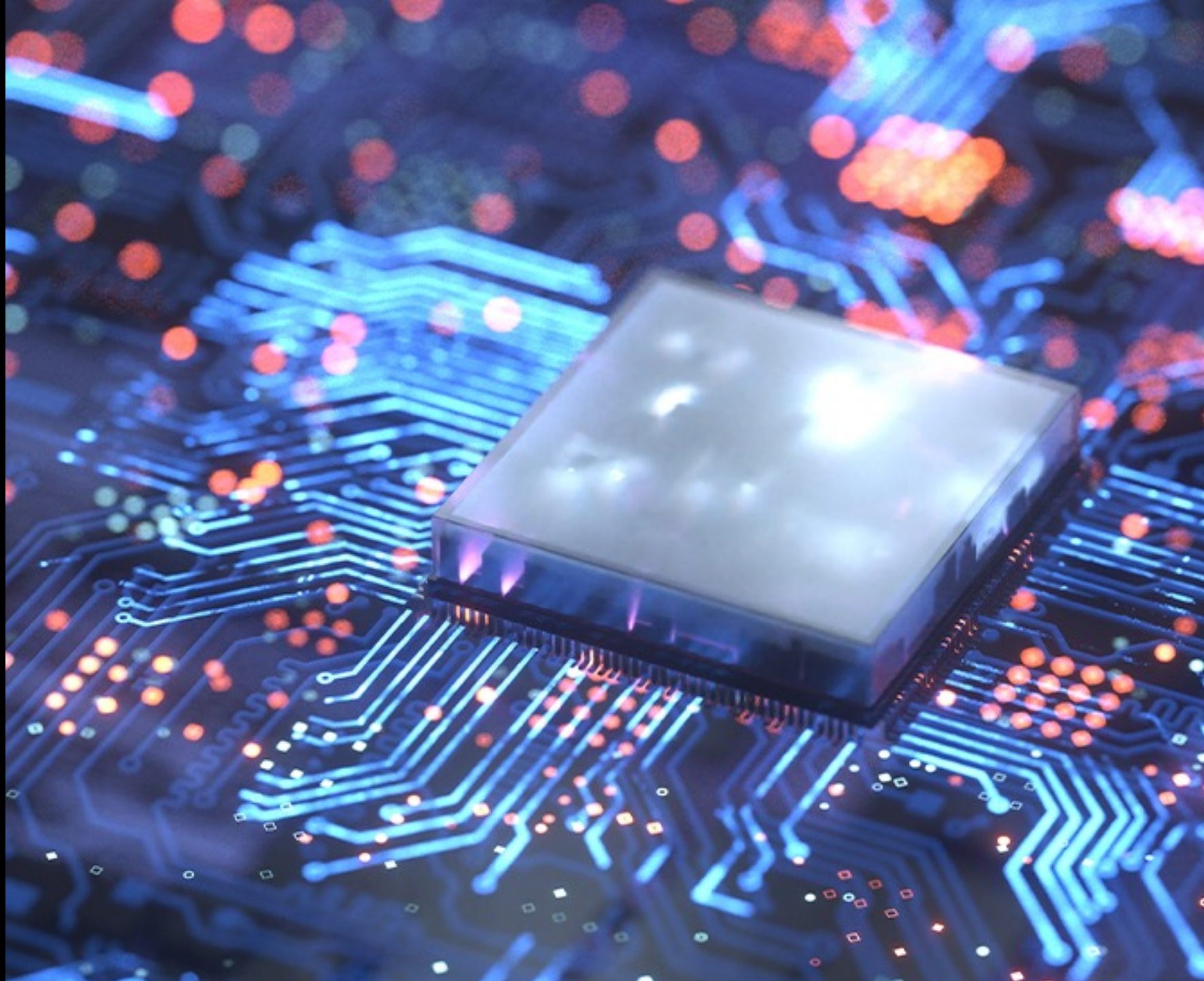
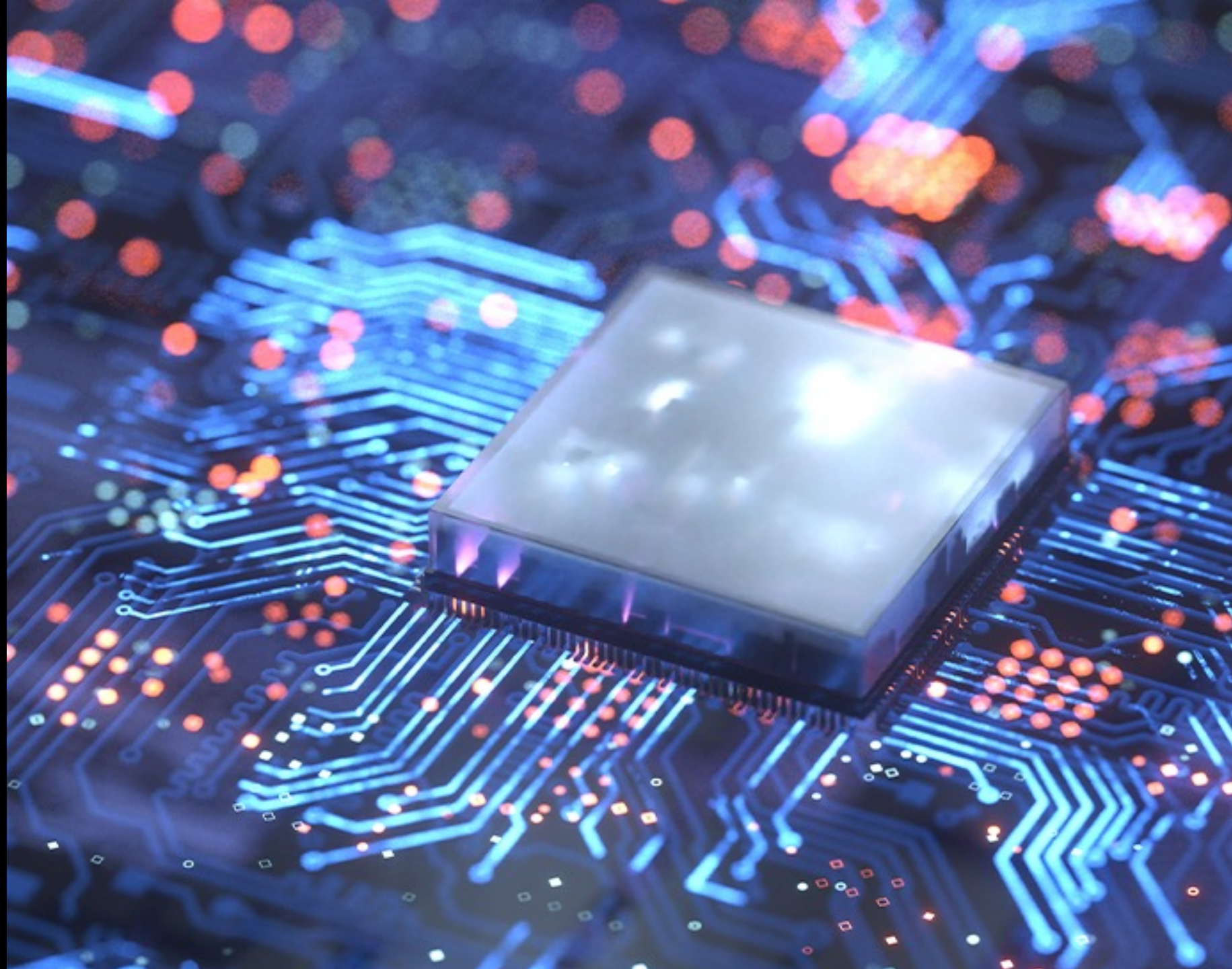


# Information Technology Sector Presentation

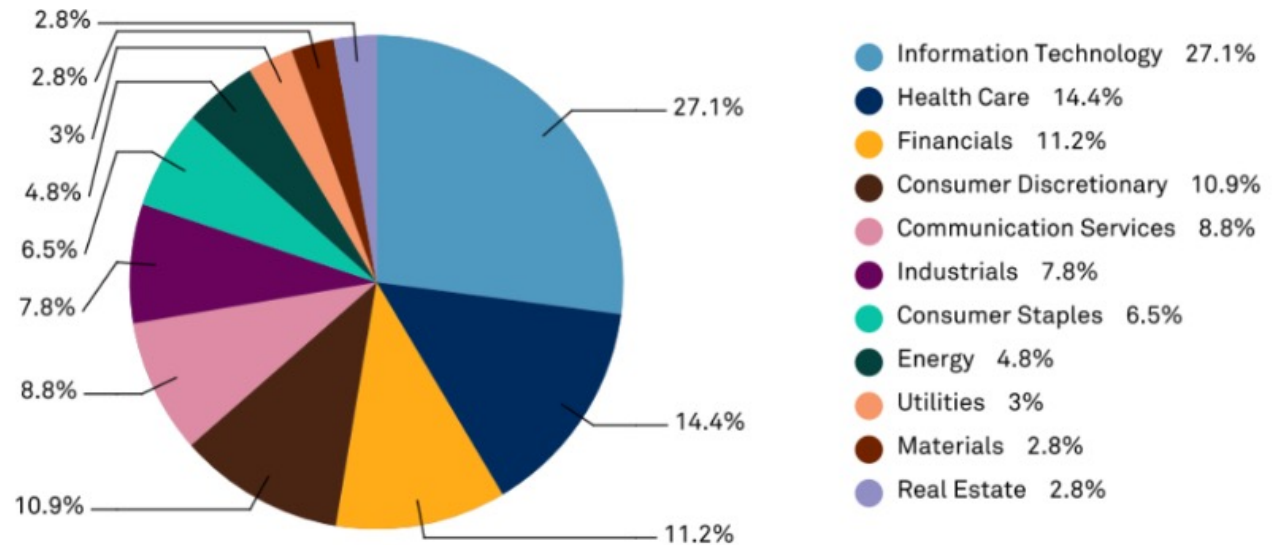
Cameron Myers, Danny Myers,  
Joe Morotti, Sean O'Reilly



