2020 Semiconductor Market Review & 2021 Outlook

SIA Roundtable

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Looking Back

~ 2020 ~
A Whipsaw Disaster That Required a Nimble Response
COVID-19 Supply Chain Impact – 2020

The impact of government quarantine orders and directives on your company’s workforce and operations

[Graph showing the impact of quarantine orders on workforce and operations across different dates and severity levels]

COVID-19 Supply Chain Impact – 2020

Index of "concern regarding these issues due to the Coronavirus / COVID-19 impact through 2020"

SCALE: Severe = 100; Moderate = 50; None = 0

20-Mar 21-Apr 25-May 29-Jun 05-Jul 16-Aug 26-Sep

Raw Materials Disruption
Electronics Systems Manufacturing Disruption
Loss of End-Market Demand Due to Recession

Electronics Components Manufacturing Disruption
Shipping and Logistics Disruption
Overall Average
COVID-19 Supply Chain Impact – 2020

Index of "Impact level of the Coronavirus / COVID-19 on market demand"

SCALE: Strong Increase = 100; No Change = 50; Strong Decrease = 0

- Computers & Data Processing
- Automotive
- Defense / Aerospace
- Consumer
- Industrial
- Telecom Infrastructure
- Medical
- Overall Average


Electronic Components Industry Association
Electronic Component Revenue Growth

Source: World Semiconductor Trade Statistics (WSTS), World Passive Trade Statistics (WPTS)
Semiconductor Revenue Growth Cycle

• Quarter-over-Quarter took a hit in summer 2020
• Annual revenue cycle trends up starting September 2019
• Annual revenue growth profile continued steady through 2020
• Annual revenue growth breaks positive in August 2020
• Strong demand and technology drivers
• Accelerating growth in 2021?

Source – WSTS
North America Sentiment Survey Trends

North American Sales Performance Compared to Prior Month

Source: ECIA Electronic Component Sales Trends Survey
North America Lead Time Trends

Average Lead Times In Weeks
Semiconductor Devices

Source: ECIA

Solid Start to Current Cycle
Most cycles last about four years

Source – WSTS

Low point in current cycle = -12.7 in Nov ’19


Electronic Components Industry Association
Semiconductor Revenue Growth Cycle

GDP Relationship

- Current Cycle – Global GDP creates drag on semiconductor growth
- Technology/Market forces aligning to support growth in 2020+

Source: IHSM Global Insight, OMDIA, IMF Forecast averages
GDP Forecast Scenarios

Scenarios have evolved over time

V – Shaped
U – Shaped
Bathtub – Shaped
Pi (π) – Shaped
W – Shape

“A Crisis Like No Other, An Uncertain Recovery”
- IMF

The Swoosh Scenario
- Conference Board

Source: IMF
Economic Risk Factors

Economic Confrontations Between Major Powers

• World trade in manufactured goods has more than doubled between 2000 and 2017—from $4.8 trillion to $12.2 trillion. The U.S. share of world trade in manufactured goods has grown from 7.6% in 2002 to 8.7% in 2017. *(Source: World Trade Organization)*

• Globally Weak Investment Due to Low Expected Returns, Uncertainty About Economic Policy

Small Business Health

• The majority of manufacturing firms in the United States are quite small. In 2017, there were 248,039 firms in the manufacturing sector, with all but 3,914 firms considered to be small (i.e., having fewer than 500 employees). In fact, three-quarters of these firms have fewer than 20 employees. *(Source: U.S. Census Bureau, Statistics of U.S. Businesses)*

• Unemployment and State Lockdown Orders

Energy Shocks

• Manufacturers consume more than 30% of the nation’s energy consumption. Industrial users consumed 32.3 quadrillion Btu of energy in 2018, or 32.3% of the total. *(Source: U.S. Energy Information Administration, Annual Energy Outlook 2019)*

Societal and Political Turmoil

Long-term Semiconductor Growth Trends

Source – WSTS
Market Outlook

- Technology and market drivers build momentum
- Economic stability needs to provide solid foundation
- Adoption of new technologies in systems drives expanding design opportunities
- Opportunities for new component technologies to make a mark
- But don’t overlook need for legacy manufacturing capacity

**Positives**
- Medical Equipment
- Data Centers
- Telecom Infrastructure
  - 5G
- Solid state drives
- “Touchless” solutions
- Memory
- Sensors

**Challenges**
- Automotive Electronic Component Supply
  - Expanding to others?
- Aerospace Electronics
- Global Trade
- Inventory / Supply Chain Management
Market Outlook – Long Term Future Still Bright!

The Developing Technology Triumverate

IoT

2020 / 2022

Perfect Storm

Cloud

Waves of Amplified Growth

5G