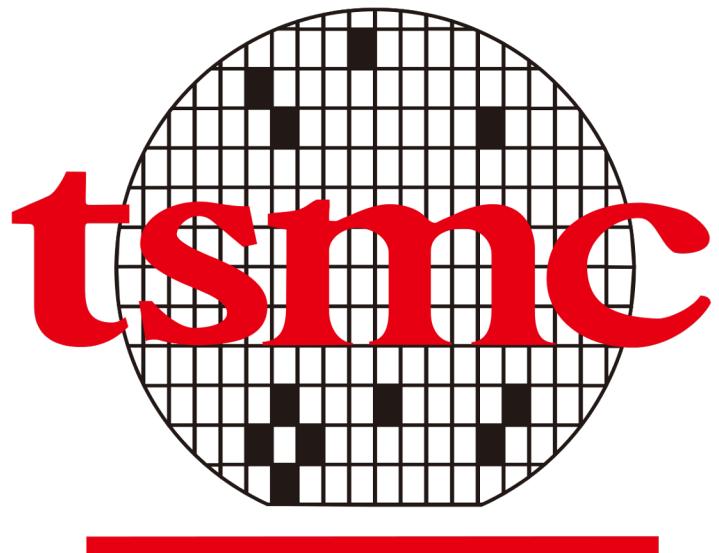
Asset Allocation

Economic Forecast

Fixed Income

Global Equities

Taiwan Semiconductor Manufacturing Company (TSM)



Sector: *Technology*
Industry: *Semiconductor - Integrated Circuits*

TSMC was founded in 1987. It is one of Taiwan's largest companies, the world's most valuable semiconductor manufacturer, and the world's largest semiconductor contract manufacturer.

Market Cap	Current Price	12 Month Target Price
378.3B	\$80.60	\$95.09

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Industry Overview

IDMs

- Integrated devices manufacturers designs, manufactures, and sells integrated circuit (IC) products
- The time frame between IC design and production is the shortest and offers the greatest profit margin among all.
- **Ex) Samsung, Intel, Toshiba**

Fabless Companies

- Designs and sells the hardware and semiconductor chips but does not manufacture the silicon wafers, or chips, used in its products
- They outsources the fabrication to a manufacturing plant or foundry.
- **Ex) Qualcomm, Nvidia, and AMD**

Pure-Play Foundries

- Foundries only manufacture devices under contract for other companies, without designing them.
- **Ex) TSMC, Globalfoundries, and UMC**

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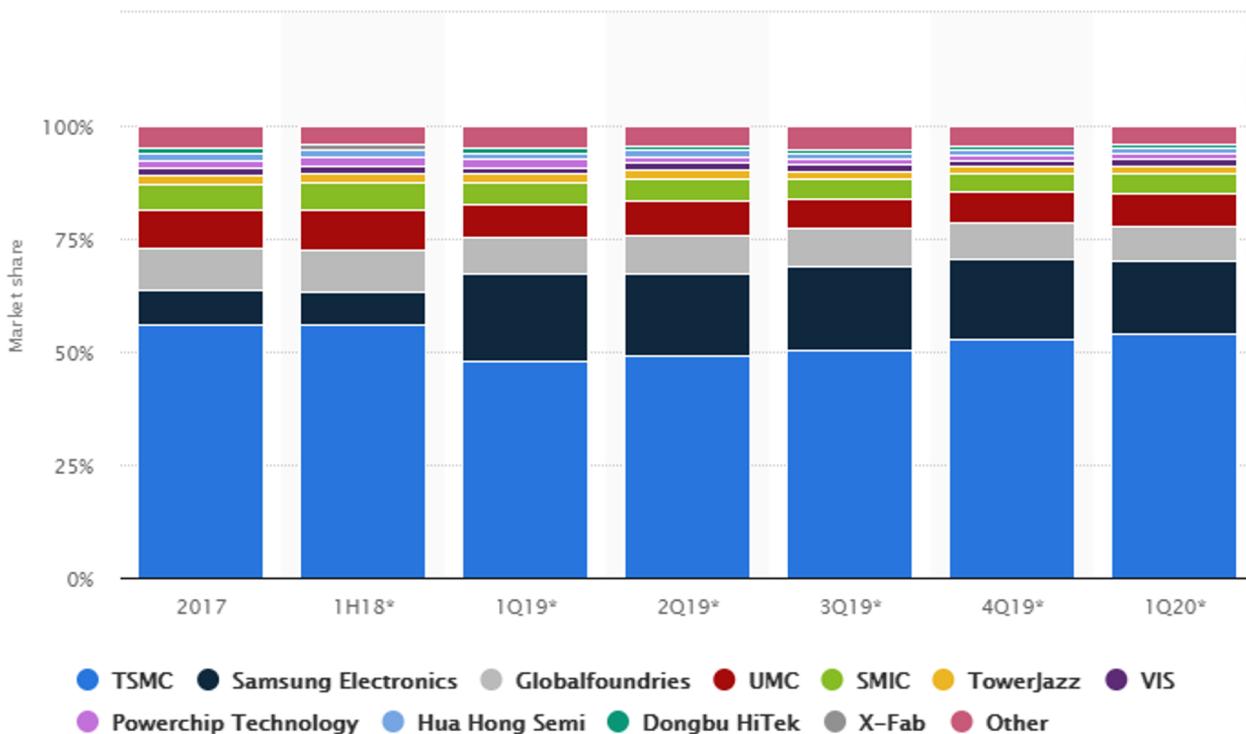
Investment Highlights

- Continuing market share gains by fabless companies.
- The “only” company in the world that offers 5nm chip production
- 5G and HPC
- Internet of Things (IoT)
 - Grew 25% in 2019
 - Expected to have a sustain double digit growth in 2021
- Automotive
 - Electric vehicles
 - Advanced Driver Assistance System