# Sector Overview



# Sector Size & Weight













Source: SPglobal Dow Factsheet

Category	Result
Market Cap	\$12.09T
Market Weight	27.25%
Industries in Sector	6
Total Constituents	76

Sources: <https://finasko.com/sp-500-companies-weightage/>

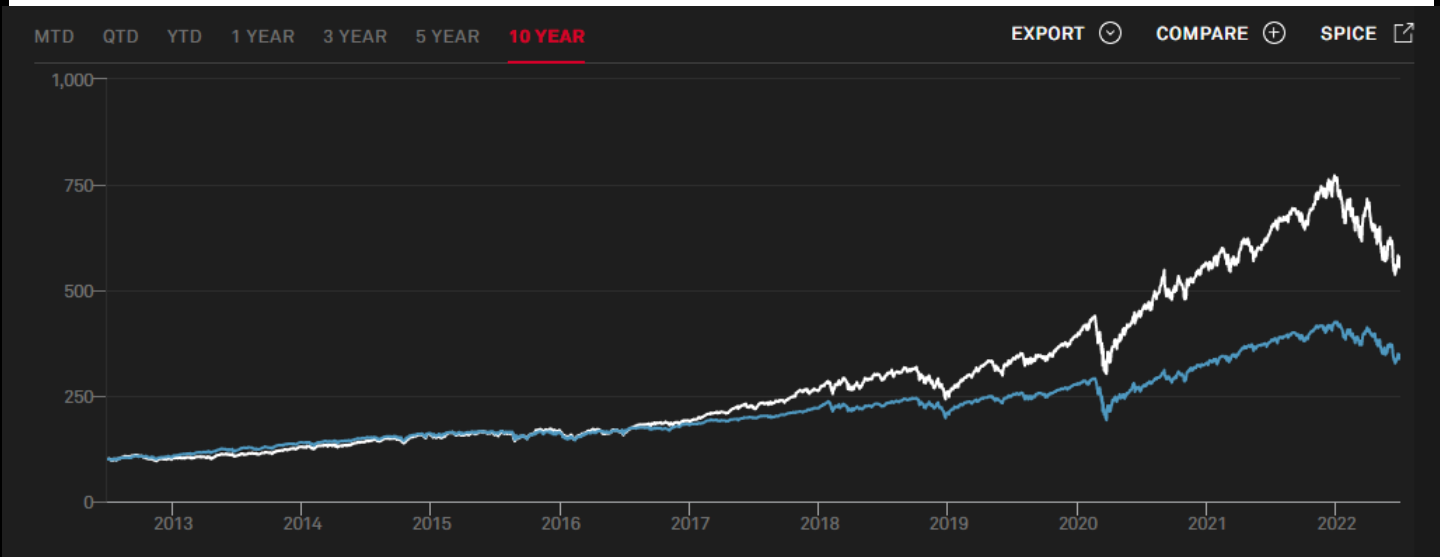
<https://www.tradingview.com/chart/U148tblg/?symbol=SSE%3A000039>

# Sector Top 10

 <b>AAPL</b> <sup>D</sup> APPLE INC	2.173T USD	22.34	6.20 USD
 <b>MSFT</b> <sup>D</sup> MICROSOFT CORP.	1.898T USD	26.76	9.65 USD
 <b>V</b> <sup>D</sup> VISA INC.	402.676B USD	31.86	6.38 USD
 <b>NVDA</b> <sup>D</sup> NVIDIA CORPORATION	373.75B USD	42.89	3.78 USD
 <b>MA</b> <sup>D</sup> MASTERCARD INCORPORATED	302.638B USD	33.12	9.65 USD
 <b>AVGO</b> <sup>D</sup> BROADCOM INC.	194.119B USD	24.71	21.01 USD
 <b>ORCL</b> <sup>D</sup> ORACLE CORPORATION	182.041B USD	28.56	2.49 USD
 <b>CSCO</b> <sup>D</sup> CISCO SYSTEMS, INC.	174.769B USD	15.11	2.86 USD
 <b>ACN</b> <sup>D</sup> ACCENTURE PLC	174.583B USD	27.53	10.47 USD
 <b>ADBE</b> <sup>D</sup> ADOBE INC.	169.17B USD	35.69	10.30 USD

# Sector Performance

Sector Name	Last % Change 05:45 PM ET 07/01/2022	1 Day	5 Day	1 Month	3 Month	YTD 07/01/2022	1 Year	3 Year	5 Year	10 Year
Energy (.GSPE)	+1.44%	+1.44%	+1.29%	-15.79%	-4.78%	+31.07%	+36.02%	+17.57%	+15.94%	+10.10%
Utilities (.GSPU)	+2.48%	+2.48%	+4.11%	-2.78%	-3.39%	+0.43%	+13.59%	+20.54%	+38.49%	+94.51%
Consumer Staples (.GSPS)	+1.43%	+1.43%	+0.28%	-1.48%	-3.88%	-5.45%	+5.43%	+27.36%	+34.21%	+111.96%
Health Care (.GSPA)	+1.22%	+1.22%	+0.38%	-1.65%	-5.16%	-8.00%	+2.96%	+41.03%	+64.95%	+243.15%
Industrials (.GSPI)	+0.91%	+0.91%	-0.84%	-6.66%	-14.40%	-16.74%	-13.98%	+14.34%	+27.82%	+140.31%
Materials (.GSPM)	+0.67%	+0.67%	-3.13%	-13.50%	-15.75%	-18.15%	-9.82%	+27.00%	+38.18%	+109.14%
Financials (.GSPF)	+1.43%	+1.43%	-1.46%	-9.79%	-16.74%	-18.34%	-13.06%	+15.67%	+29.61%	+168.96%
Real Estate (.GSPRE)	+1.86%	+1.86%	-0.55%	-5.76%	-13.85%	-19.78%	-6.08%	+14.31%	+30.91%	--
Information Technology (.GSPT)	+0.25%	+0.25%	-4.47%	-9.15%	-20.24%	-27.06%	-14.11%	+62.36%	+137.00%	+382.34%
Communication Services (.GSPL)	+0.68%	+0.68%	-4.54%	-7.08%	-20.33%	-29.98%	-29.15%	+14.04%	+21.59%	+27.29%
Consumer Discretionary (.GSPD)	+1.97%	+1.97%	-4.69%	-9.15%	-24.87%	-31.77%	-23.25%	+16.22%	+53.90%	+217.79%
S&P 500 ® Index (.SPX)	+1.06%	+1.06%	-2.21%	-7.43%	-15.56%	-19.74%	-10.99%	+30.04%	+57.85%	+180.83%

