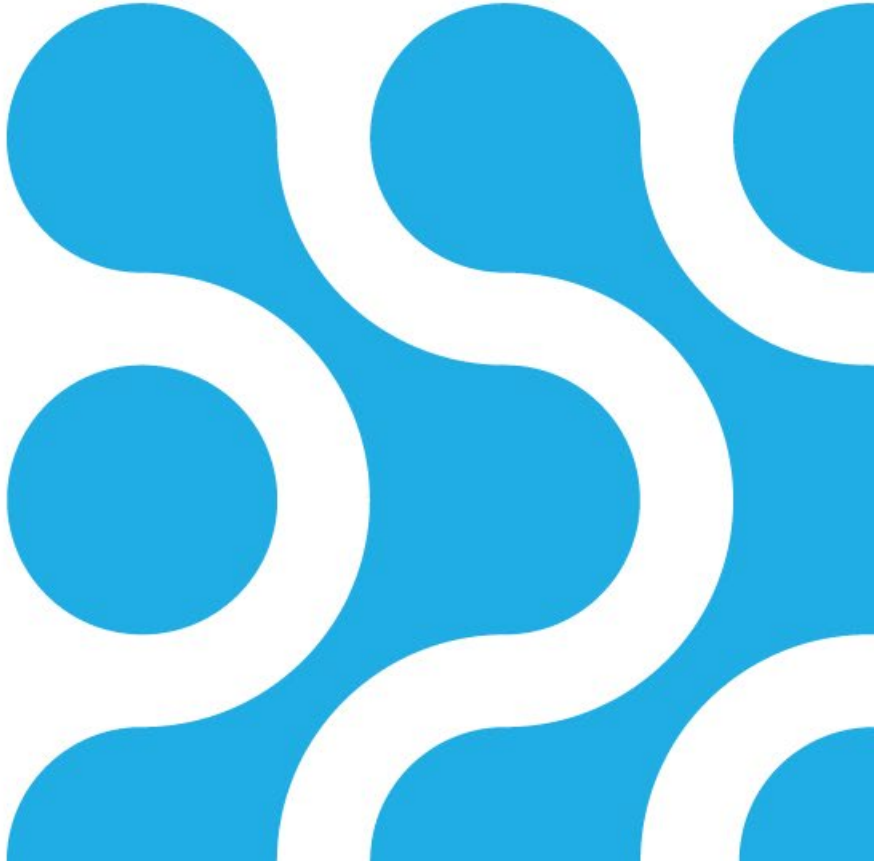
Electronic Components

2022 Midpoint Status & Outlook

Dale Ford – Chief Analyst

July 21, 2022



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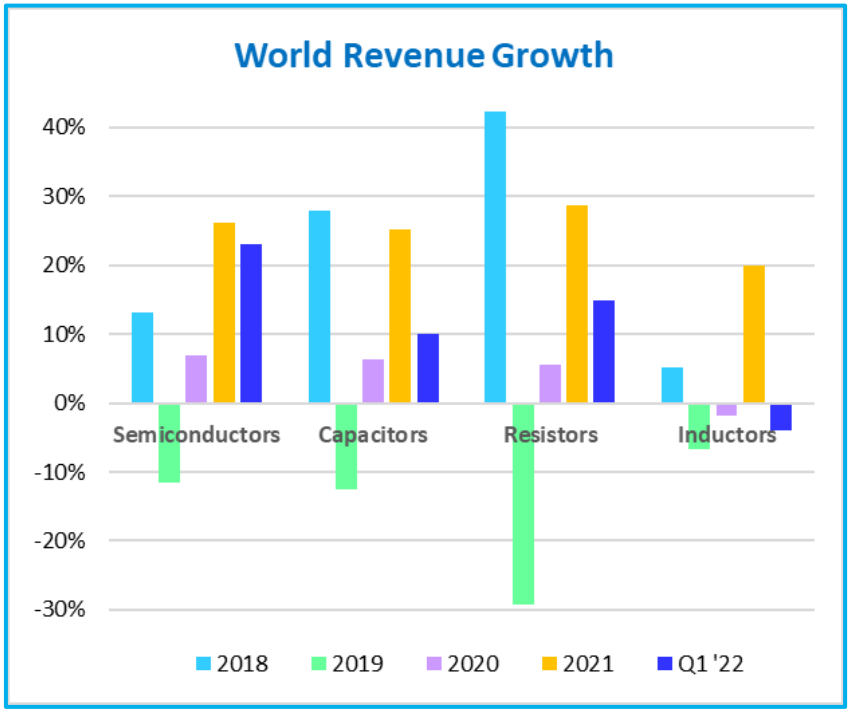
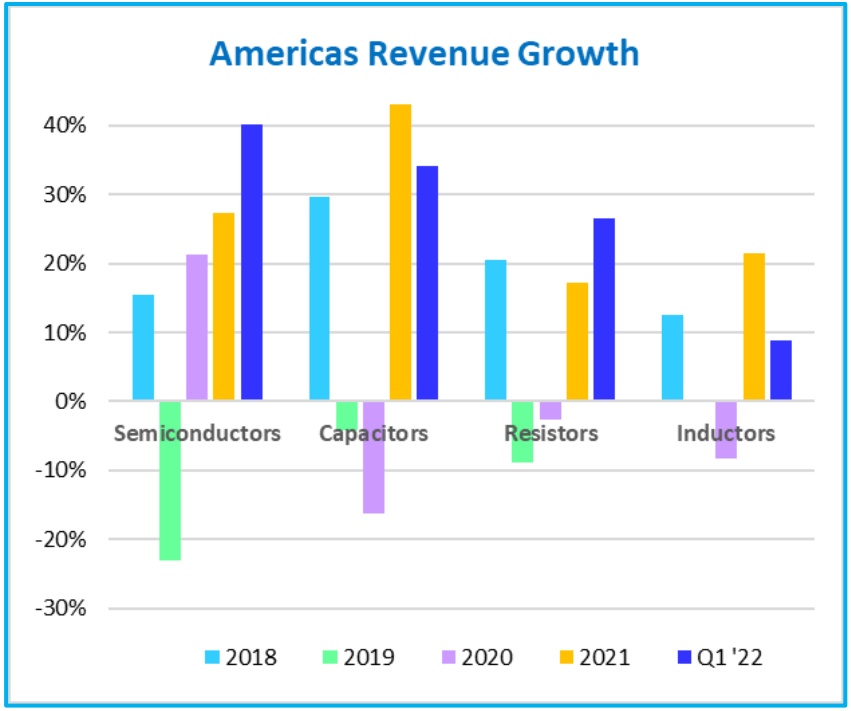
Market Status

~ June 2022 ~

Electronic Component Revenue Growth





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

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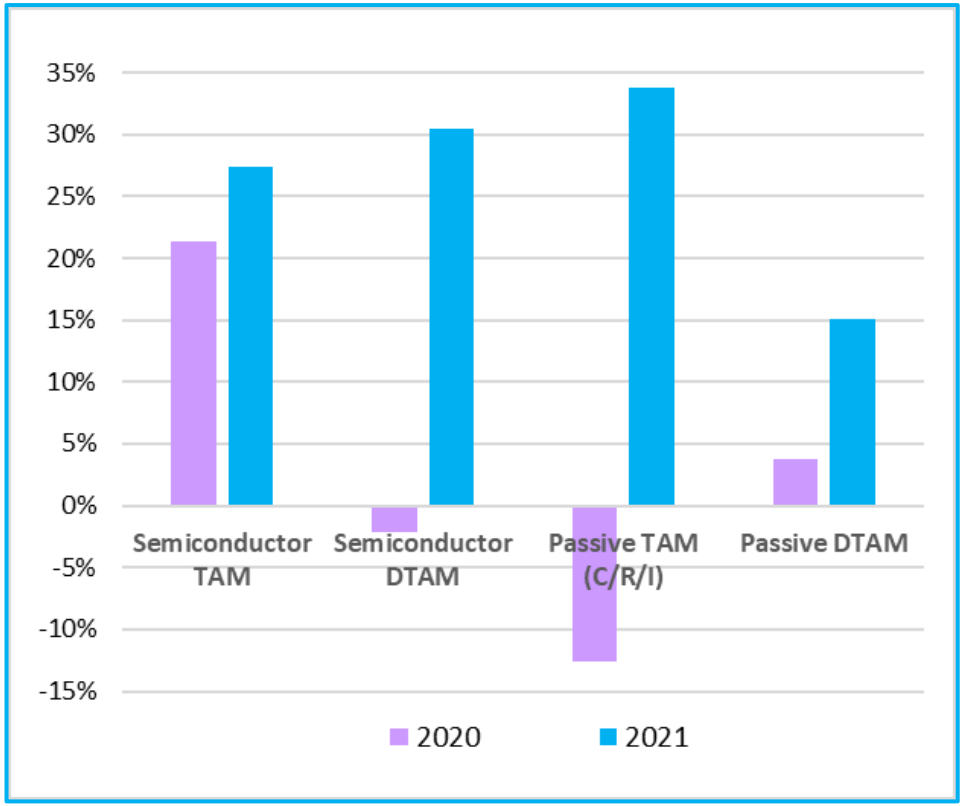
Americas TAM / DTAM Revenue Growth Comparison



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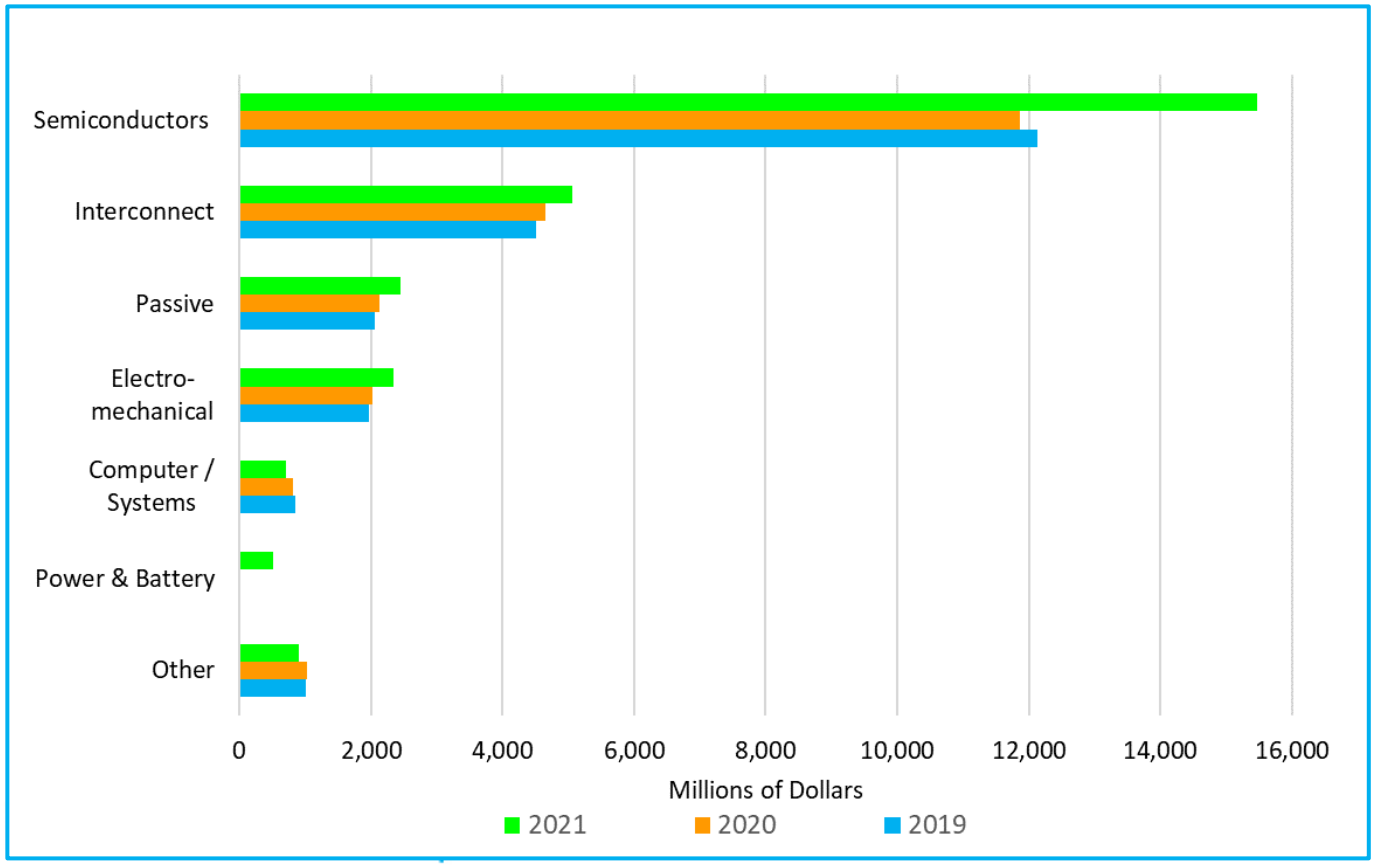
Americas Revenue for Top 50 Authorized Distributors