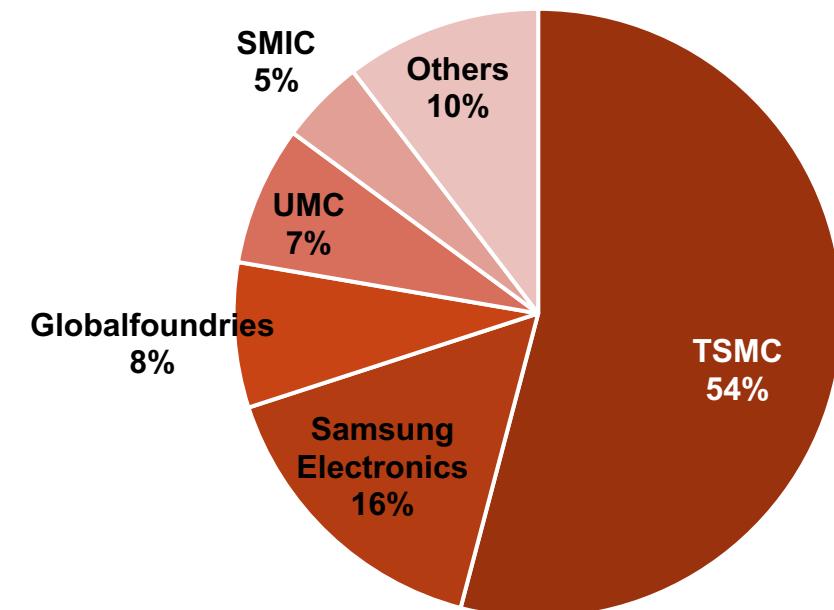
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Industry Overview

Top Semiconductor foundries market revenue from 2017 to 1Q 2020



1Q20 Sales



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Company Description

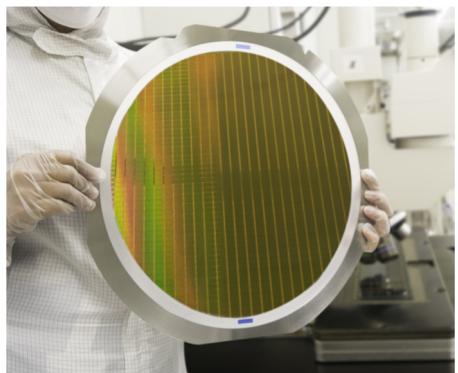
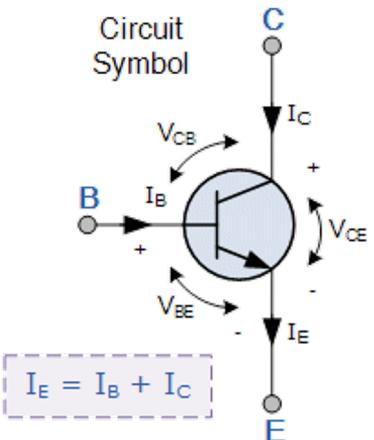
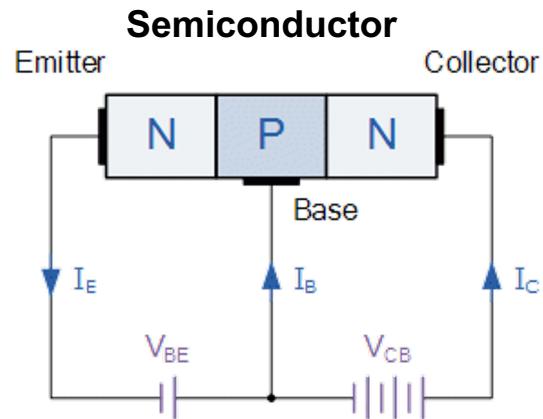
Taiwan Semiconductor Manufacturing Co. is mainly engaged in the manufacturing, sale, packaging, and test of integrated-circuit (IC) and other semiconductor products

TSM's products are applied to end goods such as PC's, data centers, industrial equipment, information applications, wireless communication services and consumer electronics, such as TV's or digital cameras

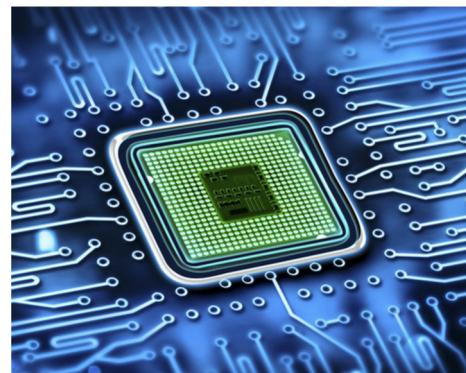
TSM also develops various semiconductor technologies it uses in processes such as mask technology, CMOS image sensor technology, or 3D IC



Products



Wafer Fabrication



Microchips

- A wafer fabrication is a collection of individual microchips made of transistors that needs to be further cut and processed.
- TSMC takes order from fabless companies and manufacture wafer fabrications.
- TSMC has the lowest labor cost and highest economic of scale compared to GlobalFoundries and Samsung.