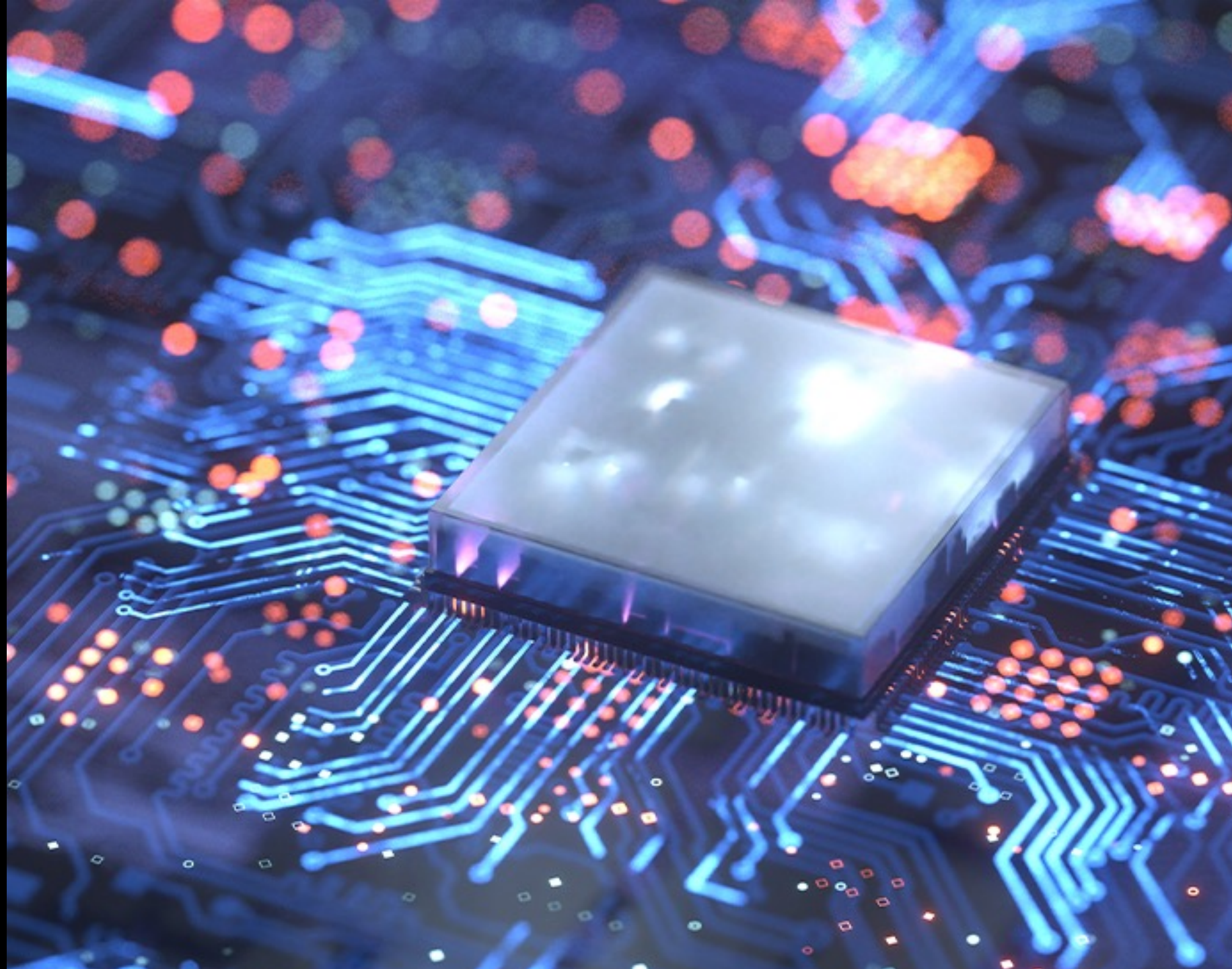


Source: [https://eresearch.fidelity.com/eresearch/markets\\_sectors/sectors/sectors\\_in\\_market.html?tab=learn&or=45](https://eresearch.fidelity.com/eresearch/markets_sectors/sectors/sectors_in_market.html?tab=learn&or=45)  
<https://www.spglobal.com/spdji/en/indices/equity/sp-500-information-technology-sector/#overview>