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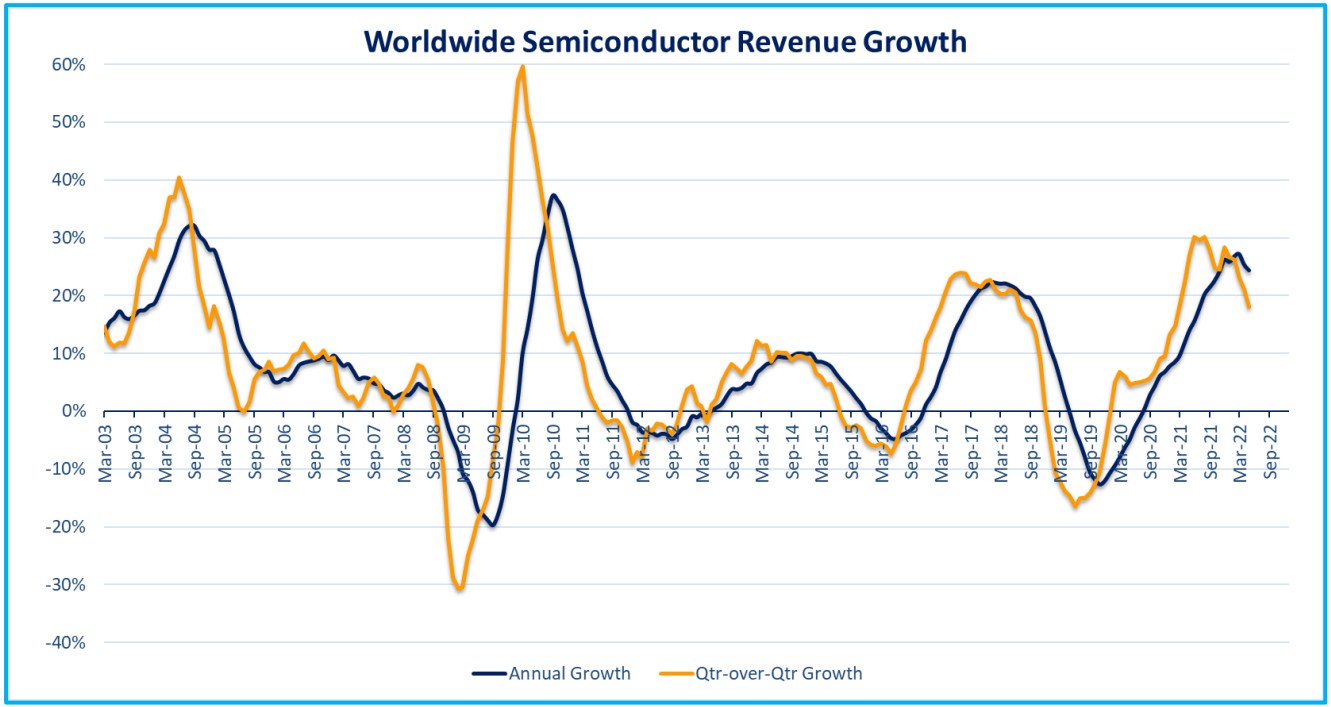
Semiconductor Revenue Growth Cycle

- Quarter-over-Quarter growth trending solidly down after highest level in over a decade
- Annual revenue cycle dips to follow quarterly but still trend for low double-digit / high single digit 2022 growth
- Rising ASPs boost revenue growth
- Still good demand and technology drivers
- Inflation and interest rates undermine consumer spending? Shifting trends?
- Question - How steep is the backside of the cycle?



Source – WSTS

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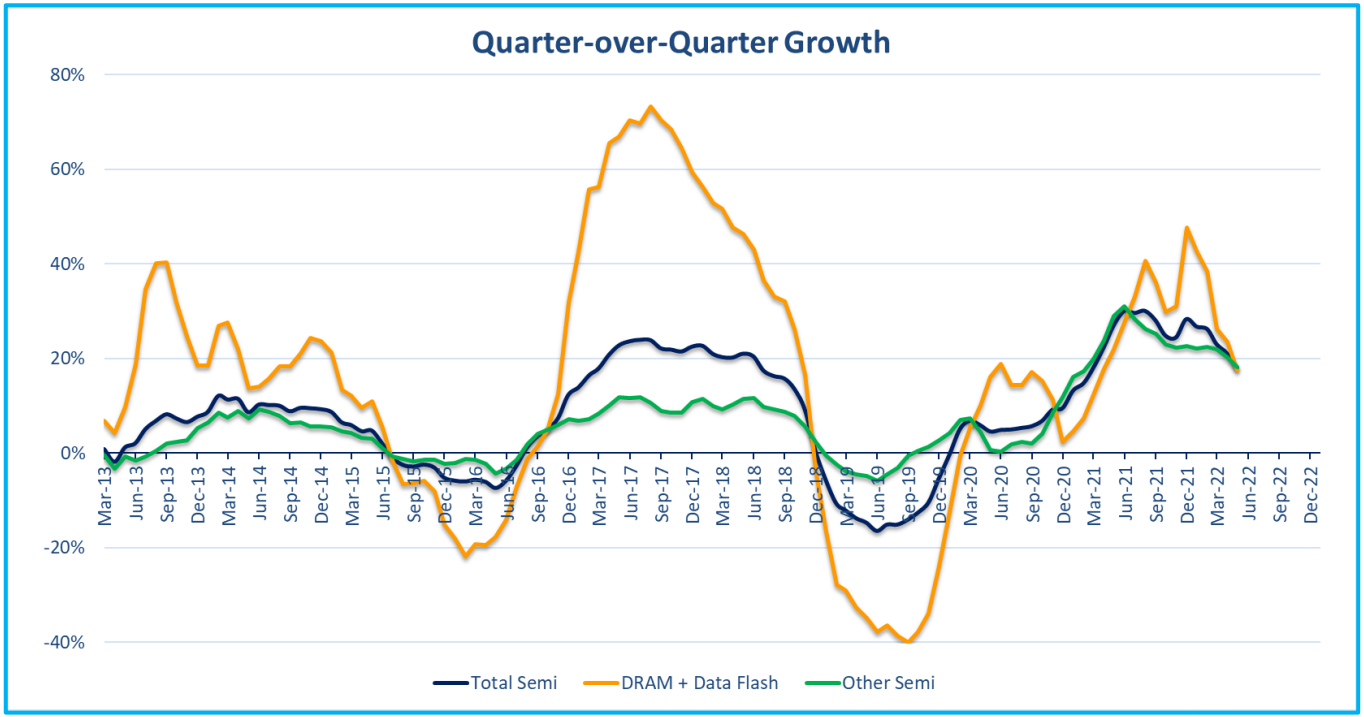
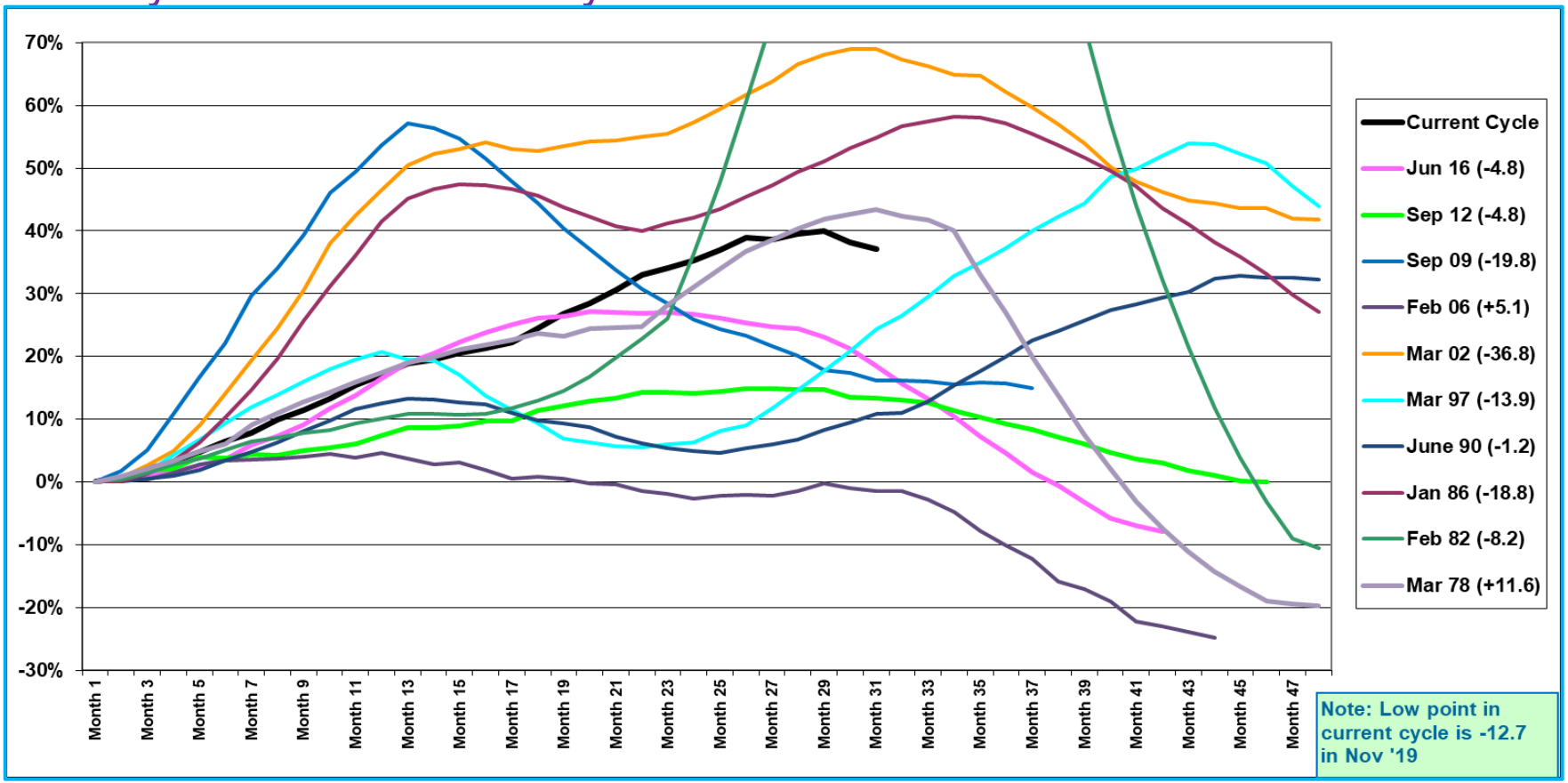
Semiconductor Growth Trends