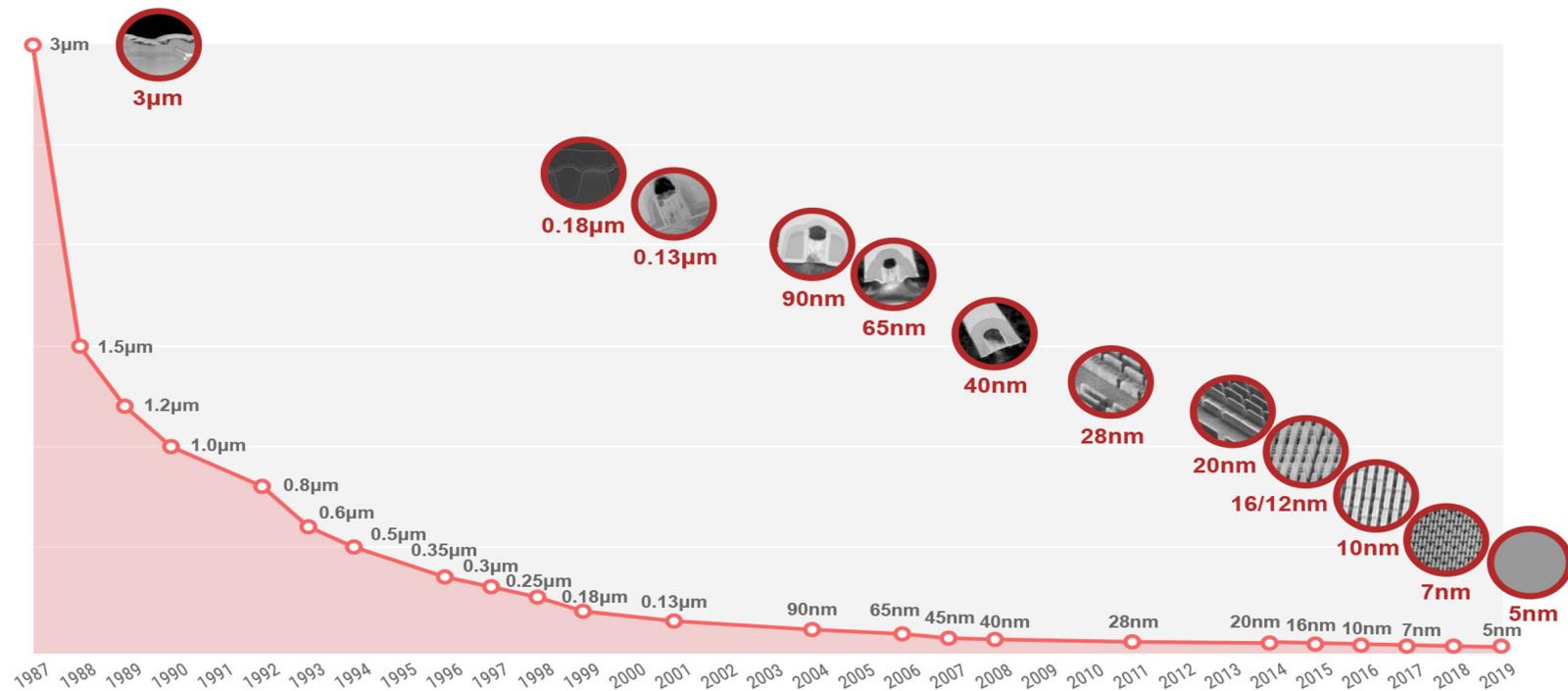
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Moore's Law

- Moore's Law:
for every 2 years,
microchip's performance
will double, and the price
will half.

Why Important?

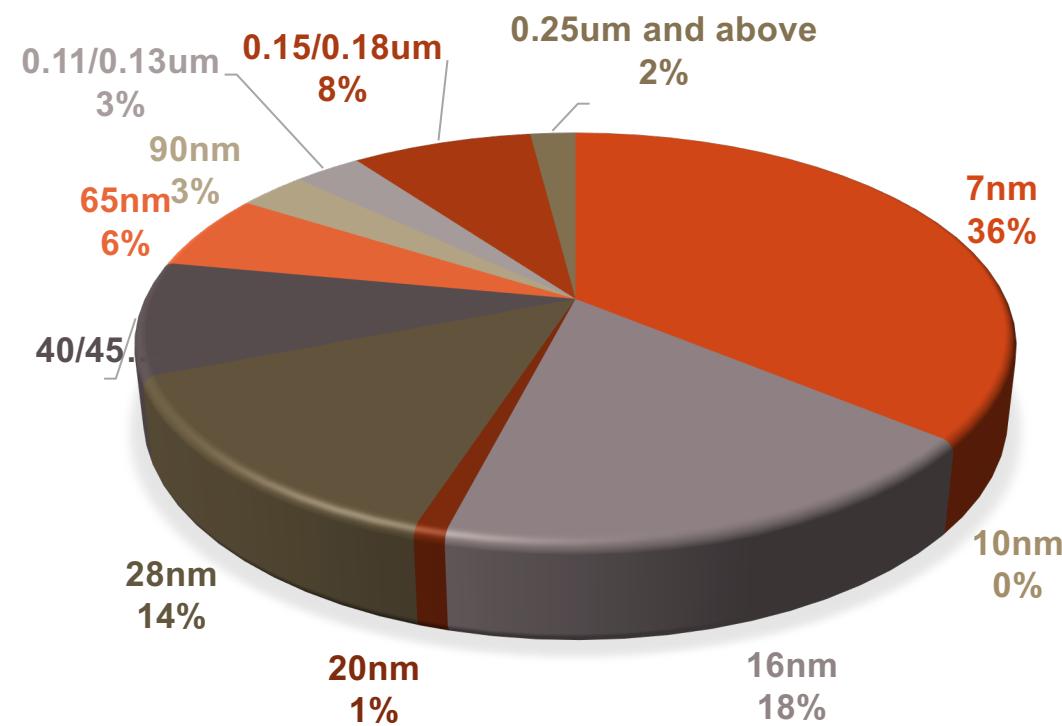
- ❑ The development of
silicon chips follows
Moore's Law.