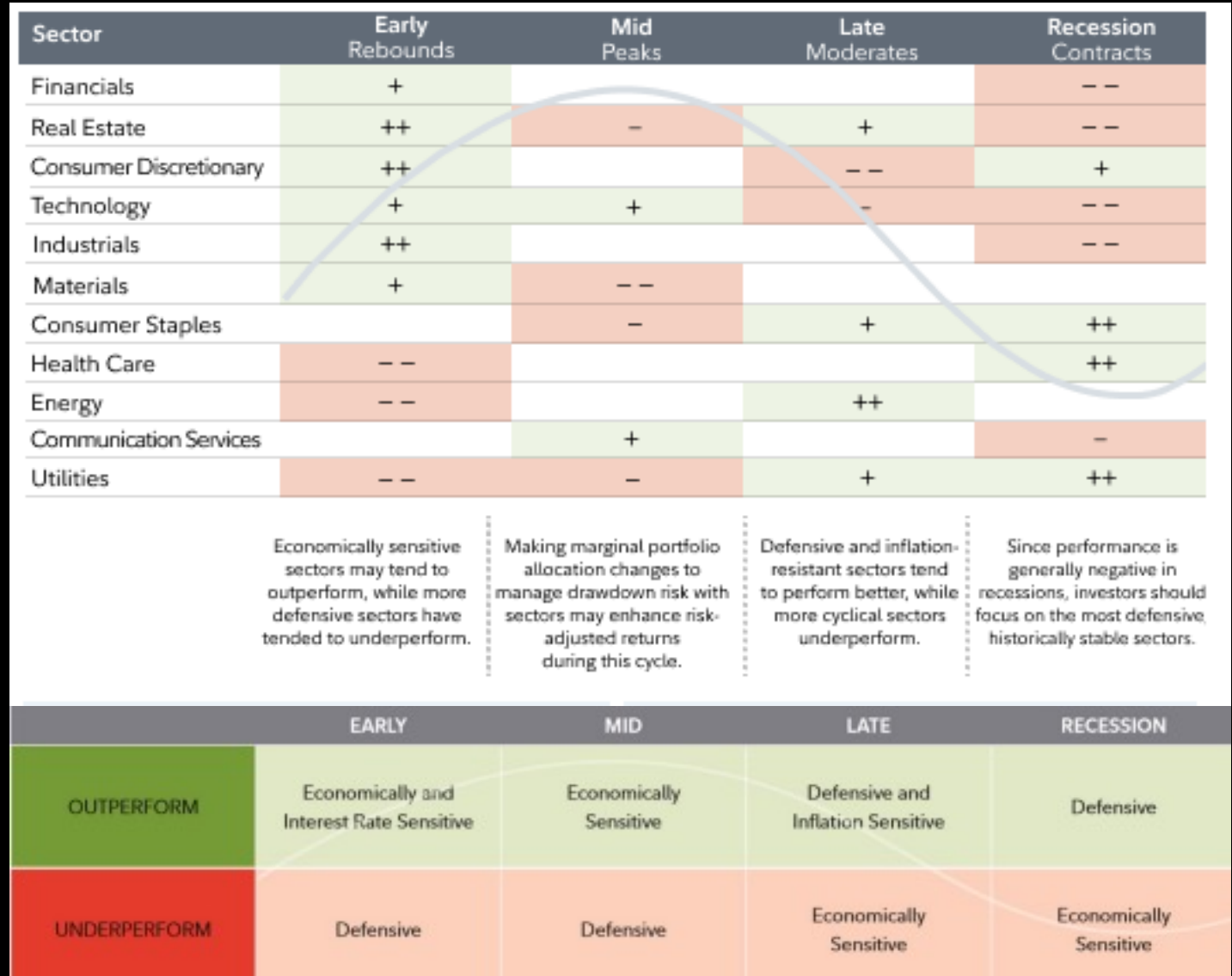
# Sector Performance

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	Total
ENRS	34.4%	CON	61.7%	REAL	UTIL	FINL	COND	REAL	COND	ENRS	INFT	HLTH	INFT	INFT	ENRS	INFT
	34.4%	-15.4%	61.7%	32.3%	19.9%	28.8%	43.1%	30.2%	10.1%	27.4%	38.8%	6.5%	50.3%	43.9%	54.6%	938.3%
MATR	22.5%	HLTH	MATR	COND	CON	COND	HLTH	UTIL	HLTH	TELS	MATR	UTIL	TELS	COND	REAL	COND
	22.5%	-22.8%	48.6%	27.7%	14.0%	23.9%	41.5%	29.0%	6.9%	23.5%	23.8%	4.1%	32.7%	33.3%	46.2%	560.2%
UTIL	19.4%	UTIL	COND	INDU	HLTH	REAL	INDU	HLTH	CON	FINL	COND	COND	FINL	TELS	FINL	HLTH
	19.4%	-29.0%	41.3%	26.7%	12.7%	19.7%	40.7%	25.3%	6.6%	22.8%	23.0%	0.8%	32.1%	23.6%	35.0%	461.0%
INFT	16.3%	TELS	REAL	MATR	REAL	TELS	FINL	INFT	INFT	INDU	FINL	INFT	S&P	MATR	INFT	CON
	16.3%	-30.5%	27.1%	22.2%	11.4%	18.3%	35.6%	20.1%	5.9%	18.9%	22.2%	-0.3%	31.5%	20.7%	34.5%	357.9%
CON	14.2%	COND	S&P	ENRS	TELS	HLTH	S&P	CON	REAL	MATR	HLTH	REAL	INDU	S&P	S&P	S&P
	14.2%	-33.5%	26.5%	20.5%	6.3%	17.9%	32.4%	16.0%	4.7%	16.7%	22.1%	-2.2%	29.4%	18.4%	28.7%	356.8%
INDU	12.0%	ENRS	INDU	TELS	COND	S&P	INFT	FINL	TELS	UTIL	S&P	S&P	REAL	HLTH	MATR	INDU
	12.0%	-34.9%	20.9%	19.0%	6.1%	16.0%	28.4%	15.2%	3.4%	16.3%	21.8%	-4.4%	29.0%	13.5%	27.3%	286.6%
TELS	11.9%	S&P	HLTH	S&P	ENRS	INDU	CON	S&P	S&P	INFT	INDU	CON	COND	INDU	HLTH	MATR
	11.9%	-37.0%	19.7%	15.1%	4.7%	15.4%	26.1%	13.7%	1.4%	13.9%	21.0%	-8.4%	27.9%	11.1%	26.1%	264.2%
HLTH	7.2%	INDU	FINL	CON	INFT	MATR	MATR	INDU	FINL	S&P	CON	TELS	CON	CON	COND	UTIL
	7.2%	-39.9%	17.2%	14.1%	2.4%	15.0%	25.6%	9.8%	-1.5%	12.0%	13.5%	-12.5%	27.6%	10.8%	24.4%	242.4%
S&P	5.5%	REAL	CON	FINL	S&P	INFT	ENRS	COND	INDU	COND	UTIL	FINL	UTIL	UTIL	TELS	TELS
	5.5%	-42.3%	14.9%	12.1%	2.1%	14.8%	25.1%	9.7%	-2.5%	6.0%	12.1%	-13.0%	26.4%	0.5%	21.6%	220.1%
COND	-13.2%	INFT	ENRS	INFT	INDU	CON	UTIL	MATR	UTIL	CON	REAL	INDU	MATR	FINL	INDU	REAL
	-13.2%	-43.1%	13.8%	10.2%	-0.6%	10.8%	13.2%	6.9%	-4.8%	5.4%	10.9%	-13.3%	24.6%	-1.7%	21.1%	204.4%
REAL	-17.9%	MATR	UTIL	UTIL	MATR	ENRS	TELS	TELS	MATR	REAL	ENRS	MATR	HLTH	REAL	CON	FINL
	-17.9%	-45.7%	11.9%	5.5%	-9.6%	4.6%	11.5%	3.0%	-8.4%	3.4%	-1.0%	-14.7%	20.8%	-2.2%	18.6%	79.8%
FINL	-18.6%	FINL	TELS	HLTH	FINL	UTIL	REAL	ENRS	ENRS	HLTH	TELS	ENRS	ENRS	ENRS	UTIL	ENRS
	-18.6%	-55.3%	8.9%	2.9%	-17.1%	1.3%	1.6%	-7.8%	-21.1%	-2.7%	-1.3%	-18.1%	11.8%	-33.7%	17.7%	41.7%

# Business Analysis

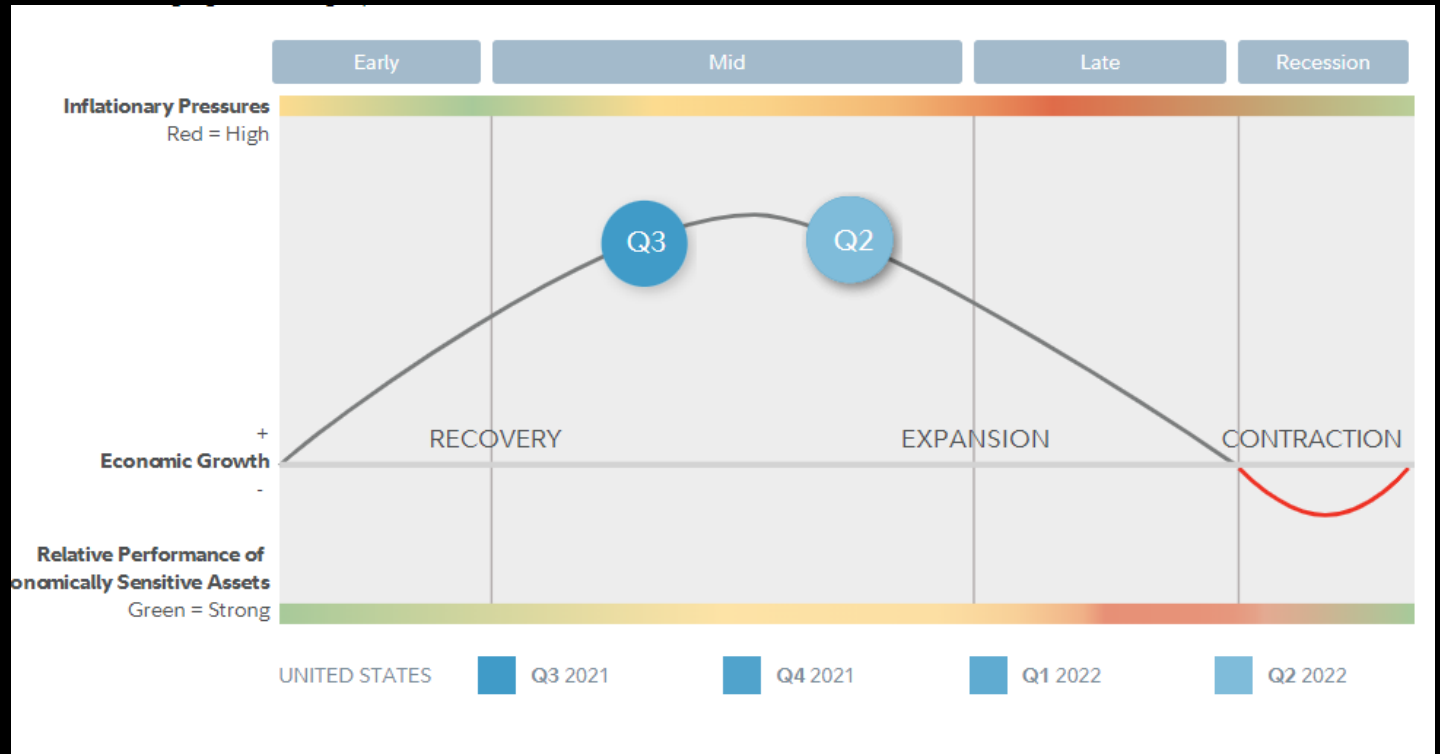


# Sector Business Cycle





# Sector Business Cycle

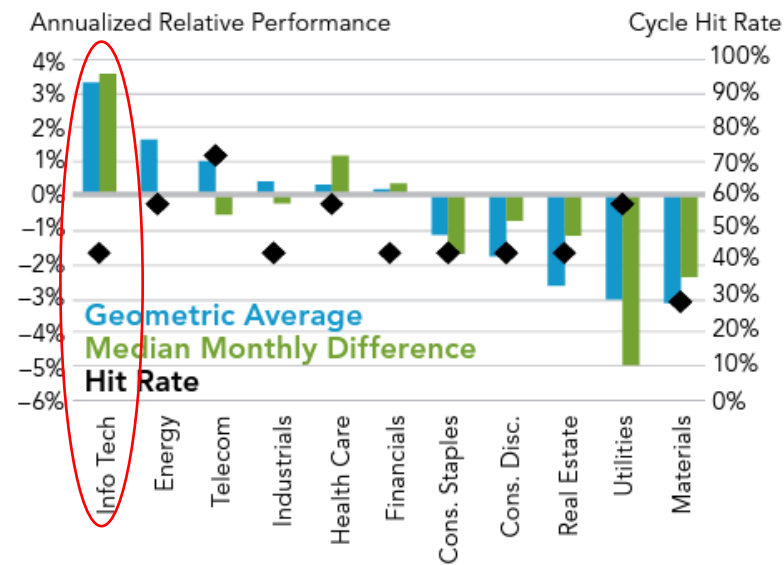


Sources: [https://institutional.fidelity.com/app/item/RD\\_13569\\_40890/business-cycle-update.html?pos=T](https://institutional.fidelity.com/app/item/RD_13569_40890/business-cycle-update.html?pos=T)

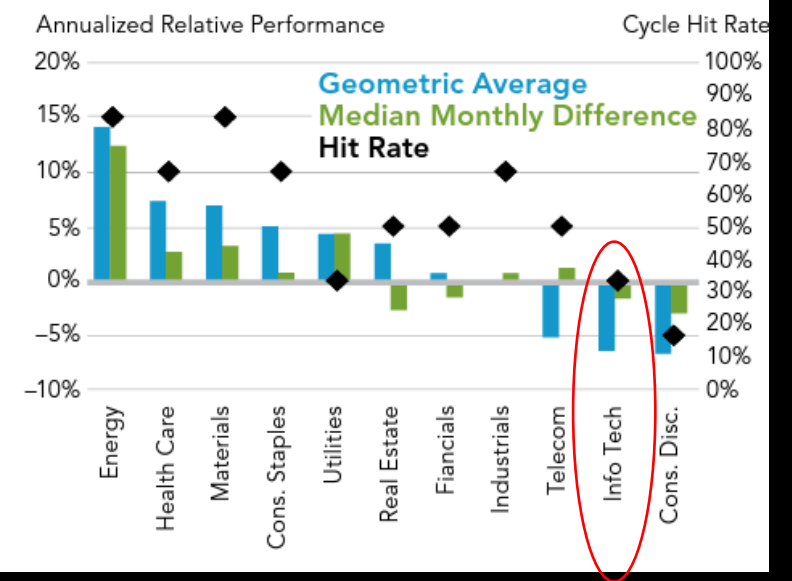
<https://institutional.fidelity.com/app/literature/item/9883196.html>