Source: WSTS

Current Cycle Extremely Robust and Durable

Most cycles last about four years

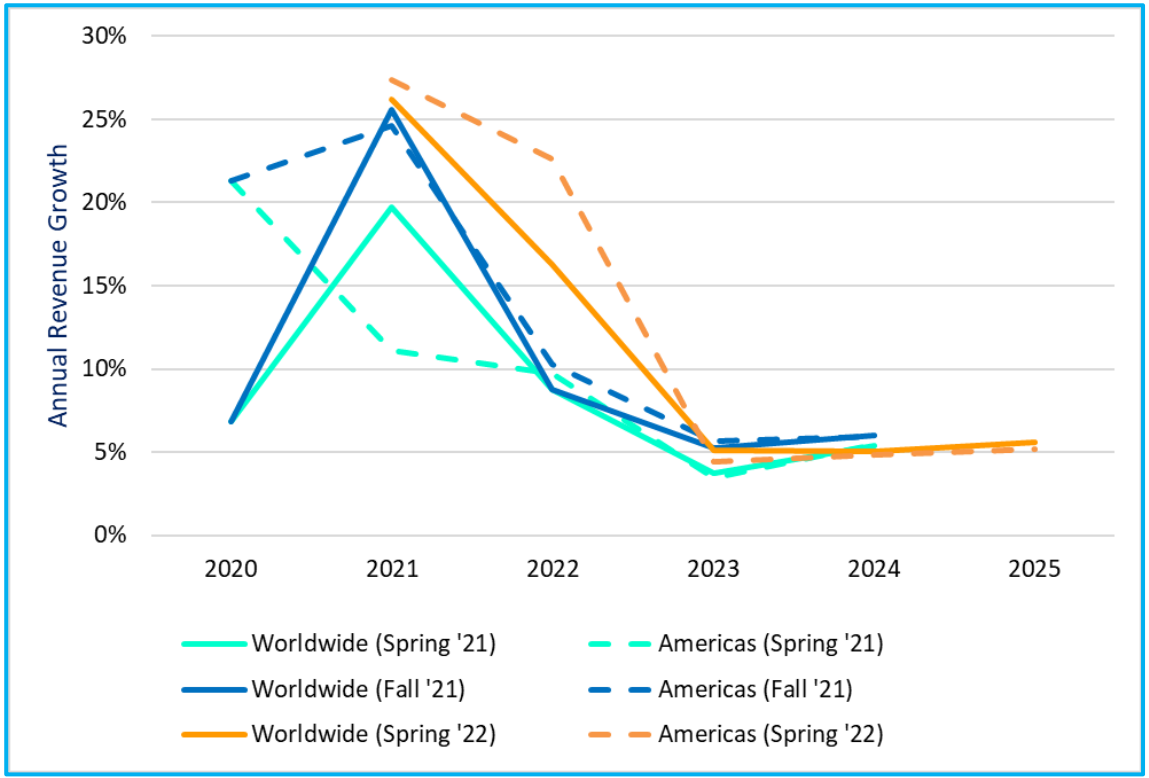


Source – WSTS

Looking Forward

~ 2022 + ~

WSTS Semiconductor Forecasts

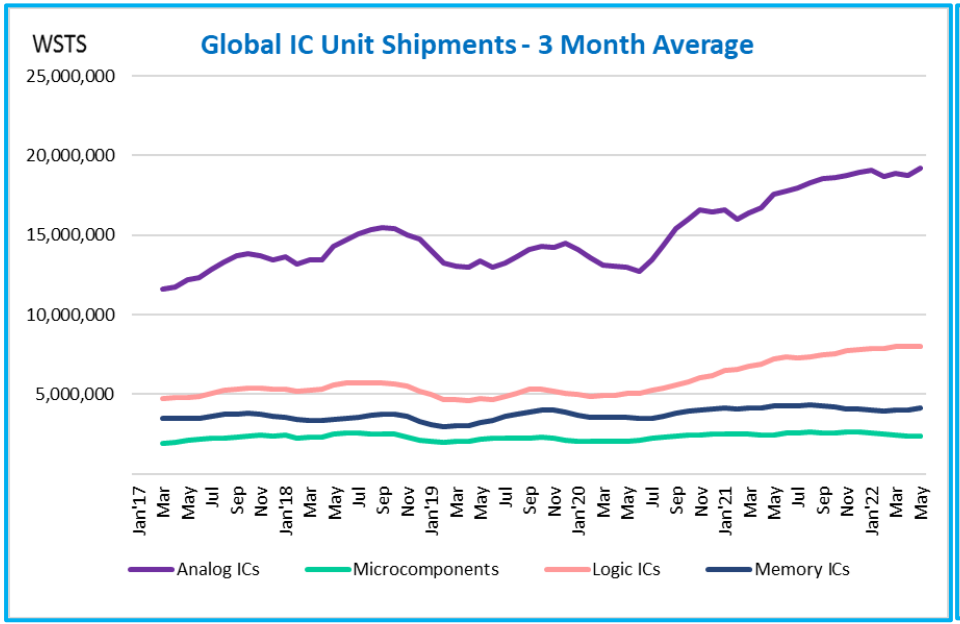


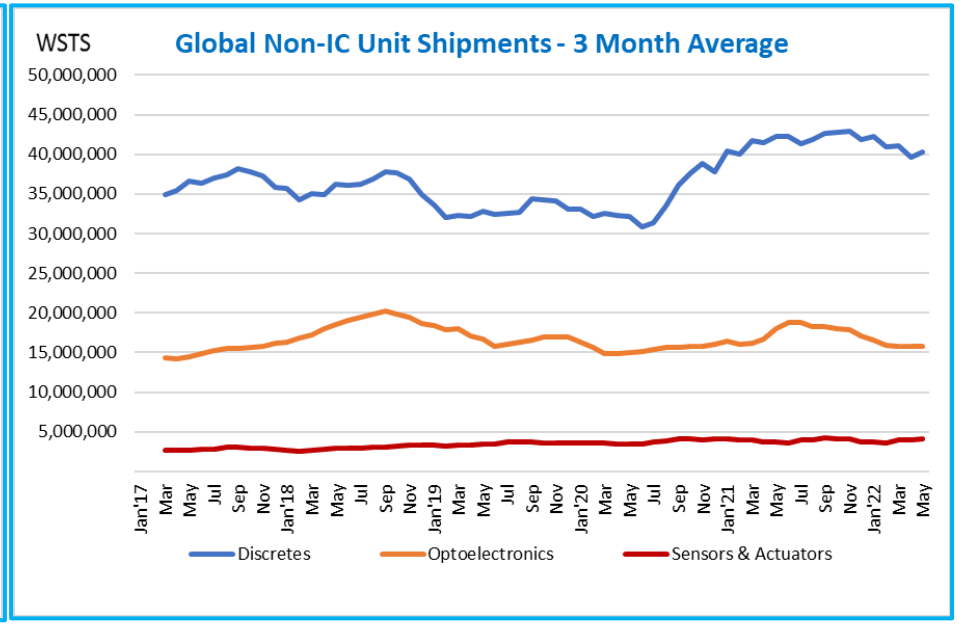
Source: WSTS

Observations:

- Forecast built up category-by-category with experienced analysts from all regions
- Typical semiconductor cycle pattern
- Memory IC drives Americas dramatic jump
- It appears the forecast has a more near-term focus
- Clear expectation for solid 2022 downturn
- Long-term forecasts gravitate to 5%

Worldwide Semiconductor Unit Shipments





Source: WSTS

Increase From:	Previous Peak	Recovery Start
• Discretes	5.6%	30.7%
• Analog ICs	23.9%	50.6%
• Logic ICs	39.8%	63.6%

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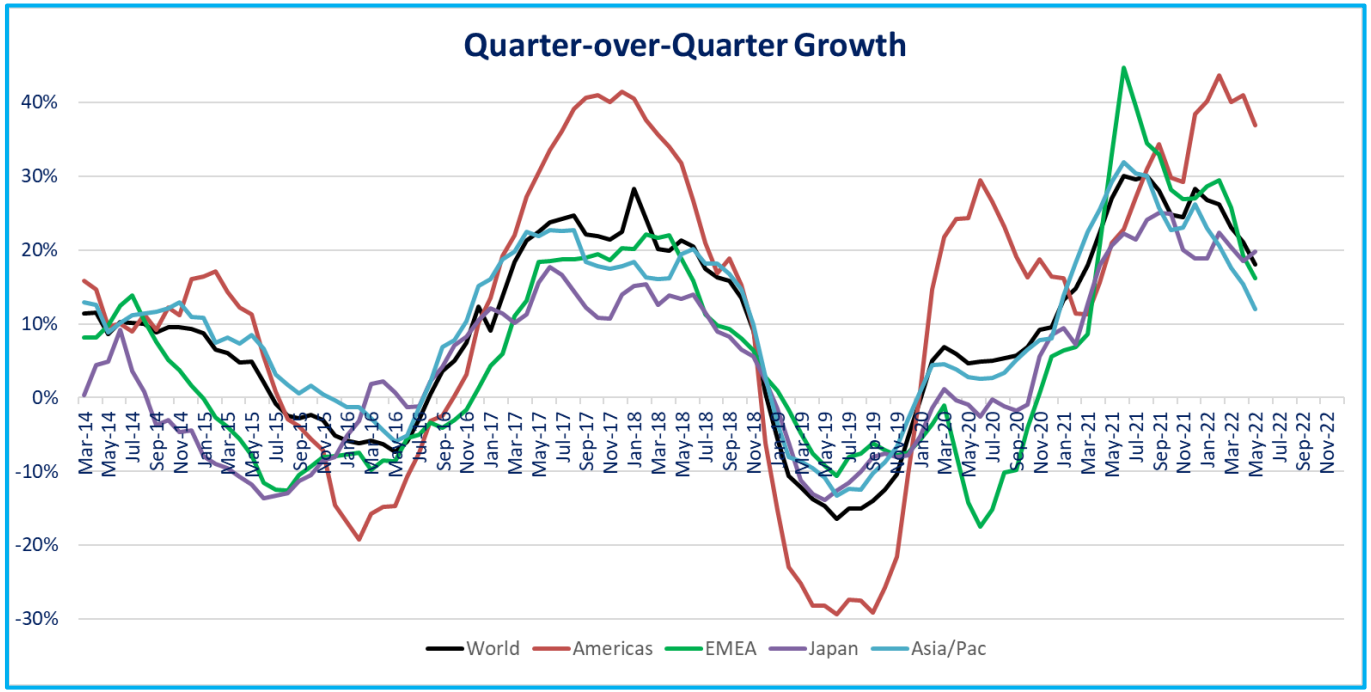
But What About the Americas?

- Counter-cyclical trend starting in summer 2020
- High memory mix in Americas contributes to volatility
- Increasing ASPs will boost growth rates through 2022
- But inflation eventually clips the wings of growth



Source – WSTS

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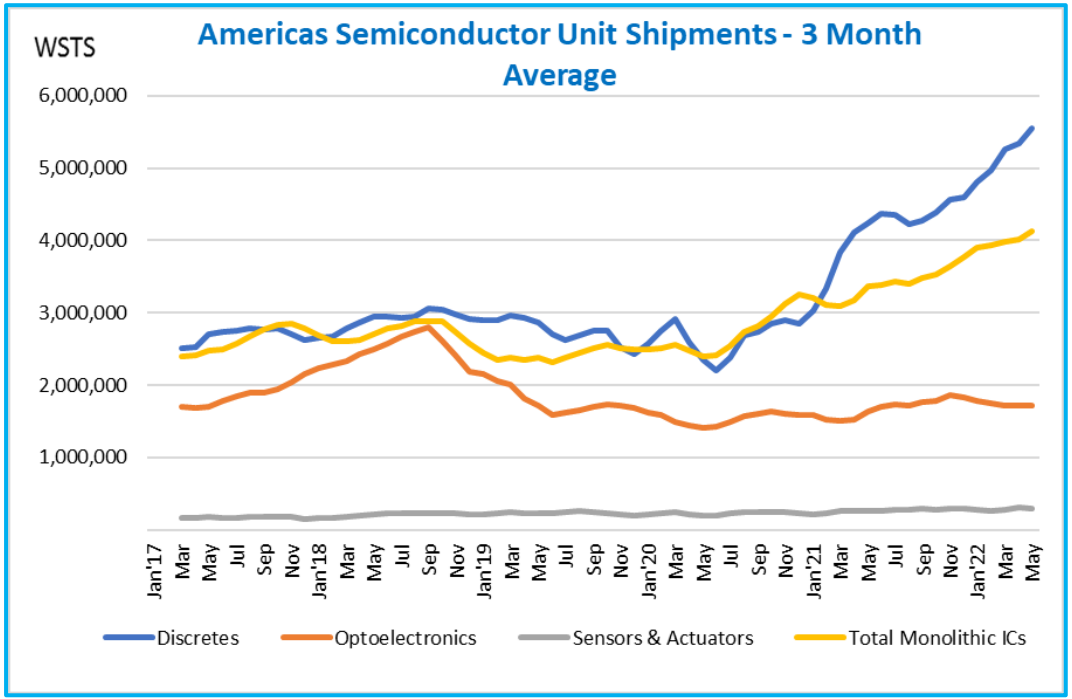
Americas Semiconductor Unit Shipments



Source: WSTS

Increase From:	Previous Peak	Recovery Start
• Discretes	81.7%	152.4%
• Monolithic ICs	43.7%	72.7%

