

Twitter Thread by Christopher Seifel



Christopher Seifel

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\$TSM: Fueling the Future of Computing

Taiwan Semiconductor Mfg. Co. (TSMC) has become the leading manufacturer (fab) of semiconductor chips by capitalizing on a series of egregious missteps at \$INTC

This is **not a buy rec, but rather info for when it's actionable**

A thread■

1/ The Basics

The first "pure-play" foundry -> enabled the rise of the "fabless" (i.e. design-only) industry

A foundry ("Fab") manufactures microchips (integrated circuits "IC") for customers such as fabless chip companies.

Fab only = sole focus on better process technologies

2/ First Mover

The leader in chip mfg. is the fab that can get to the next "process node" first

Process Node ("Tech"): Used to indicate feature size of transistor - > now marketing tool for chip generation

As [@GavinSBaker](#) wrote in Jan '19, TSMC passed INTC at the 7nm node

3/ Market Overview

All electronics = powered by semis

3 Types of Companies:

1. Integrated Device Mfgs. ("IDM"): \$INTC, KOSE: A005930, \$TXN, \$MU

2. Fabless: \$NVDA, \$AMD, \$QCOM, \$AVGO

3. Fabs: \$TSM, \$UMC, \$SMICY, GF

Market Size: Semis power all electronics...

4/ Technology Advantage

Tech dominance while other foundries can't keep up (GF dropped out at 7nm)

Tech advantage -> customer additions (\$AMD from GF)

1) 5nm already in production

2) Specialty tech (5G)

3) Advanced Packaging

TSM: 52% market share

Manu leader + Ecosystem

5/ Technology Platforms

Automotive Electronics: IP ecosystem & RF tech driven by autonomous & EV

High Performance Computing: Cloud datacenters and communication infrastructures

IoT: Fueled by wearables, smart homes / cities / industries

Smartphone: Mobile proliferation

6/ Q4 2020 Financial Results

Accelerating Rev growth YoY: 16%, 22%, 24.2%

Expanding EBIT %: 35%, 37.7%, 40%, 41.3%

2x FCF YoY

Accelerating EPS Growth YoY: 24.2%, 43.5%, 49.2%

ROA: 10.7%, 12.1%, 13.1%, 14%

ROE: 20.9%, 23.4%, 27.8%, 29.1%

7/ Capital Expenditures

2021 Guidance: \$25B-\$28B vs. \$17B in 2020 (47% - 65% YoY Increase)

LT Capital Intensity: mid-30%

Accelerates CapEx spend to prep for higher growth

2021 Capital Intensity est.: ~48.5%

On conf. call: to support expected higher Revenue CAGR next 5 years

8/ Revenue Composition

5nm shipments accelerated in Q4 – now 20% of Rev

Advanced Tech (< 16nm tech) = 62% vs. 56% Q4 2019

Smartphone continues to dominate

Main HPB growth areas: CPU, networking & AI accelerator

- Could CPU growth be from \$INTC?

HPC - main growth driver

9/ Next Step: N3

2021 Rev Driver = HPC & Auto

HPC: “We see a stronger innovation is coming our way on N3 as well as on N5.”

N3: Volume production 2H 2022

N3: 70% logic density gain, up to 15% performance gain & up to 30% power reduction vs. N5 (175MM transistors / mm²)

10/ Future R&D Leadership

3nm logic tech platform & apps (2021): 6th gen 3D platform

Beyond 3nm by 2023 – 2nm in pipeline

Projects: Beyond-2nm node, 3D transistors, new memory, etc.

Focus: novel materials, processes, devices, nanowires & memories (+8-10 yrs away)

11/ Conclusion

\$TSM is fueling the world of ubiquitous computing and interconnected devices

Has overtaken \$INTC in mfg. leadership -> economic benefits

Positioned to benefit and capitalize on hyper-growth trends: AI / autonomous driving, 5G, IoT

12/ Resources

@GavinSBaker on INTC: <https://t.co/JCRhKxifTB>

Anything written by @FoolAllTheTime

\$TSM R&D: <https://t.co/lLe1nmjWsX>

\$TSM Q4 2020 Earnings: <https://t.co/JF8Ga6uFAI>

13/ Bonus Feature

@SahilBloom posted an amazing thread (as always) on TSMC's founder, Morris Chang. It is a great supplement to this thread!

<https://t.co/UKngzlUo5m>

In 1983, a 52-year-old senior executive at Texas Instruments was passed over for the company's top job.

He would go on to found and build the most strategically important company in the world.

Who's up for a story?

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— Sahil Bloom (@SahilBloom) [January 24, 2021](#)