# Sector Business Cycle

**EXHIBIT 4: Sector leadership has rotated frequently in the mid-cycle phase, resulting in the smallest sector-performance differentiation of any business cycle phase.**



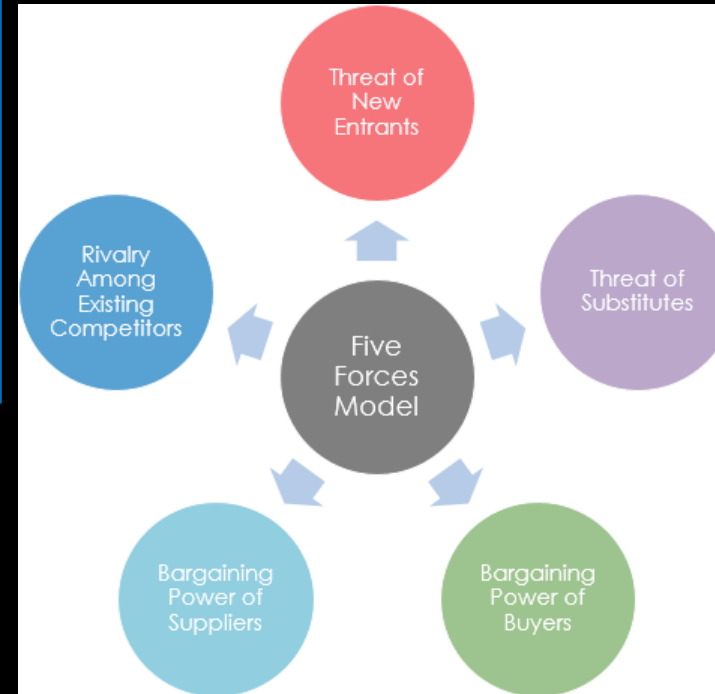
**EXHIBIT 5: As the economic recovery matures, the ENE and MAT sectors have typically performed well, as have defensive-oriented sectors (HTH, CNS, UTL).**



# Porter's 5 Forces

High rivalry due to customers and suppliers having loyalty to specific companies and there being so many companies.

Low threat because it is very expensive to enter as well as high brand loyalty



Low threat because info tech doesn't have substitutes

Low-Medium power due to companies being loyal to their suppliers but there being a bunch of suppliers

High bargaining power due to variety of choices

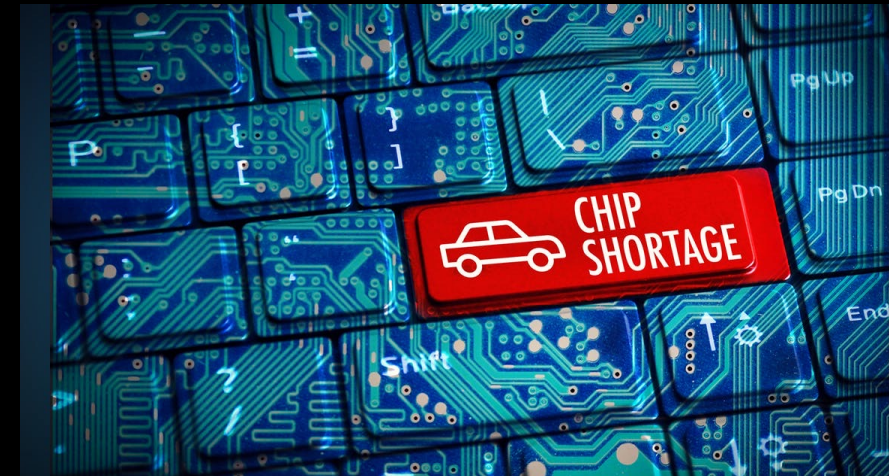
Sources: <https://www.visual-paradigm.com/servlet/editor-content/tutorials/five-forces-analysis-tutorial/sites/7/2019/02/five-forces-model.png>

<https://brandminds.live/porters-five-forces-analysis-of-the-it-industry/>

# Info Tech in 2022

## 1) Information Technology Trends

- 1.1) 1. Cloud Computing
- 1.2) 2. Mobile Apps
- 1.3) 3. Big Data Analytics
- 1.4) 4. Automation
- 1.5) 5. Artificial Intelligence
- 1.6) 6. Smart Technology
- 1.7) 7. Virtual Reality
- 1.8) 8. Augmented Reality
- 1.9) 9. Blockchain Data
- 1.10) 10. Cyber Security
- 1.11) 11. Growth of IoT Networks
- 1.12) 12. Predictive Analytics Implementations
- 1.13) 13. Cloud Migration
- 1.14) 14. Rise Of Data Officers
- 1.15) 15. Quantum Computing Applications
- 1.16) 16. Smart Technology
- 1.17) 17. Open Source Solutions
- 1.18) 18. Edge Computing
- 1.19) 19. Rise Of Chatbots



Sources: <https://linchpinseo.com/trends-in-the-information-technology-industry/>

<https://connect.comptia.org/blog/information-technology-stats-facts#:~:text=Projections%20show%20the%20technology%20industry,CAGR%20of%2017.5%25%20by%202025.>

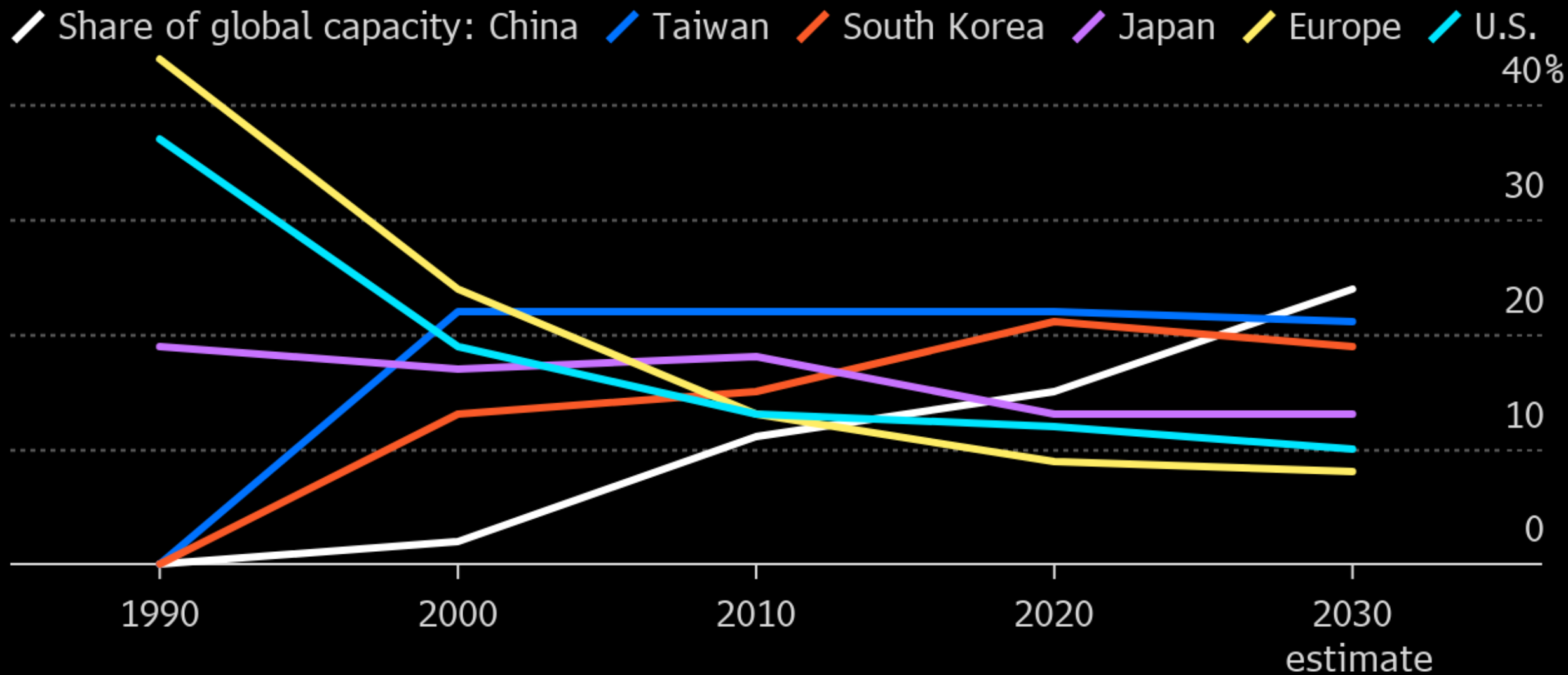
<https://www.electronicdesign.com/industrial-automation/article/21214146/the-global-chip-shortage-how-did-we-get-here-where-are-we-headed-what-now>

A close-up, high-angle shot of a square microchip mounted on a glowing blue and orange circuit board. The chip is the central focus, with its metallic surface reflecting light. The circuit board is filled with intricate patterns of glowing lines and dots, creating a sense of depth and complexity. The background is dark, making the glowing elements stand out.