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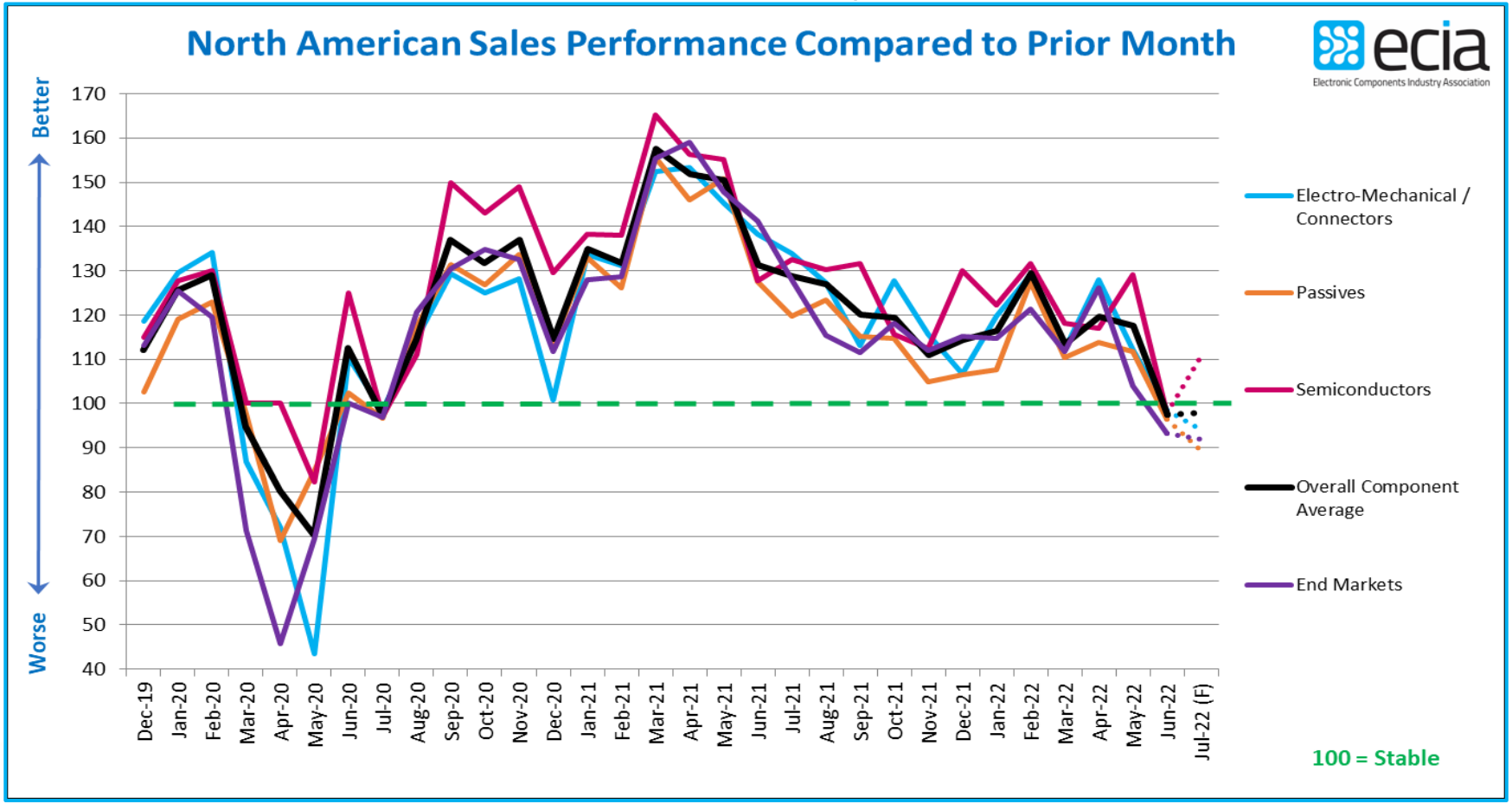
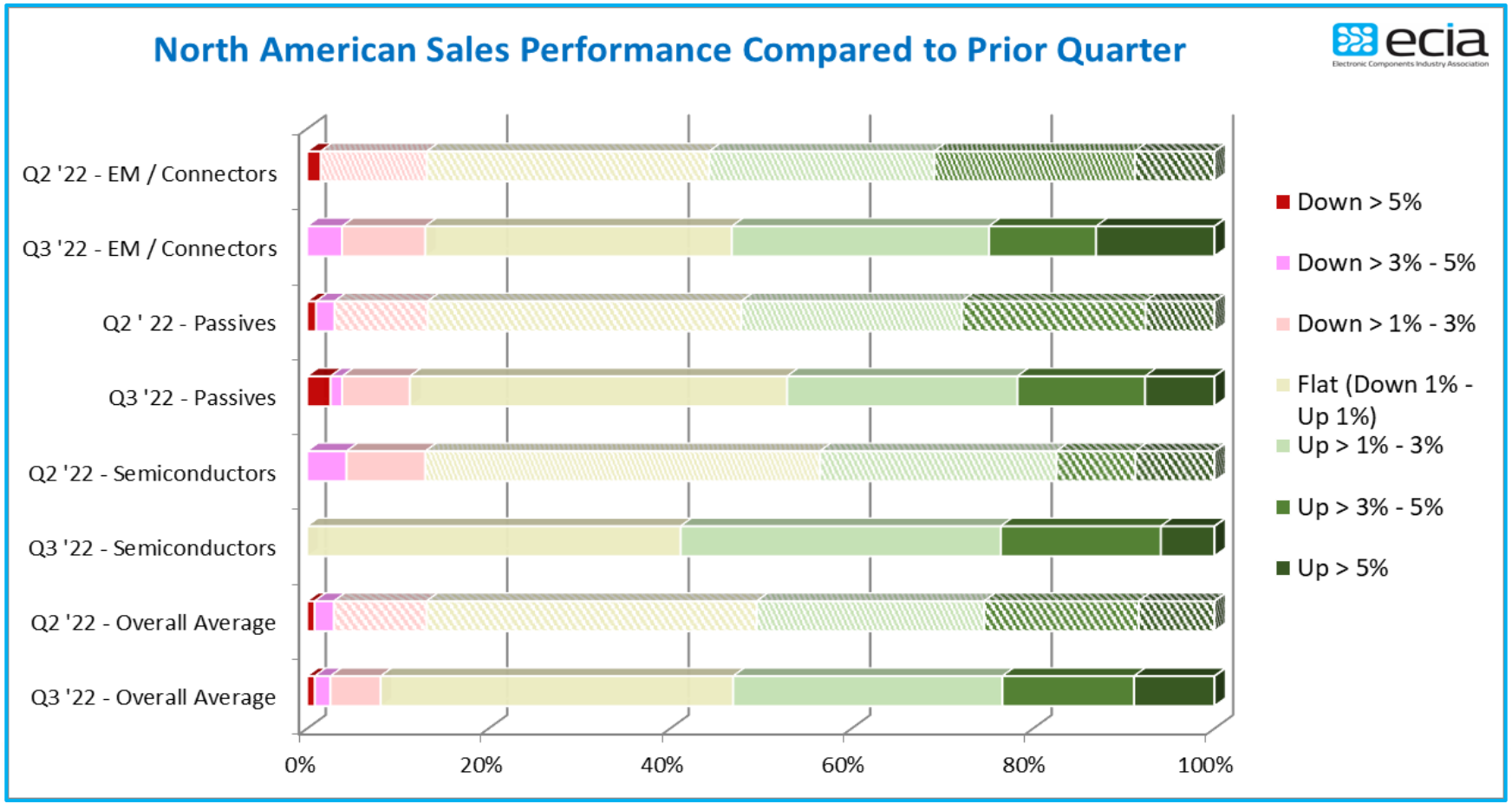
North America Sentiment Survey Trends



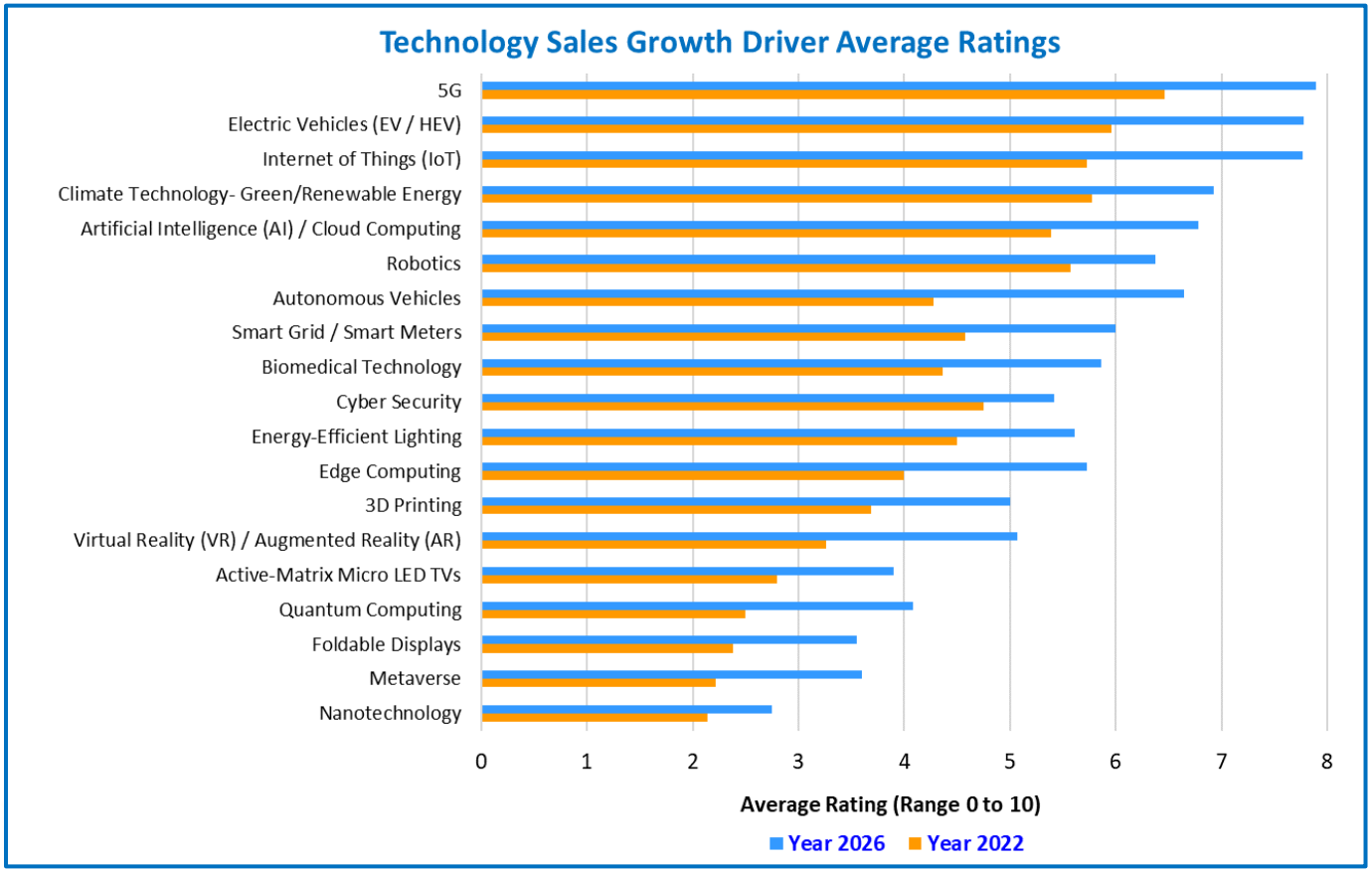
Source: ECIA Electronic Component Sales Trends Survey

North America Sentiment Survey Trends



Source: ECIA Electronic Component Sales Trends Survey

Top 50 Americas Distributor Technology Outlook - 2022



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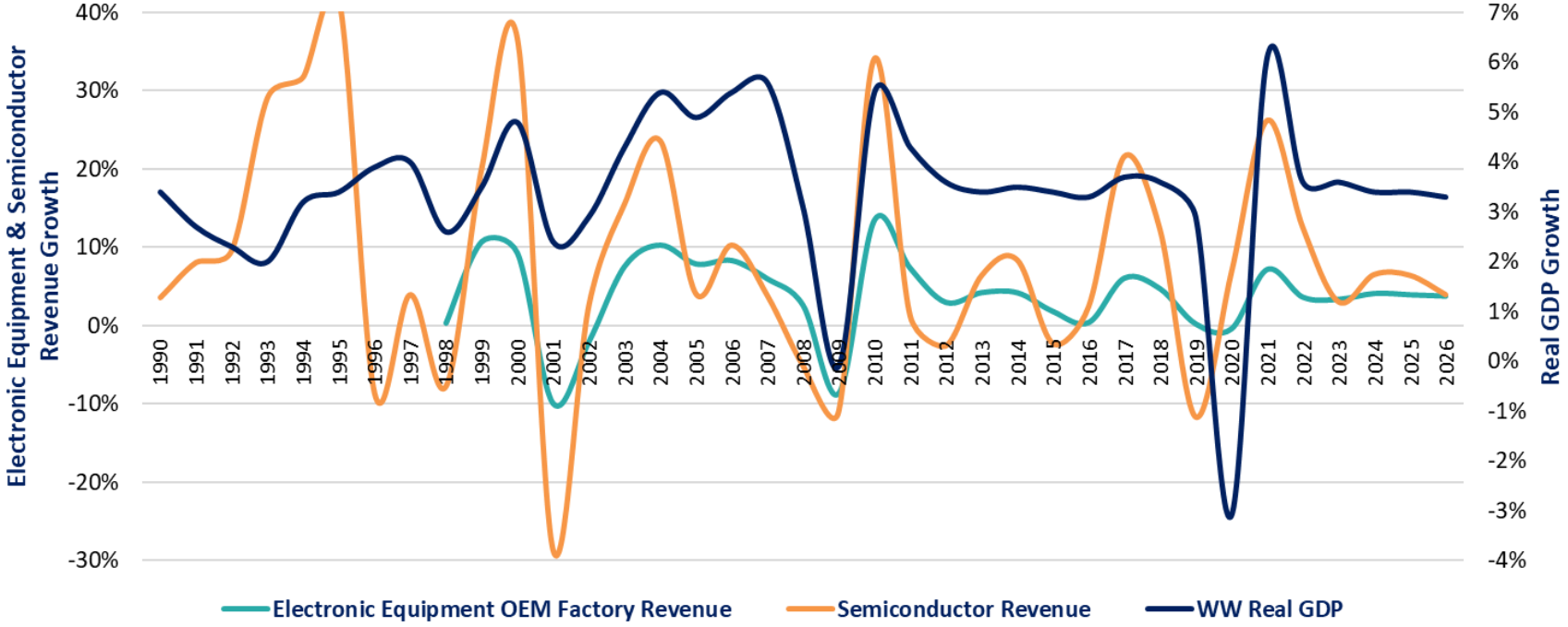
Economic Impact