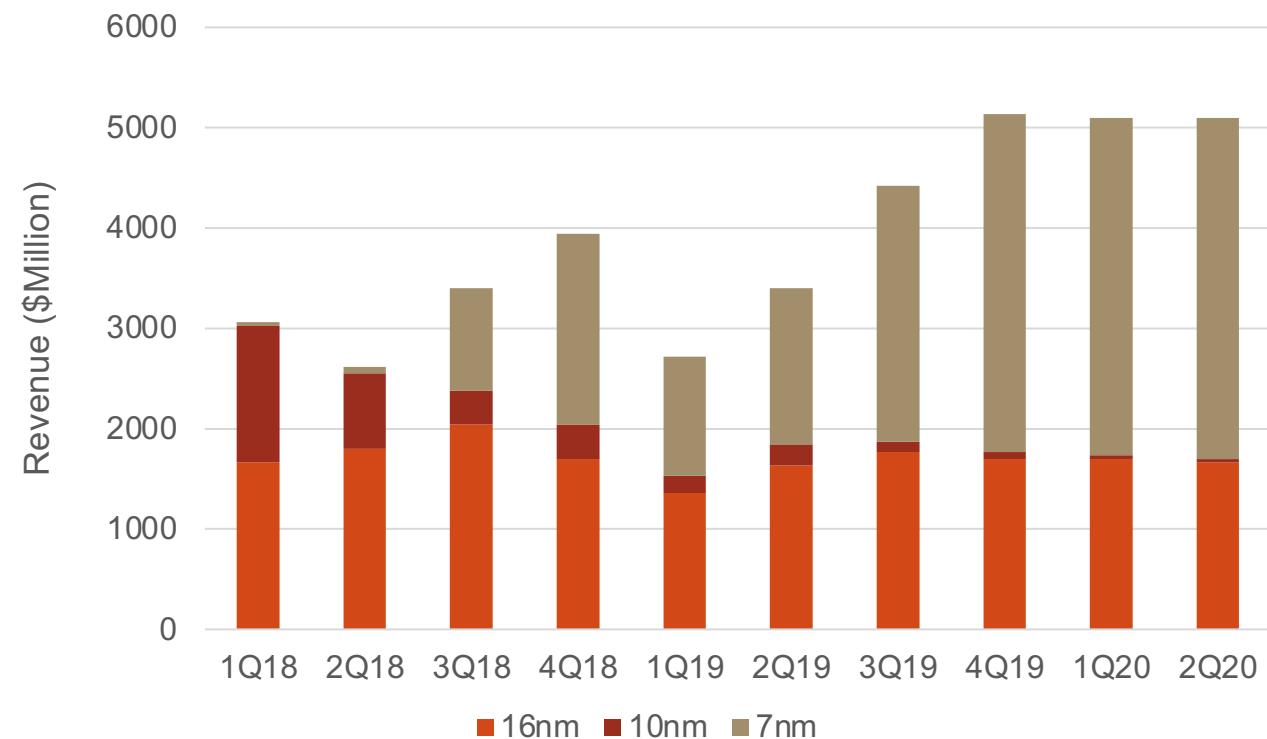
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2Q20 Revenue Breakdown