# Economic Analysis

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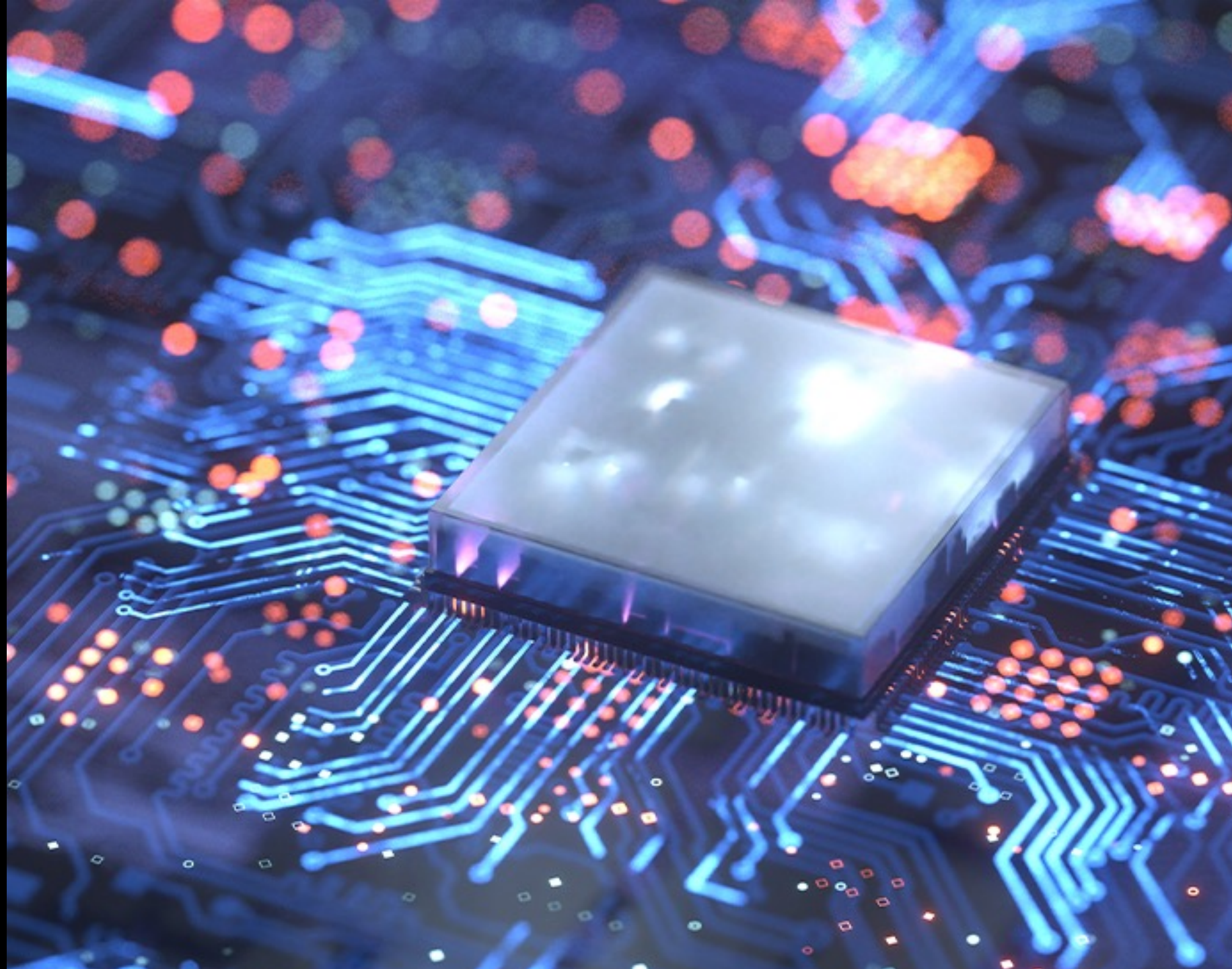
# Asian Countries Overtake U.S., Europe in Chip Manufacturing



Source: Semiconductor Industry Association/Boston Consulting Group Report

**Bloomberg**

# Financial Analysis



# Sales and Earnings growth rates of sector, industry, major companies

How do these rates compare to history?

- The Technology sector decreased in all industries in the last year, and all but one industry decreased more so than the S&P 500 as a whole.

Industry ▲	Last % Change 04:20 PM ET 07/01/2022	% CHANGE 06/30/2022			
		YTD	1 - Year	3 - Year	5 - Year
Information Technology	+0.25%	-27.25%	-14.40%	+61.96%	+136.15%
Communications Equipment	-0.09%	-31.47%	-15.25%	-12.51%	+46.63%
Electronic Equipment, Instruments & Components	-0.37%	-29.38%	-19.72%	+18.40%	+45.53%
IT Services	+1.26%	-21.96%	-25.60%	+4.81%	+64.59%
Semiconductors & Semiconductor Equipment	-3.48%	-36.18%	-21.49%	+68.22%	+122.20%
Software	+1.09%	-26.39%	-12.66%	+68.38%	+194.06%
Technology Hardware, Storage & Peripherals	+1.42%	-23.02%	-0.34%	+160.03%	+247.06%
S&P 500 © Index	+1.06%	-20.58%	-11.80%	+28.68%	+56.44%

- The Technology sector has increased in the last five years overall and all but two have increased more than the S&P 500.



# NASDAQ 100 - Technology

- The Technology sector has greatly appreciated since its inception ~ 20 years ago.
- The only notable declines were in the latter half of 2008 and 2018, the beginning of 2020, and we are currently in month 6 of a steep decline.

## Max – 18 years



## 5 Year



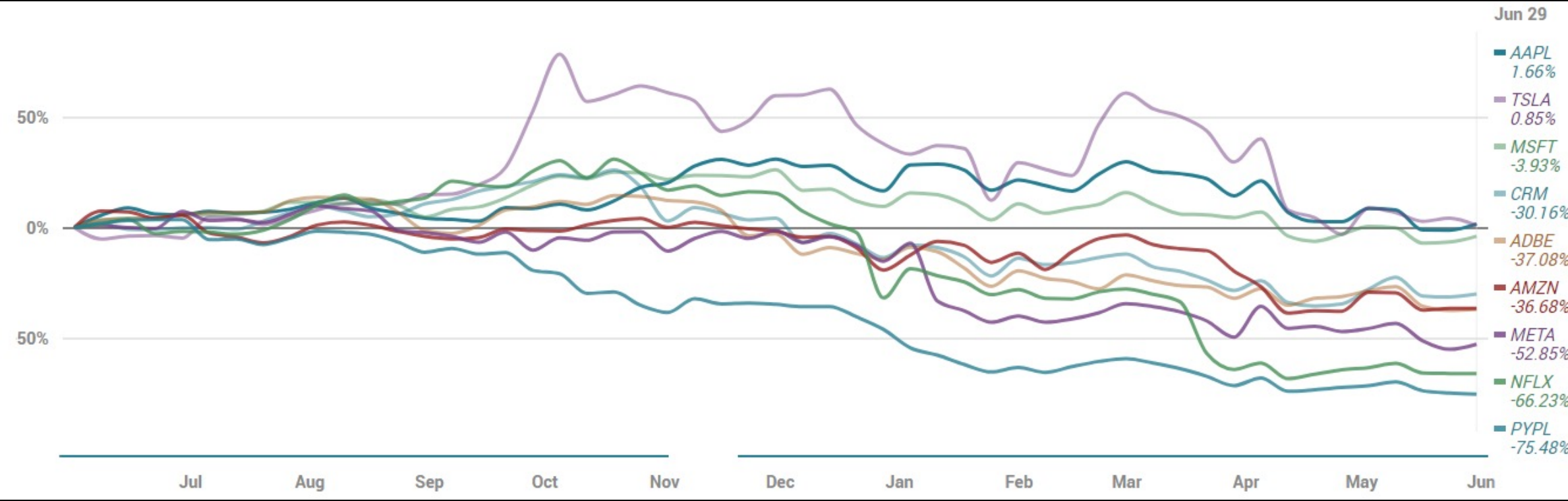
## 1 Year








# Earnings

Company	Gross Profit (TTM)		Quarterly Earnings Growth (YOY)	
	2019	Current	2019	Current
Amazon	114.99B	197.48B	40.23%	N/A
Apple	260.17B	152.84B	1.02%	5.80%
Microsoft	143.02B	115.86B	12.07%	8.20%
Meta	70.69B	95.28B	27.62%	-21.40%
Salesforce	17.20B	19.47B	21.82%	-94.00%
Nvidia	10.91B	17.48B	-17.42%	-15.40%