Historic alignment between economy and electronics

Semiconductor Alignment Continues



Source: WSTS, IMF, OMDIA

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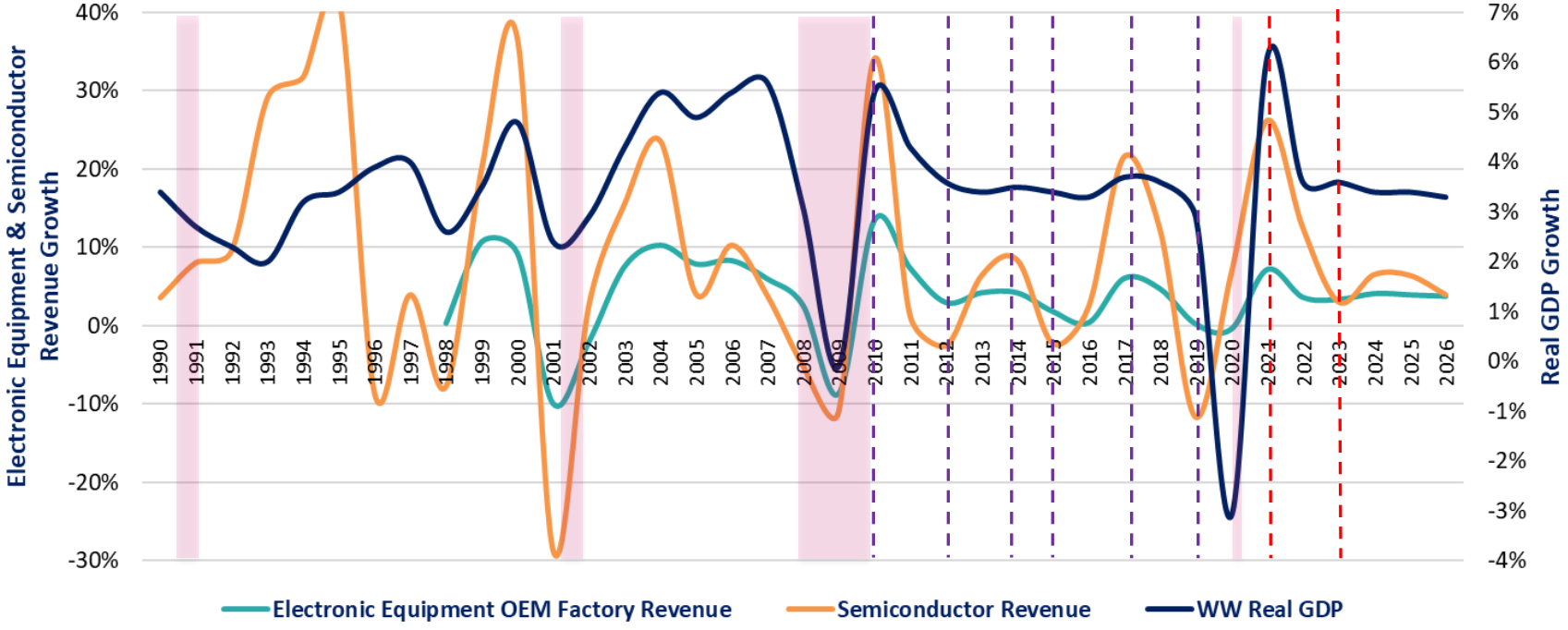
Historic alignment between economy and electronics

Semiconductor Alignment Continues



Source: WSTS, IMF, OMDIA

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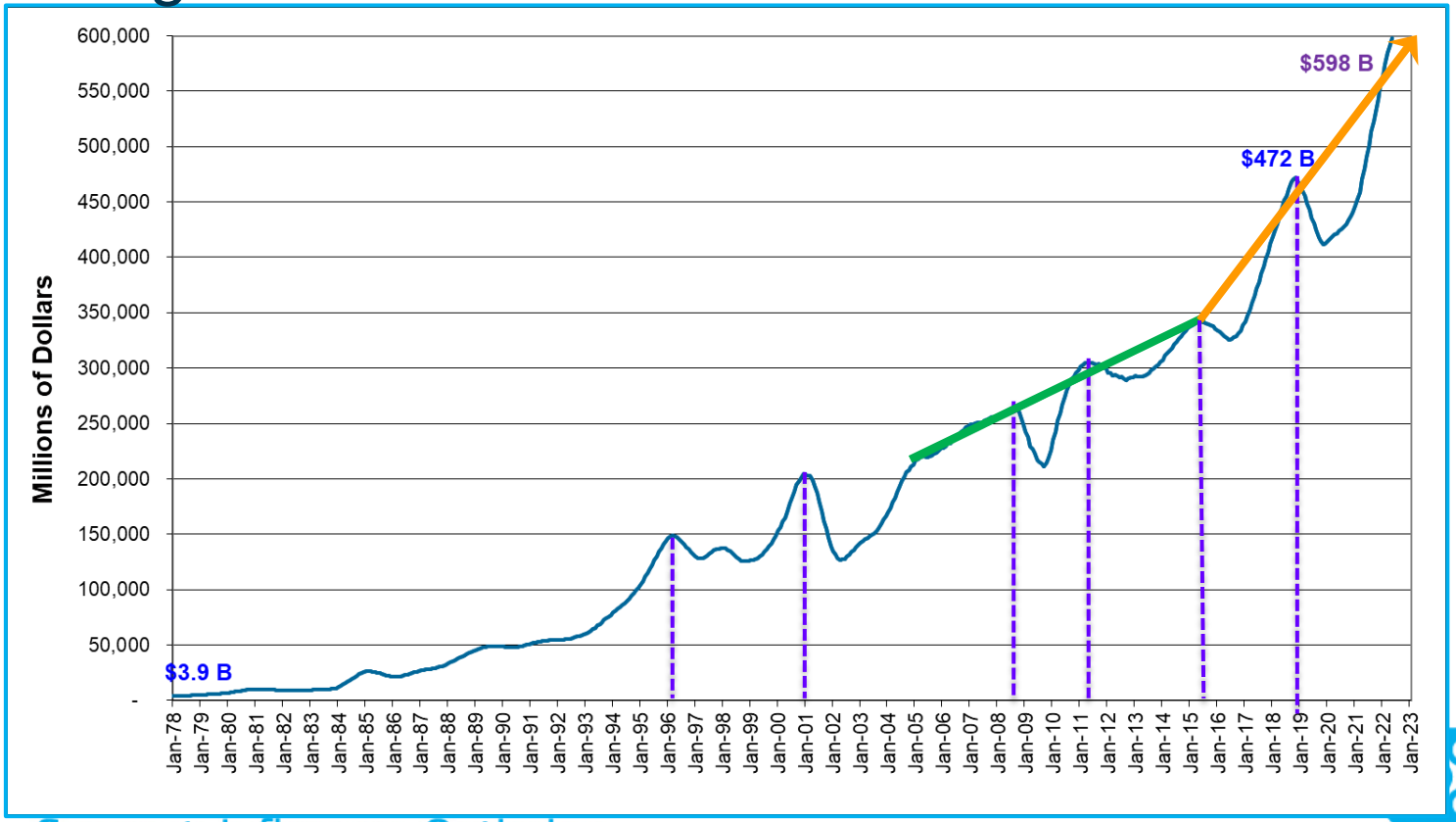
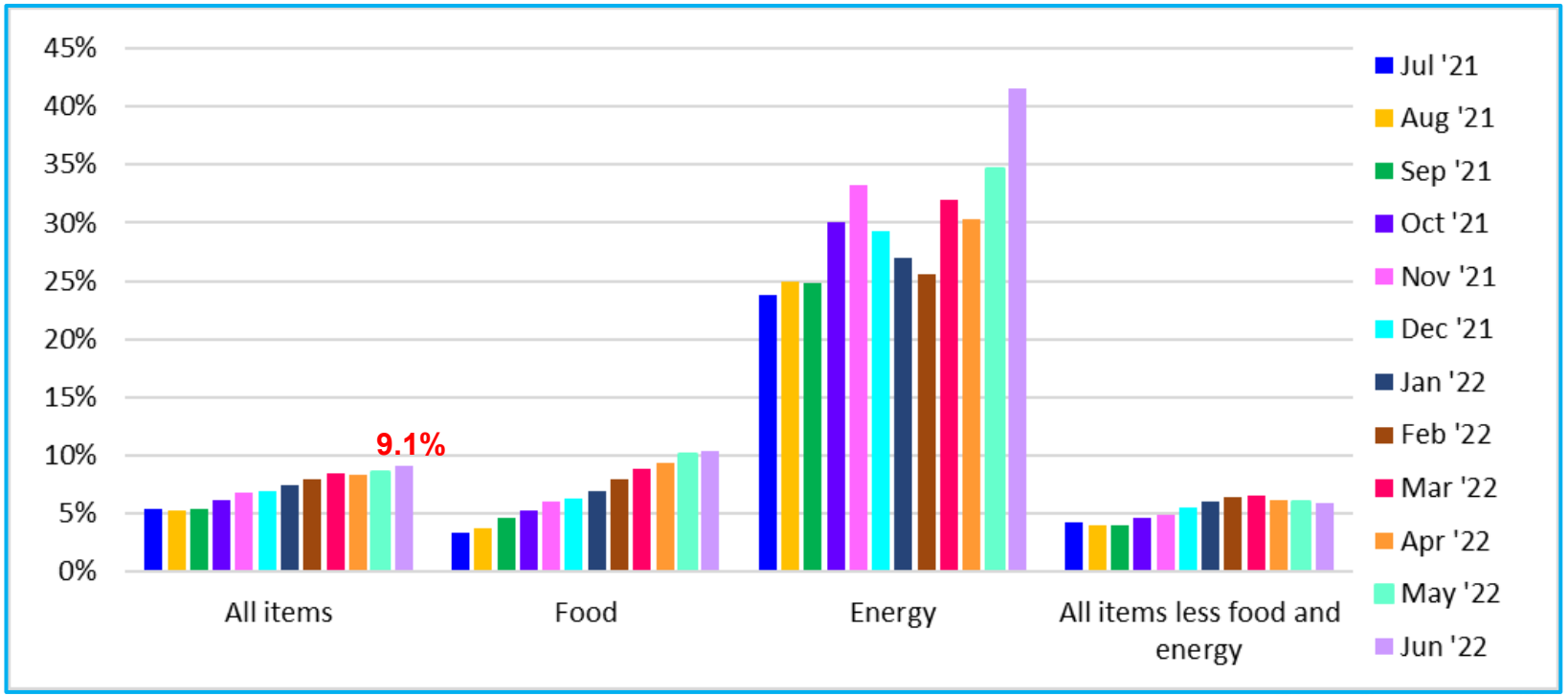
Long-term Semiconductor Growth Trends



- Average annual growth
  - 2005-2015 = 5.5%
  - 2015-2022 = 8.0%
- $625 B in 2022?
- $1.0 T by 2029?
- $1.5 T by 2034?
- $2.0 T by 2038?
- HOW?