WAFER FAB REVENUE

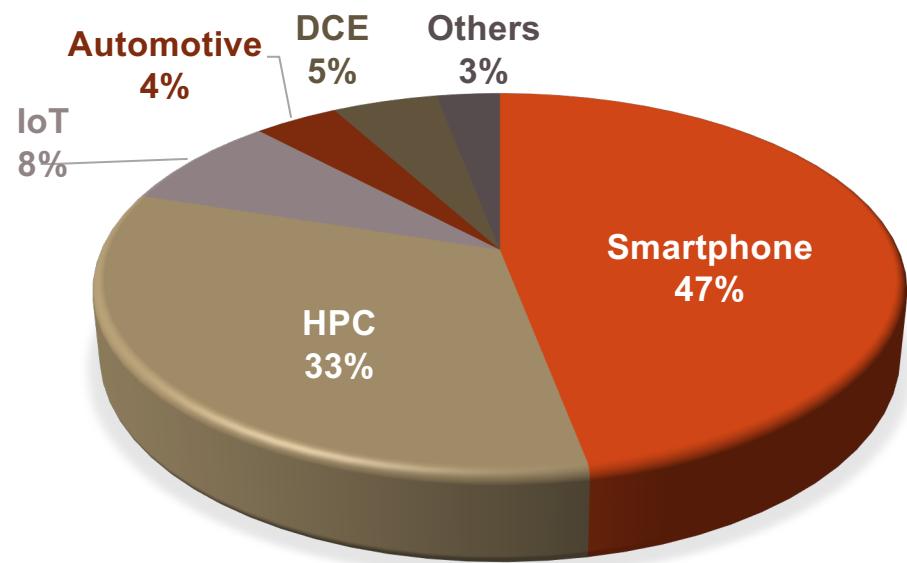


16nm and Below Revenue

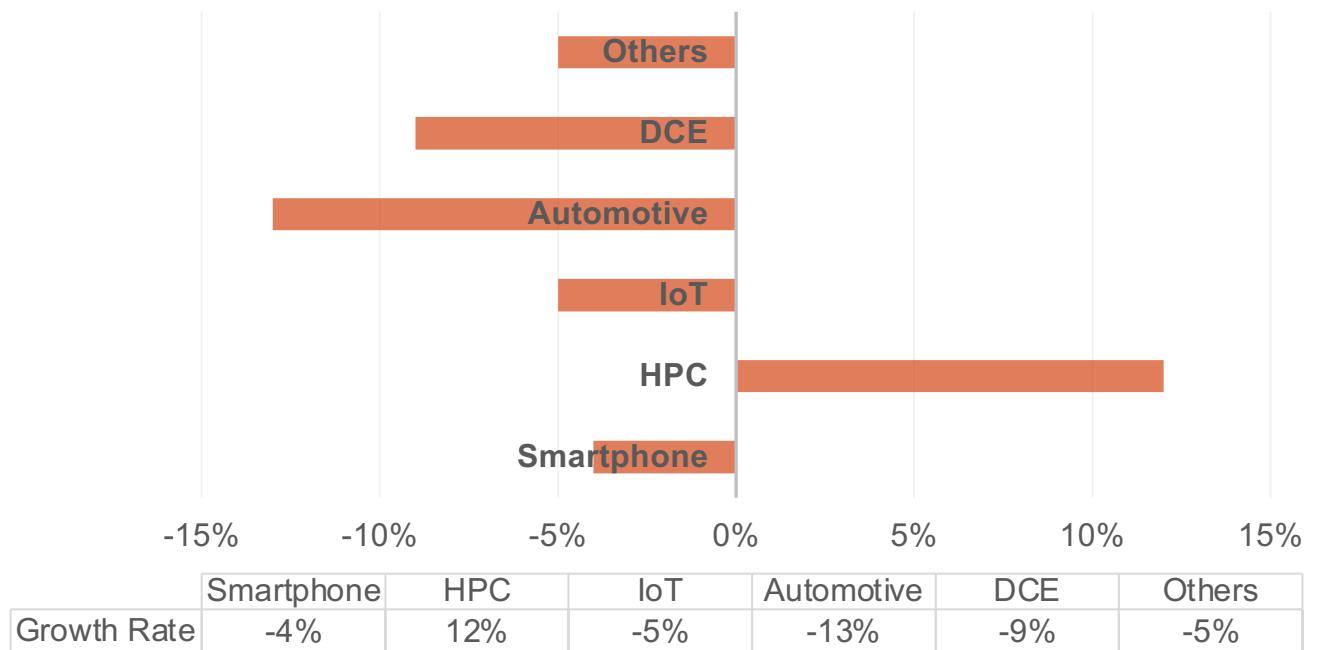


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2Q20 Revenue Breakdown



Growth rate by Platform (QoQ)



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Recap of Recent Major Events

- ◆ **TSMC announced intention to build and operate 5nm fabrication in Arizona**
- ◆ **TSMC stopped partnering with Huawei** (its biggest Chinese customer, 13% of its revenue)
- ◆ **TSMC delivered the world-first 7nm automotive design enablement platform**
- ◆ **TSMC jumped nearly 10% as Intel faced 7nm transistor delays.** (07/27/2020)
-> Intel had ordered 180,000 6nm wafers from TSMC

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TSMC's Major Future R&D Projects

2020 N5 technology entered volume production

2021 3nm logic technology platform and applications

2022 N3 technology enter volume production

2023 Beyond-3nm logic technology platform and applications

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Economic Moat

- The 5nm technology will set TSMC's wide economic moat for another 2-3 years.
- The 3 nm node was once assumed by some experts to be the end of Moore's law.
 - hard to meet for electrons has a high chance to bypass the gate oxide layer regardless of its polarity in transistors smaller than 5nm.
- The absolute limit for silicon is around 1.5nm
 - further downsizing requires carbon as a substitute which won't be available for another 10 years.

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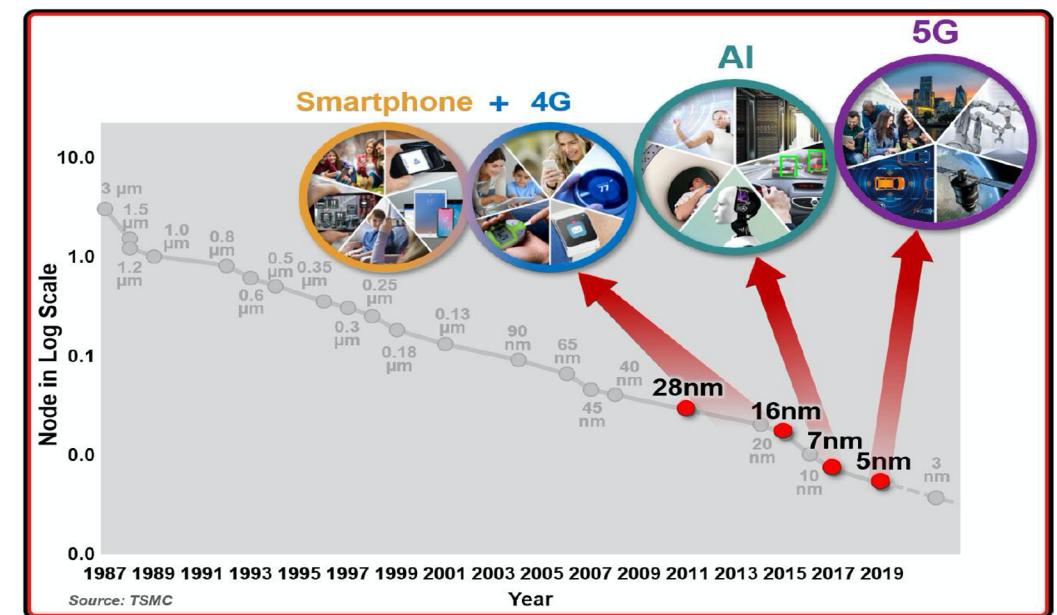
Competitive Position: Samsung VS. TSMC

- Technology
 - 14nm Samsung > TSMC
 - 10nm and 7nm Samsung <TSMC
 - 3nm yet to come
- Limitation in the U.S. and China
 - Qualcomm and Chinese Telecom owns CDMA patent