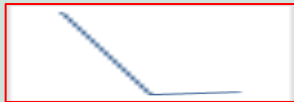

# Major Company growth rates over the last year



# Tech Margins

	2014	2018	Current	Trend
Operating	12.12%	23.87%	27.19% (FY22Q1 = -14.01%)	
Net	10.96%	0.03%	-6.6%	
R&D as % of sales	11.3%	11.1%	8.4%	
ROE	18.71%	17.44%	37.06%	
Inventory Turnover by Sales	N/A	19.31	15.78	

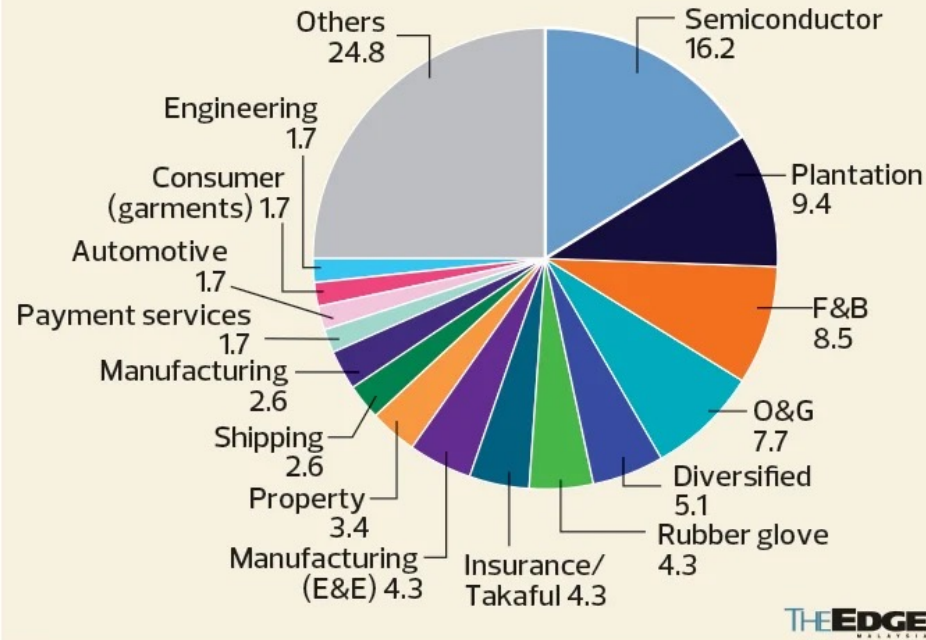
# Market Margins

	2014	2018	Current	Trend
Operating	16.79%	14.61%	7.28%	
Net	9.92%	8.35%	4.8%	
R&D as % of sales	3.9%	3.9%	10%	
ROE	13.14%	12.97%	20.45%	
Inventory Turnover by Sales	11.36	14.03	10.99	

## Tech – Market Margin

	2014	2018	Current
Operating	-4.67%	9.26%	19.91%
Net	1.04%	-8.32%	-11.4%
R&D as % of sales	7.40%	7.2%	-1.6%
ROE	5.57%	4.47%	16.61%
Inventory Turnover by Sales	-11.36	5.28	4.79

Companies in net cash, by sector — among top 500 companies by market cap (%)



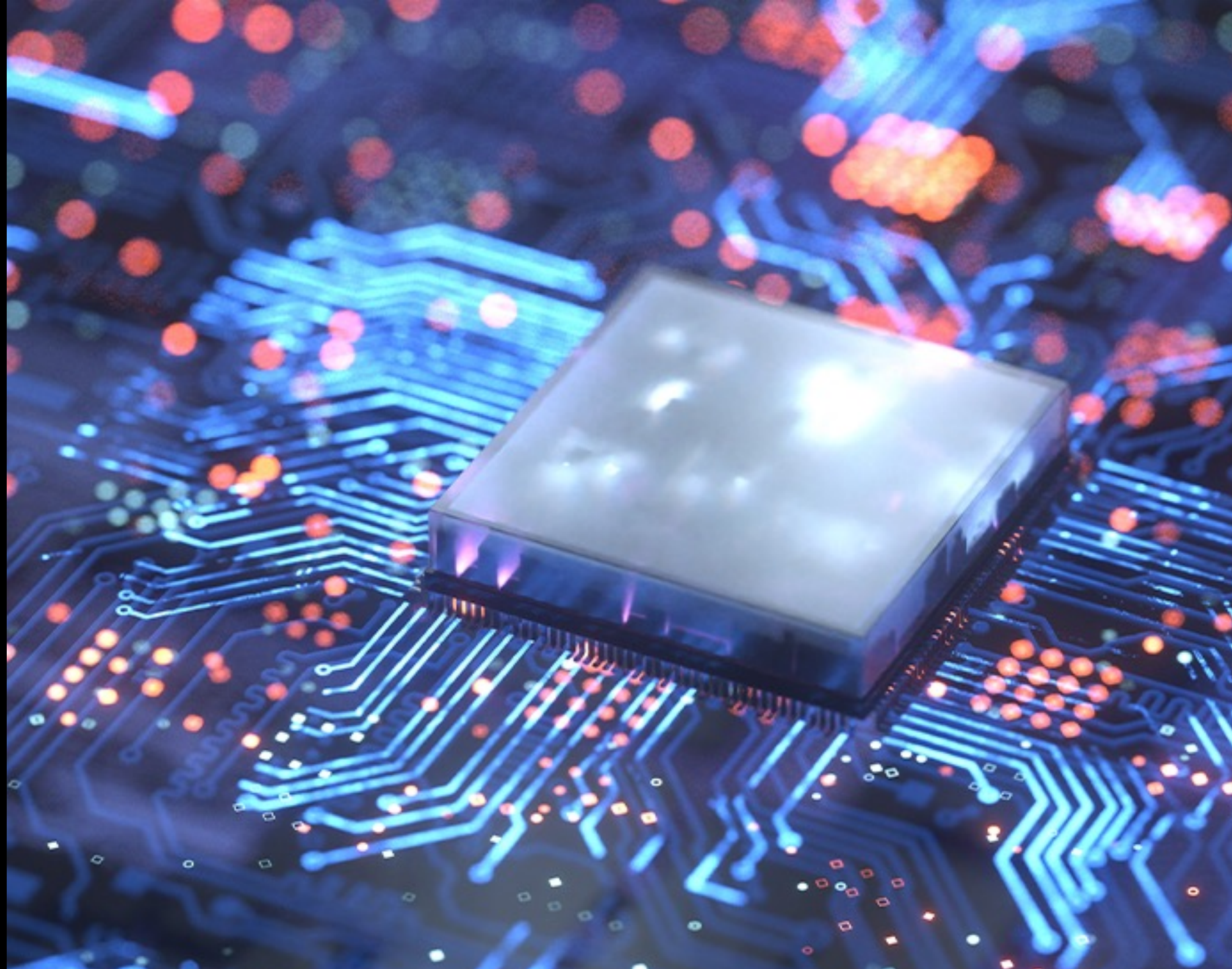
Free Cash Flow at end of FY

2014	2018	FY21 Q4
17.83%	-3.76%	24.13%

Is this sector a net user of cash or generate free cash flow?

- Technology is traditionally one of the highest cash sectors, although this can vary from year to year.

# Valuation Analysis





SECTOR  
VALUATION

<b>Absolute Basis</b>	<b>High</b>	<b>Low</b>	<b>Median</b>	<b>Current</b>
P/E	93.1573	11.8942	24.6019	25.6515
P/B	11.6614	2.4947	4.8348	8.5574
P/S	7.2946	1.4569	3.2372	5.4894
P/EBITDA	23.1500	7.1025	13.7651	17.2566

<b>Relative to SP500</b>	<b>High</b>	<b>Low</b>	<b>Median</b>	<b>Current</b>
P/E	3.6582	0.7967	1.2905	1.2617
P/B	2.5964	1.0807	1.6536	2.1173
P/S	2.568	1.4642	1.8933	2.3006
P/EBITDA	2.7526	1.106	1.5825	1.4357

Market Cap: 12.09T

SECTOR  
VALUATION

Industry	% Weight	Estimated 2022 P/E*
Communication Equipment's	3.03%	23.35
Electronic Equipment, Instruments, and Components	3%	15.34
IT Services	17.73%	45.32
Semiconductors and Semiconductors Equipment	20.64%	15.61
Software	34.97%	47.64
Technology Hardware, Storage, and Peripherals	20.64%	21.88