Source – WSTS

Twelve Month U.S. CPI Percent Change as of June 2022



Source – Bureau of Labor Statistics (BLS)

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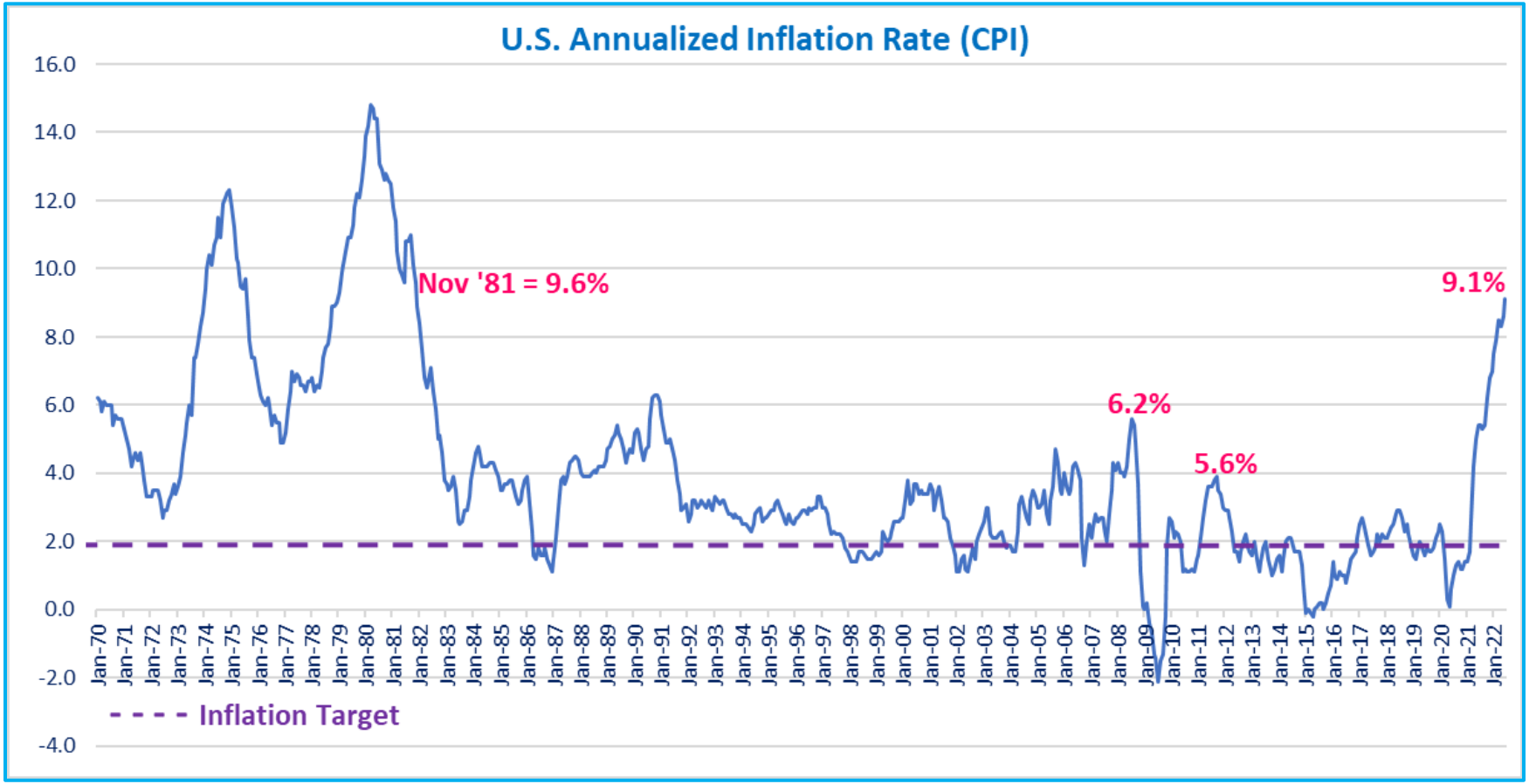
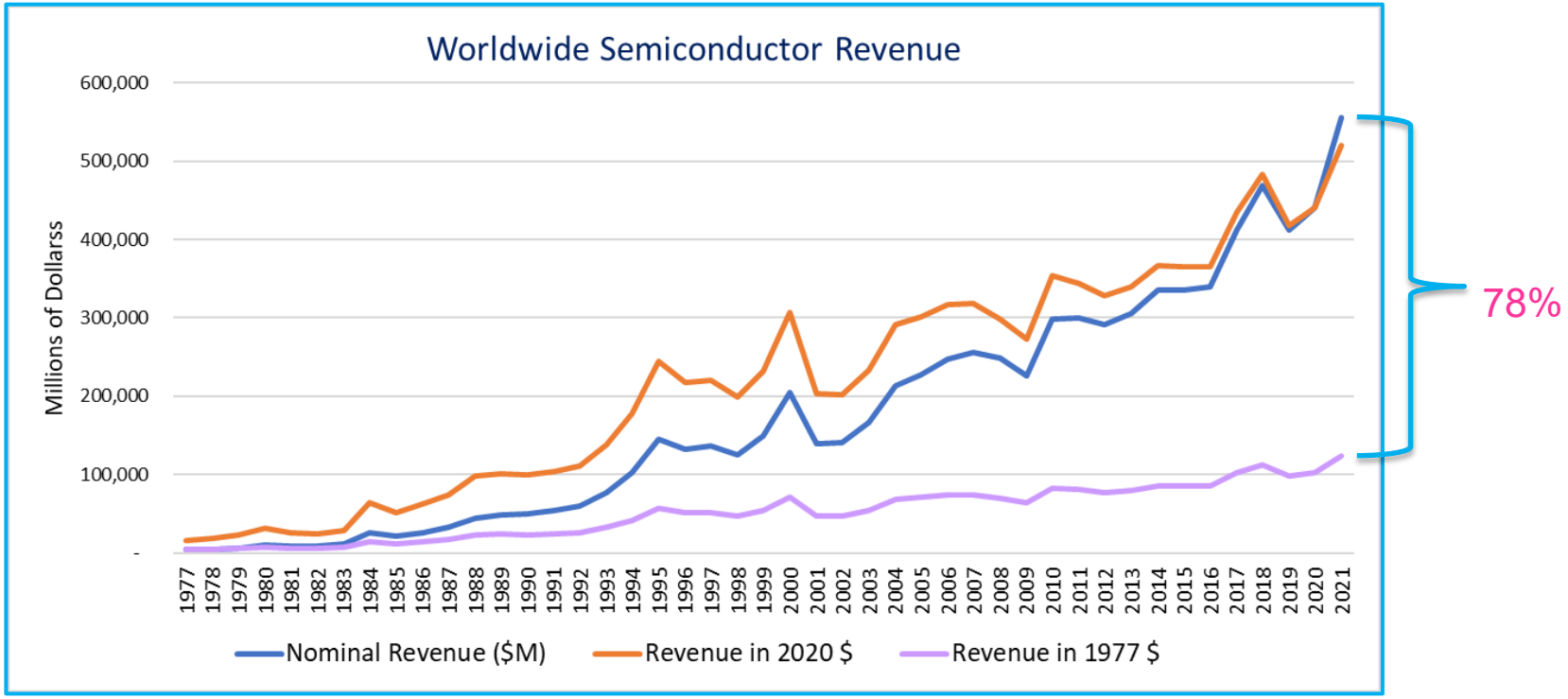
Inflation Hits Highest Rate in 41 Years



Source – Bureau of Labor Statistics (BLS)

Semiconductor Revenues in Constant Dollar Value



Source – WSTS and Bureau of Labor Statistics (BLS)

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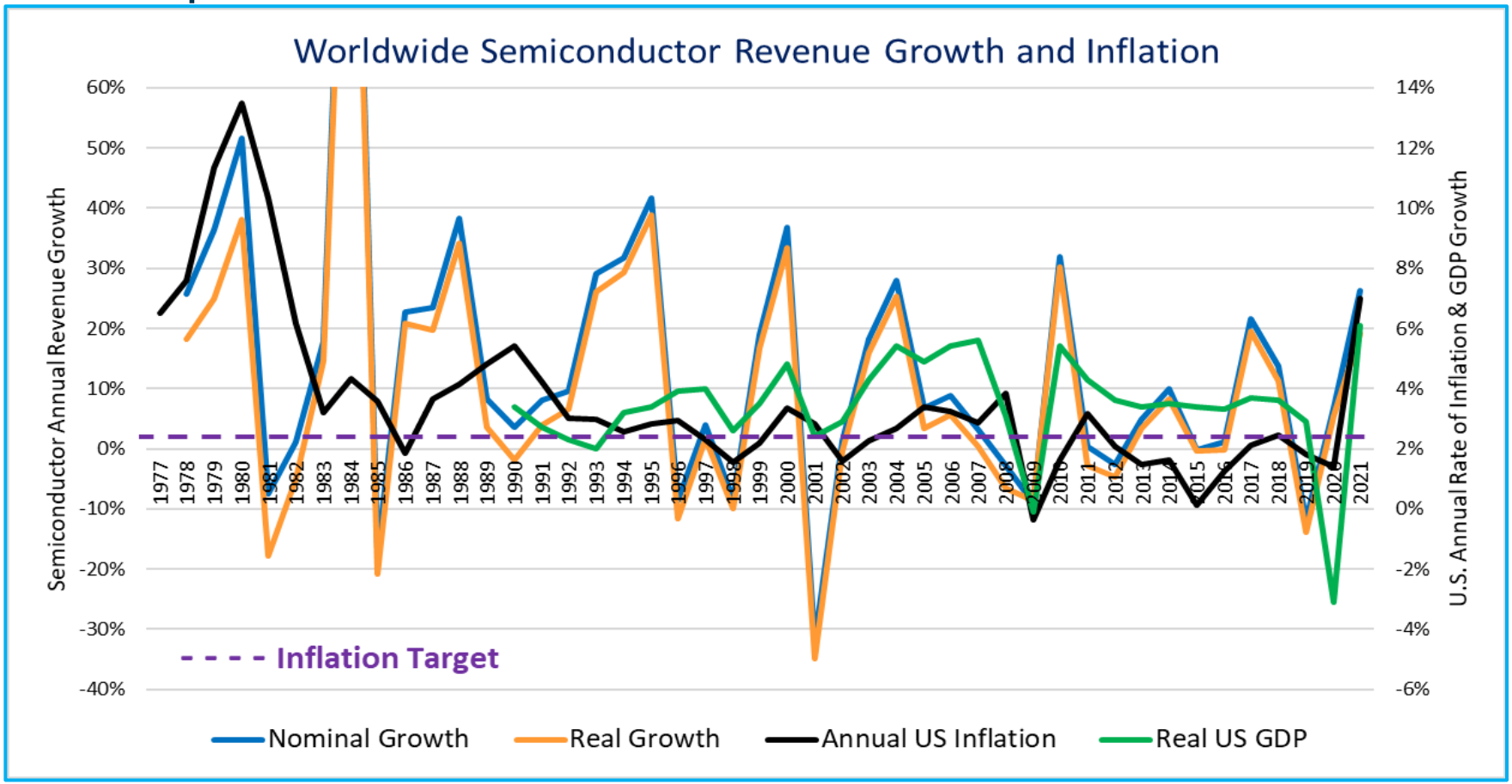
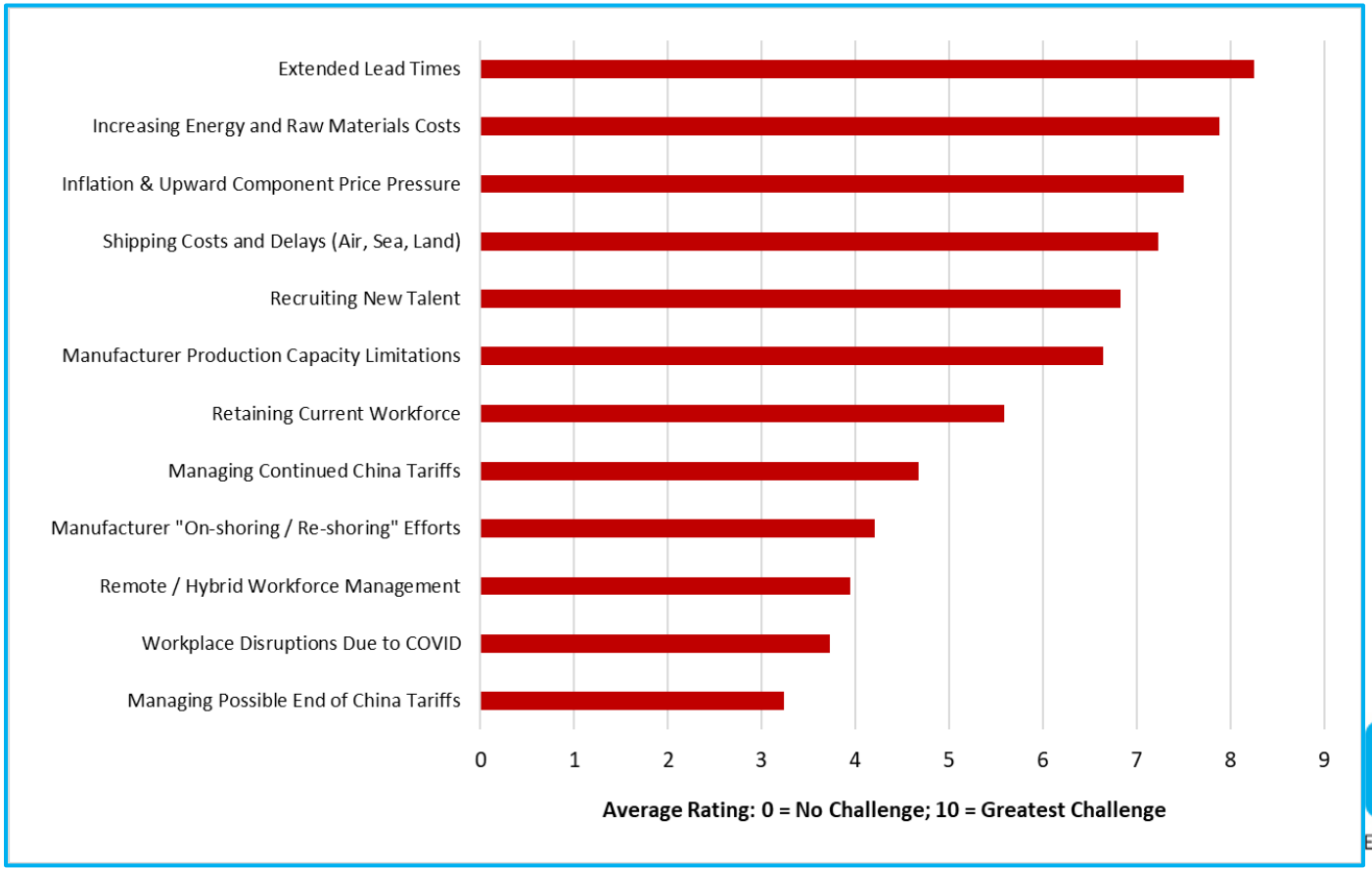
The Impact on Semiconductor Revenue Gowthr