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Growth Opportunities

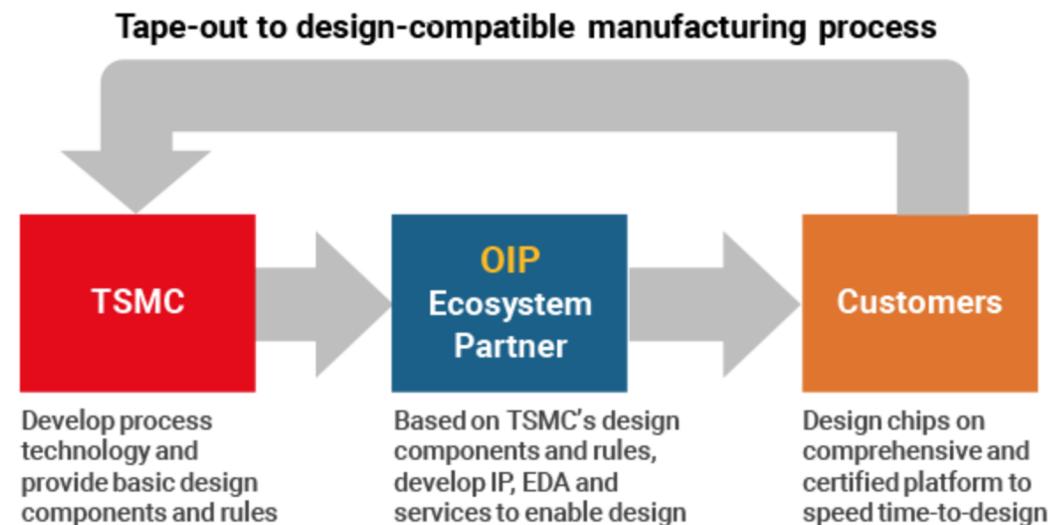
- Increasing demand for 5nm technology chips.
- TSMC's ecosystem: Open Innovation Platform® (OIP)
 - Reduce production failures and increase consumer stickiness.
- Gradually increase its market shares and become a monopoly in the near term.
- Biden winning the election
 - Huawei restore their partnership with TSMC



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Growth Opportunities

- Open Innovation Platform® (OIP)



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Financial Summary

TSM Summary Statistics	
Current Price	\$80.58
52-Week Range	\$41.05 - \$84
Market Cap	\$383,679,600,000
Beta	0.96
P/E	27.41
P/B	7.603
P/S	10.32

TSM Debt Analysis	
Current Ratio (mrq)	1.4
Quick Ratio (mrq)	1.26
Long-Term Debt/Equity (mrq)	0.05
Long Term Debt/Capital	0.03
Total Debt/Equity (mrq)	0.15
Total Debt/Capital	0.29
Total Liabilities / Total Assets	0.28

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Financial Analysis

TSM Financial Summary								
	2015	2016	2017	2018	2019	2020	2021	2022
Revenue (USD Millions)	26,571	29,257	32,977	34,200	34,640	43,340	48,107	53,399
YoY Growth (%)	10.1%	10.1%	12.7%	3.7%	1.3%	25.1%	11%	11%
Gross Profit	12927	14655	16695	16,516	15,955	22,507	24,535	27,234
Gross Margin (%)	48.7%	50.1%	50.6%	48.3%	46.1%	51.9%	51.0%	51.0%
EBITDA	17090	18574	21,785	22,090	22,052	28,171	30,789	34175
EBITDA Margin (%)	64.3%	63.5%	66.1%	64.6%	63.7%	65.0%	64.0%	64.0%
Net Income	9657	10238	11640	11,643	11,188	16,305	16,838	18,690
Net Income Margin (%)	36.3%	35.0%	35.3%	34.0%	32.3%	37.6%	35.0%	35.0%

	TSM	UMC (United MicroElectronics)	SMIC (Semiconductor Manufact. Int'l)	TSEM (Tower Semiconductor)
Gross Profit Margin (TTM)	50.7%	17.2%	22.5%	18.2%
EBITDA Margin (TTM)	63.7%	35.1%	36.1%	16.1%
Net Income Margin (TTM)	37.0%	5.8%	8.5%	6.4%
PE Ratio	27.411	17.75	45.75	27.50
ROE	27.7%	4.5%	2.8%	5.9%