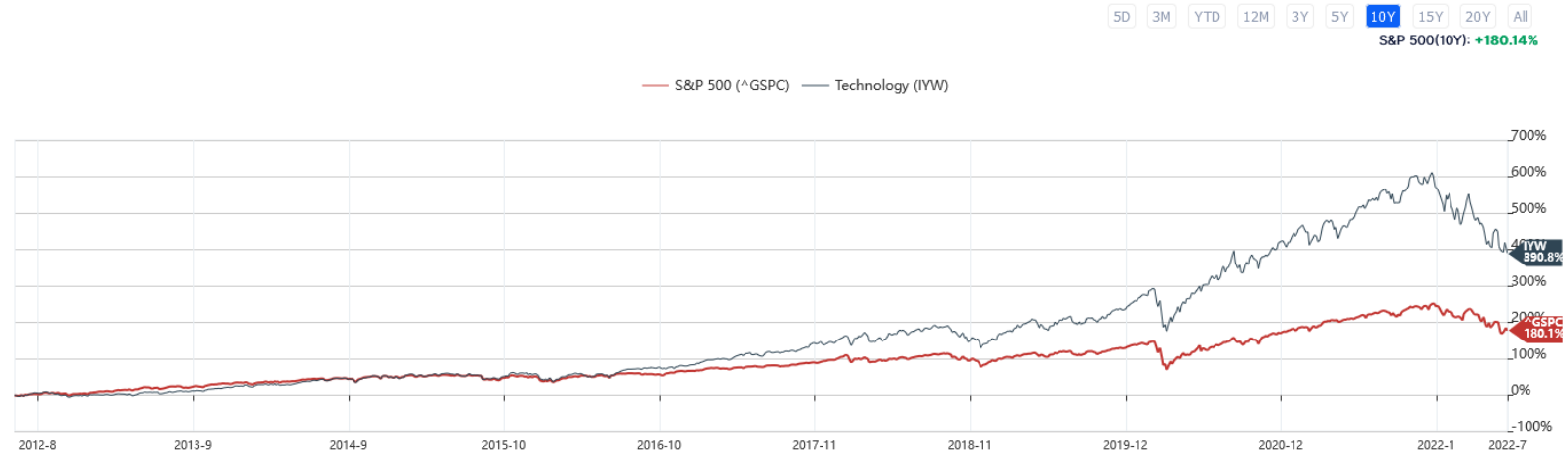
\* Sector Median P/E: 24.60

## SECTOR VALUATION

<u>Company</u>	<u>Company Name</u>	<u>Primary Industry</u>	<u>Mkt Cap</u> ▼	<u>Imp Mkt Cap</u>	<u>Price</u>	<u>Volume</u>	<u>Tot Rev</u>	<u>EBITDA</u>
AAPL	Apple Inc.	Technology Hardware, Storage and Peripherals	2,248,607.2	-	138.93	70.97	386,017	130,634
MSFT	Microsoft Corporation	Systems Software	1,941,407.42	-	259.58	22.82	192,557	94,983
V	Visa Inc.	Data Processing and Outsourced Services	414,924.98	-	199.18	4.13	26,937	19,019
2330	Taiwan Semiconductor Manufacturing Company Limited	Semiconductors	394,532.23	-	15.22	66.42	59,904.38	40,160.22
NVDA	NVIDIA Corporation	Semiconductors	363,658	-	145.23	57.63	29,541	12,533
MA	Mastercard Incorporated	Data Processing and Outsourced Services	309,534.46	-	318.24	2.29	19,896	11,810
A005930	Samsung Electronics Co., Ltd.	Technology Hardware, Storage and Peripherals	290,585.53	-	43.22	24.98	240,380.76	75,327.22
AVGO	Broadcom Inc.	Semiconductors	192,960.25	-	477.84	2.13	29,994	16,857
ORCL	Oracle Corporation	Systems Software	188,863.31	-	70.87	7.80	42,440	18,483
ASML	ASML Holding N.V.	Semiconductor Equipment	178,978	-	448.56	1.09	19,626.38	6,877.48

# SECTOR VALUATION

## Sector Performance



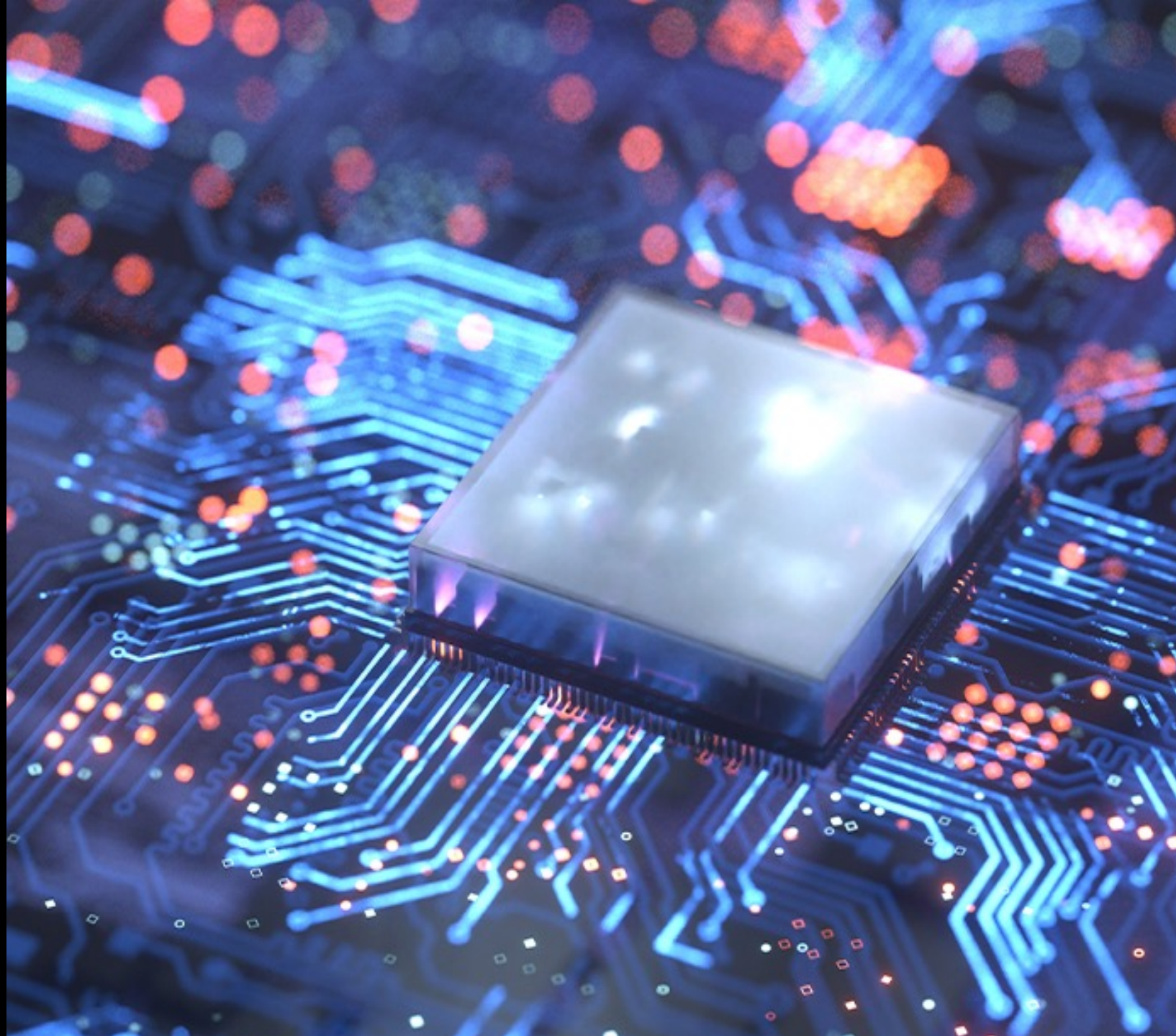
### Annualized Return %

Symbol		1 Week	1 Month	3 Months	6 Months	YTD	1 Year	3 Years	5 Years	10 Years
<b>^GSPC</b>	+	-2.21	-6.73	-15.85	-19.74	-19.74	-11.45	8.86	9.55	10.87
<b>IYW</b>	+	-5.62	-9.13	-22.15	-30.30	-30.30	-19.42	17.37	18.77	17.25

### Total Annual Return %

Symbol		2022	2021	2020	2019	2018	2017	2016	2015	2014	2013
<b>^GSPC</b>	+	-20.58	26.89	16.26	28.88	-6.24	19.42	9.54	-0.73	11.39	29.60
<b>IYW</b>	+	-30.28	35.45	48.22	46.65	-0.94	36.62	13.72	3.67	19.43	26.63

Recommendation



Sector	S&P 500 Weight	SIM Weight	+/-
Information Technology	27.11%	24.59%	-2.52%

## Recommendation

- Because our economy is currently moving towards late-cycle inflationary pressure, based off past trends, we could be heading towards a recessionary period.
  - This is also coming off the negative effects on the economy of Covid-19.
- When moving towards this type of period, the Information Technology sector tends to perform poorly, which is what we're seeing in the market currently.
- Recommendation: hold - We don't recommend selling as the economy will favor technology as there is once again an upturn. We also don't recommend buying more as things are still on the downturn and it's uncertain when things will turn around.