Top 50 Americas Distributor Challenges - 2022



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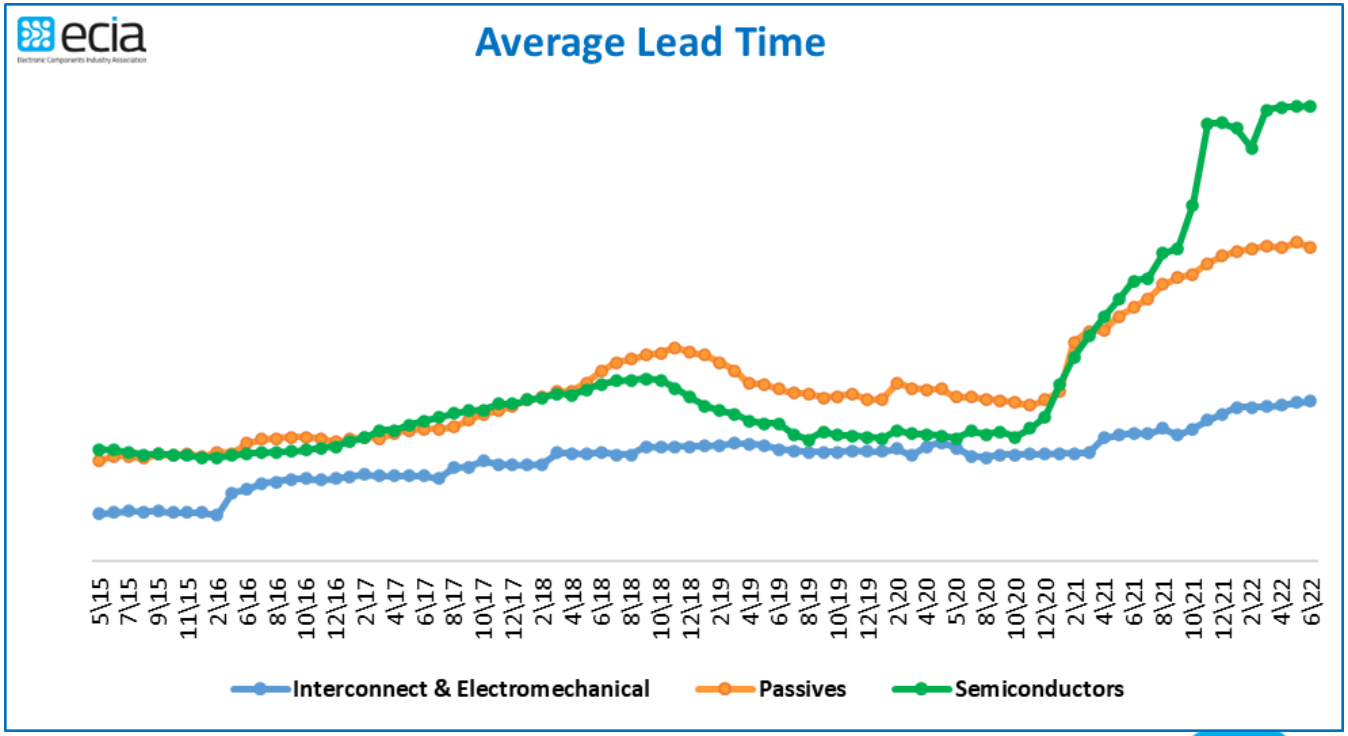
Supply Chains
&
Lead Times

Stabilizing Lead Time Pressure



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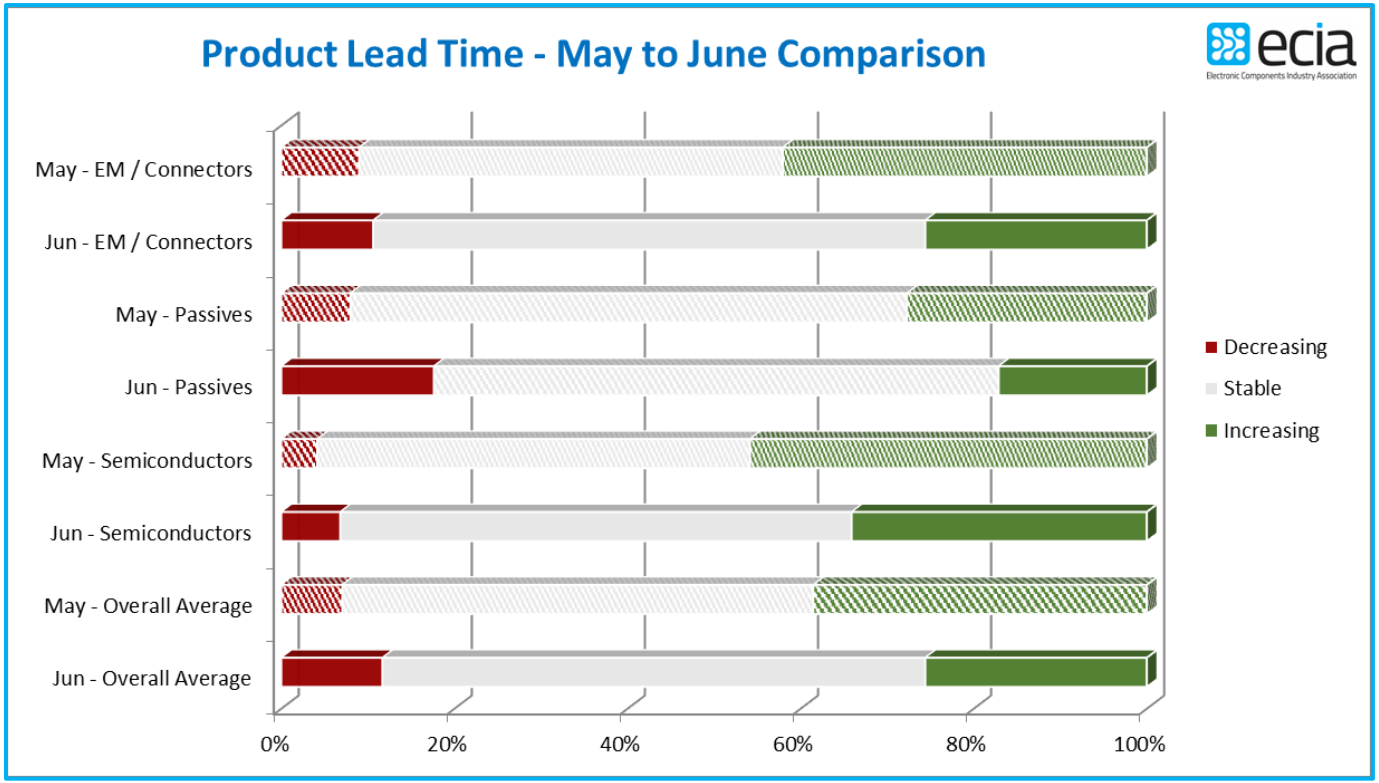
Hopeful Outlook for Moderating Pressure



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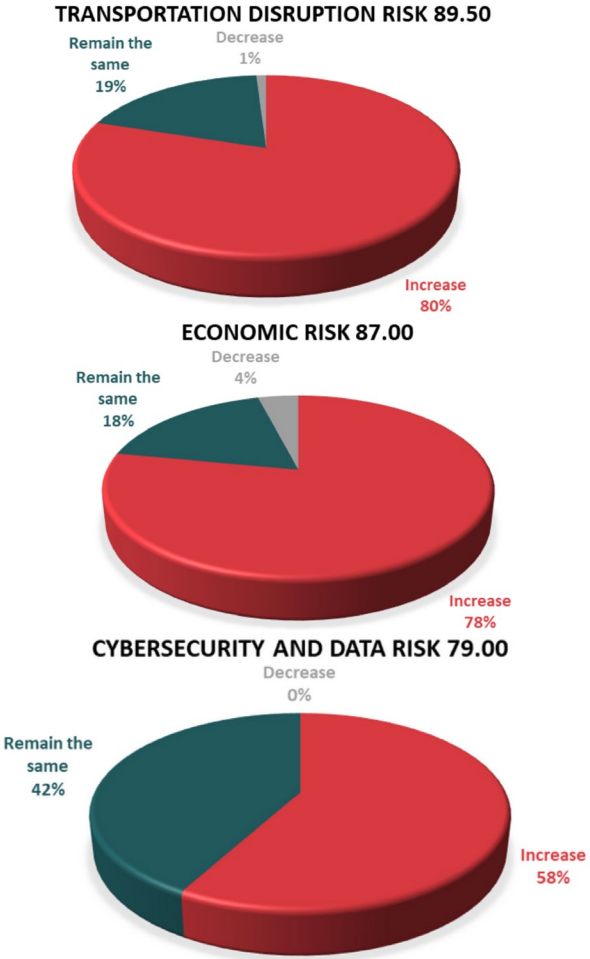
Lehigh University Supply Chain Risk Index – Q2 2022

Risk Type	1st Quarter 2022 Risk Index	2nd Quarter 2022 Risk Index	Trend	
Transportation Disruption Risk	85.47	89.50	↑	+4.03
Economic Risk	88.36	87.00	↓	-1.36
Cybersecurity and Data Risk	76.72	79.00	↑	+2.28
Supplier Risk	85.34	78.50	↓	-6.84
Government Intervention Risk	75.43	76.02	↑	
Customer Risk	66.81	64.00	↓	
Operational Risk	66.67	58.00	↓	
Environmental Risk	60.34	56.50	↓	
Quality Risk	63.68	56.00	↓	
Technological or Competitive Risk	59.05	55.00	↓	
Average Risk Index	72.79	69.95	↓	-2.84