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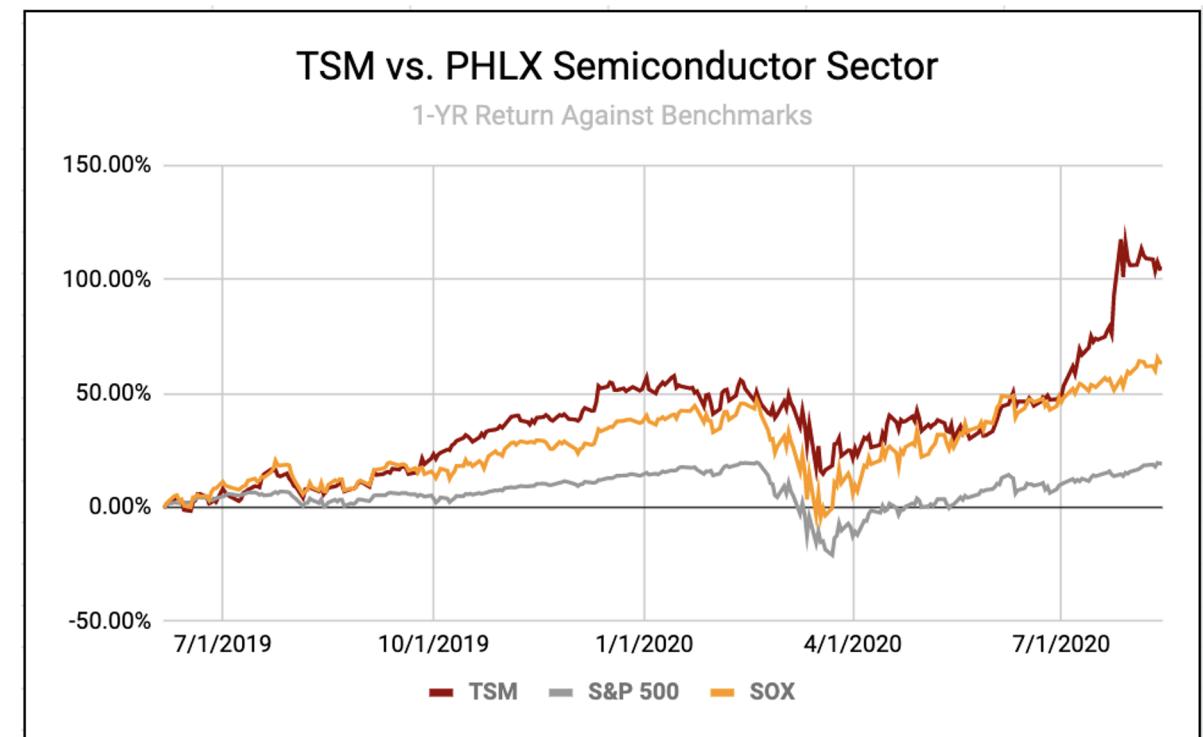
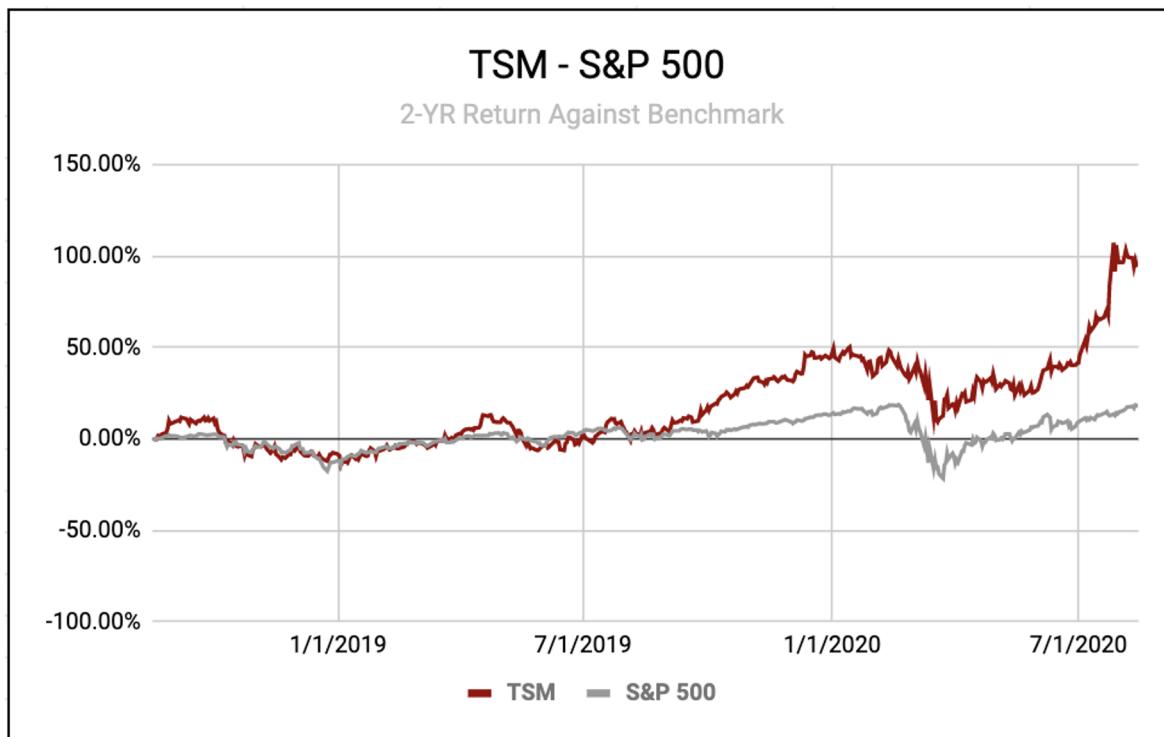
Financial Analysis

	2018					2019					2020				
	Q1	Q2	Q3	Q4	ANNUAL	Q1	Q2	Q3	Q4	ANNUAL	Q1	Q2	Q3	Q4	ANNUAL
Revenue (USD Millions)	8,460	7,850	8,490	9,400	34,200	7,100	7,750	9,400	10,390	34,640	10,310	10,380	11,300	11,350	43,340
YoY Growth (%)					3.7%					1.3%					25.1%
Gross Profit	4,255	3,752	4,024	4,484	16,516	2,932	3,333	4,474	5,216	15,955	5,341	5,501	5,763	5,902	22,507
Gross Margin (%)	50.3%	47.8%	47.4%	47.7%	48.3%	41.3%	43.0%	47.6%	50.2%	46.1%	51.8%	53.0%	51.0%	52.0%	51.9%
EBITDA					22,090					22,052					28,171
EBITDA Margin (%)					64.6%					63.7%					65.0%
Net Income	3,063	2,434	2,904	3,243	11,643	1,995	2,147	3,243	3,803	11,188	3,887	4,038	4,181	4,200	16,305
Net Income Margin (%)	36.2%	31.0%	34.2%	34.5%	34.0%	28.1%	27.7%	34.5%	36.6%	32.3%	37.7%	38.9%	37.0%	37.0%	37.6%

	2Q20		3Q20
	Actual	Guidance	Guidance
Net Revenue (US\$ Billion)	10.38	10.1-10.4	11.2-11.5
Gross Margin	53%	50-52%	50-52%
Operating Margin	43.2%	39-41%	39-41%

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Price Performance



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Valuation (DCF)

Key Projections

(TWD in millions)	Dec-19	Dec-20	Dec-21	Dec-22	Dec-23	Dec-24	Dec-25
Revenue	1,069,985	1,296,698	1,417,772	1,553,733	1,608,113	1,640,276	1,673,081
EBITDA	653,864	852,362	915,430	1,033,863	1,070,048	1,091,449	1,113,278
Capital Expenditures	460,422	490,534	450,794	465,000	468,776	461,523	447,125
% YoY Revenue Growth	3.7%	21.2%	9.3%	9.6%	3.5%	2.0%	2.0%
% EBITDA Margin	61.1%	65.7%	64.6%	66.5%	66.5%	66.5%	66.5%
% CapEx Margin	43.0%	37.8%	31.8%	29.9%	29.2%	28.1%	26.7%