Source: Lehigh Univ, CSCMP



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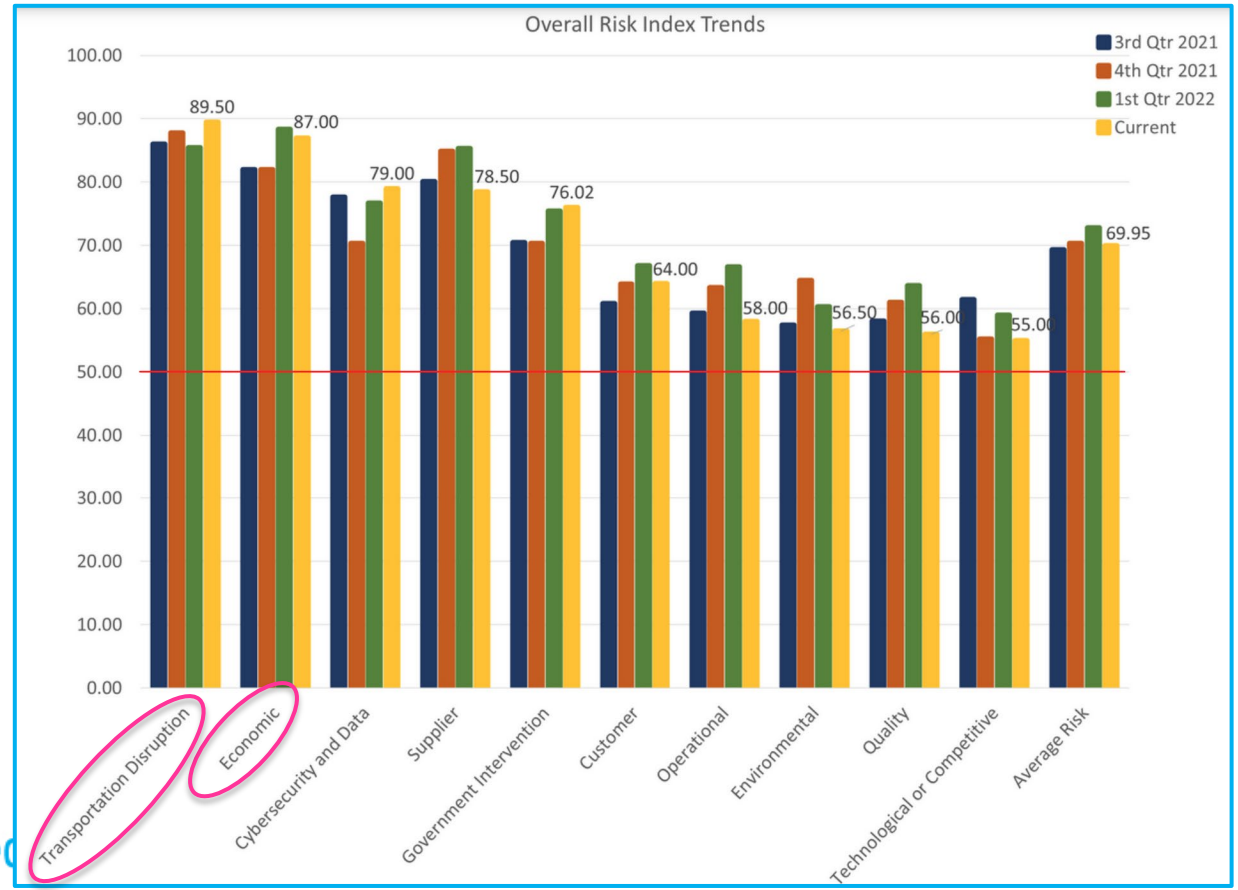
Lehigh University Supply Chain Risk Index – Q2 2022



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Source: Lehigh Univ, CSCMP

And the Hits Just Keep on Coming!

- California Air Resources Board (CARB) issued regulations which require trucking companies to upgrade their trucks with 2010 or newer engines by Jan. 1, 2023
  - Will take roughly 80,000 commercial trucks, or roughly 17% of the trucking fleet, off the road
  - Adds pressure to the supply chain crisis and causes many small trucking businesses to close or significantly reduce their workforce
- BofA chief investment strategist Michael Hartnett warns surging consumer prices + increasingly hawkish central bank = economic downturn in the U.S.
  - "Inflation shock worsening"
  - "rates shock just beginning"
  - "recession shock coming"

"If you think there was a supply chain problem over the last year, wait until you take this many trucks out of the marketplace that are not replaceable"

Joe Rajkovacz, director of governmental affairs and communications at the Western States Trucking Association

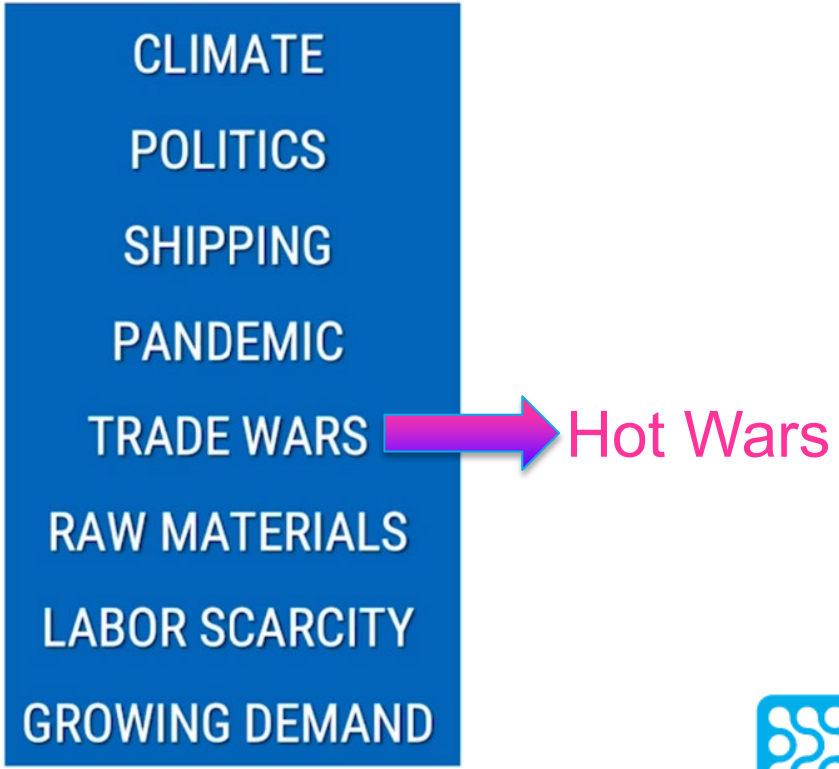
Recent Developments

- Bi-Partisan support of CHIPs Act - $52B / $75B / $250B ??
  - Senate Passage
- Hydrogen pipelines and clean energy solutions from Canada
- Samsung $200B investment in Texas for Fabs over next 2 decades?

What happened: "'We cannot allow countries like China to use their market position in key raw materials, technologies or products to disrupt our economy or exercise unwanted geopolitical leverage,' Yellen said in a speech in Seoul," Axios reported.

A path forward: Yellen said that the U.S. and its allies "should focus on 'friend-shoring,' or diversifying their supply chains to rely more on trusted trading partners, strengthening economic resilience and lowering risks," according to Reuters's summary of her pre-released remarks.

Supply Chain Disruptors



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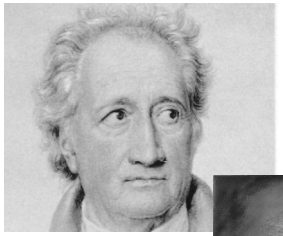
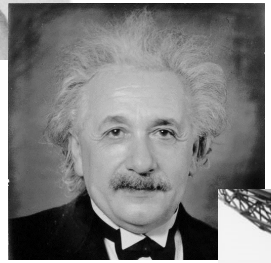
The Vision Thing

Journey Into the Future

Exploring the Tech that is Waiting for Us



"Dream no small dreams for they stir not the hearts of men."
– ***Johann Wolfgang von Goethe***



"To look to the future, we must first look back upon the past. That is where the seeds of the future were planted. I never think of the future. It comes soon enough."
– ***Albert Einstein***

"Any sufficiently advanced technology is indistinguishable from magic"
– Arthur C. Clarke

"Shouldn't we be content to be cosmic sloths enjoying the universe from the comfort of earth? The answer is: No."
– Stephen Hawking

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The Future is Here

The Metaverse Continuum is a spectrum of digitally enhanced worlds, realities, and business models poised to revolutionize life and enterprise in the next decade.

From metaverse and Web3, to digital twins and conversational AI, efforts to reimagine the future of technology are giving rise to new worlds and realities businesses will soon need to operate across – stretching from digital to physical and encompassing consumer experiences and enterprise business models alike.

71%

of global executives state that the metaverse will have a positive impact on their organizations, with

42%

believing it will be breakthrough or transformational.

98%

of global executives believe continuous advances in technology are becoming more reliable than economic, political, or social trends in informing their organization's long-term strategy.

The Metaverse Continuum's impact will be felt across every dimension of the enterprise.

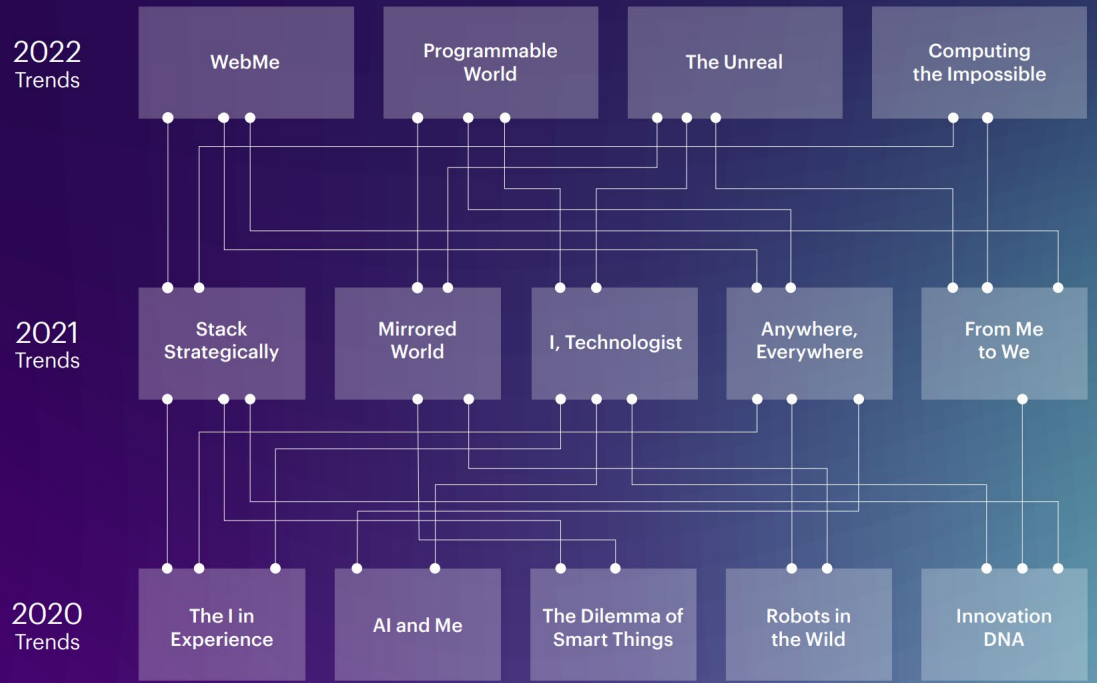
Thinking about "just" the metaverse misses the bigger picture. It's not about one virtual environment or another, but the deep-rooted impact they will have on our reality. Over the next decade, nearly every environment that businesses currently operate across will transform as the Metaverse Continuum matures. Leaders will need to reimagine every dimension of their enterprise, from operating models to their core value proposition – and some are already starting today.

Source: Accenture

Completing the Picture

Accenture's Technology Vision report comprises a three-year set of technology trends, currently including trends from 2020 and 2021.

It's important to recognize that each year's trends are part of a bigger picture. Tracking how they evolve over time offers a glimpse into how they may continue to grow in the future.



Source: Accenture

Our Four Technology Trends for 2022

The building blocks of the Metaverse Continuum are taking shape today, but will coalesce over the next decade to create an entirely new enterprise landscape.

WebMe

Putting the Me in Metaverse

The internet is being reimagined as metaverse and Web3 efforts transform the underpinning and operation of the virtual world.

Programmable World

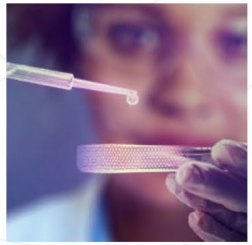
Our Planet, Personalized

Control, customization, and automation are being enmeshed into the world around us, making the physical as programmable as the digital.

The Unreal

Making Synthetic, Authentic

As AI-generated data and synthetic content convincingly mimic what is "real," authenticity is the new north star.



Computing the Impossible

New Machines, New Possibilities

A new generation of computers are solving some of the world's most intractable problems, leading to one of the biggest technological disruptions of our time.

Source: Accenture

The types of compute power making the impossible possible.

The next generation in computing has started to emerge, making industry-altering capability increasingly feasible. Several computing areas are leading the way:

High Performance Computers (HPC)

are massive parallel processing supercomputers that can help businesses take advantage of the huge swaths of data inherent to the digital world in ways that would be too expensive or inefficient using traditional computing.

Quantum computers

use properties of quantum physics to enable massively parallel and probabilistic problem solving – meaning they could solve a class of problems that are considered impossible for classical computers.

Biology-inspired computers

either mimic (bio-mimicry) or harness (bio-compute) the power of biological processes to store data, solve problems, or model complex systems in fundamentally different ways, with the potential to improve power efficiency, speed, accuracy or other computing constraints.

75%

of executives are considering investing or partnering with others to address previously unsolvable problems using next-generation computing (e.g., High Performance Computing, Quantum Computing, Bio-inspired Computing).

Source: Accenture

Thank you!

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