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Valuation (DCF)

Projected Unlevered Cash Flow

(TWD in millions)	Dec-20	Dec-21	Dec-22	Dec-23	Dec-24
EBITDA	852,362	915,430	1,033,863	1,070,048	1,091,449
D&A	(346,538)	(378,894)	(415,229)	(429,762)	(438,357)
EBIT	505,825	536,536	618,633	640,286	653,091
Pro forma Taxes	(65,757)	(69,750)	(80,422)	(83,237)	(84,902)
NOPAT	440,067	466,786	538,211	557,048	568,189
Capital Expenditures	(490,534)	(450,794)	(465,000)	(468,776)	(461,523)
NWC Investment	36,046	19,250	21,617	8,646	5,114
(+) D&A	346,538	378,894	415,229	429,762	438,357
Free Cash Flow	332,117	414,137	510,057	526,681	550,137
% Growth		25%	23%	3%	4%

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Valuation (DCF)

EBITDA Exit

	Low	Mid	High
(A) PV of Discrete Cash Flows	3,534,746	3,604,823	3,677,190
Selected EBITDA Exit Multiple	13.4x	14.4x	15.4x
(B) PV of Terminal Value	6,830,291	7,666,963	8,565,541
(A + B) Enterprise Value	10,365,038	11,271,786	12,242,731

Revenue Exit

	Low	Mid	High
(A) PV of Discrete Cash Flows	3,534,746	3,604,823	3,677,190
Selected Revenue Exit Multiple	6.0x	6.5x	7.0x
(B) PV of Terminal Value	6,647,847	7,344,877	8,068,109
(A + B) Enterprise Value	8,514,650	9,229,348	9,970,56

EBITDA Multiple Implied Stock Price (USD)	84.29	90.99	97.94
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Revenue Multiple Implied Stock Price (USD)	61.38	66.33	71.46
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Valuation (DCF)

Select Multiples

(TWD in millions)	Low	Mid	High
Company LTM EBITDA			
Multiple	14.6x	14.6x	14.6x
Benchmark LTM EBITDA			
Multiple	5.6x	20.5x	127.9x
Historical LTM EBITDA			
Multiple	6.1x	8.0x	12.5x
Selected EBITDA Exit			
Multiple	13.4x	14.4x	15.4x
Terminal Value	14,579,657	15,671,106	16,762,554
Implied Fair Value	83.32	90.00	96.93
Implied Exit Revenue			
Multiple	8.9x	9.6x	10.2x
Implied Perpetuity Growth			
Rate	5.5%	5.3%	5.1%

(TWD in millions)	Low	Mid	High
Company LTM Revenue			
Multiple	9.0x	9.0x	9.0x
Benchmark LTM Revenue			
Multiple	1.4x	5.1x	23.7x
Historical LTM Revenue			
Multiple	3.9x	5.3x	7.8x
Selected Revenue Exit			
Multiple	6.0x	6.5x	7.0x
Terminal Value	9,782,454	10,602,592	11,422,730
Implied Fair Value	60.95	65.90	71.02
Implied Exit EBITDA Multiple	9.0x	9.7x	10.5x
Implied Perpetuity Growth			
Rate	3.7%	3.7%	3.5%

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Valuation (Multipliers)

P/E Multiples

	SAMSUNG	INTC	TXN	QCOM	AVGO	TSM
LTM P/E Ratio	15.8x	9.1x	26.7x	49.3x	61.0x	25.3x

Average	34.89x
(x)Net Income	\$15,955
(=)Equity Value	\$556,638.04
(/)Shares Outstanding	4910.2
Implied Share Price	\$105.2

EV/EBITDA Multiples

	SAMSUNG	INTC	TXN	QCOM	AVGO	TSM
LTM EV/EBITDA Ratio	4.94x	5.6x	21.0x	27.2x	17.0x	14.6x

Average	15.148x
(x)EBITDA	\$21,795
(=)Implied EV	\$330,150.66
(-)Non-Shareholder Claims	\$11,474
(=)Equity Value	\$318,676.66
(/)Shares Outstanding	4910.2
Implied Share Price	\$64.90

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Valuation (Weighted)

Suggested Fair Value			
Models	Suggested Fair Value	Weights	
DCF EBITDA exit	\$ 90.99	35%	\$ 31.85
DCF Revenue exit	\$ 66.33	25%	\$ 16.58
P/E Multiples	\$ 105.20	15%	\$ 15.78
EBITDA Multiples	\$ 64.90	25%	\$ 16.23
			\$ 80.43

12-Month Target Price			
Models	Suggested Fair Value	Weights	
DCF EBITDA exit	\$ 96.93	30%	\$ 29.08
DCF Revenue exit	\$ 71.02	15%	\$ 10.65
P/E Multiples	\$ 110.00	40%	\$ 44.00
EBITDA Multiples	\$ 75.69	15%	\$ 11.35
			\$ 95.09

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Investment Thesis

- HPC: Long term growth driver for TSMC
- It is a leading-edge company that has very high chance will take over the entire foundry market in the next 5-8 years.
- Low risk, Medium return.
- An international stock will set us in a good position to weather the election.

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Risks

- Political Risk
 - Turning to a weapon that the U.S. to use against China.
 - Taiwan government only own 6% of shares, U.S. institutional own 19.76% of shares.
 - China annex Taiwan.
 - Exchange Rate
- Technology Risk
 - Facing 3nm technology competition with Samsung in the future. (approx. 3 years later)
- Market Risk

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Question Time



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