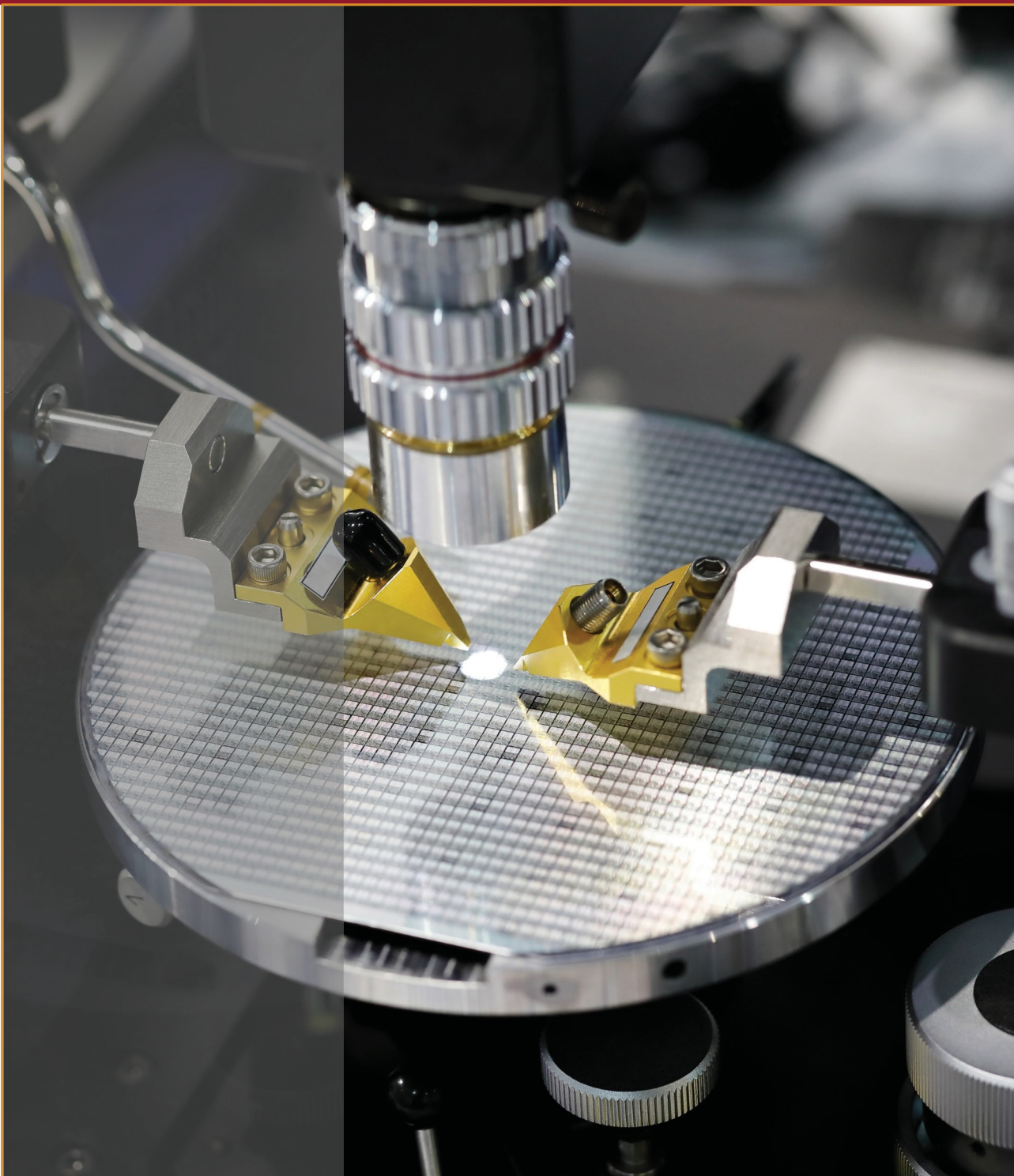


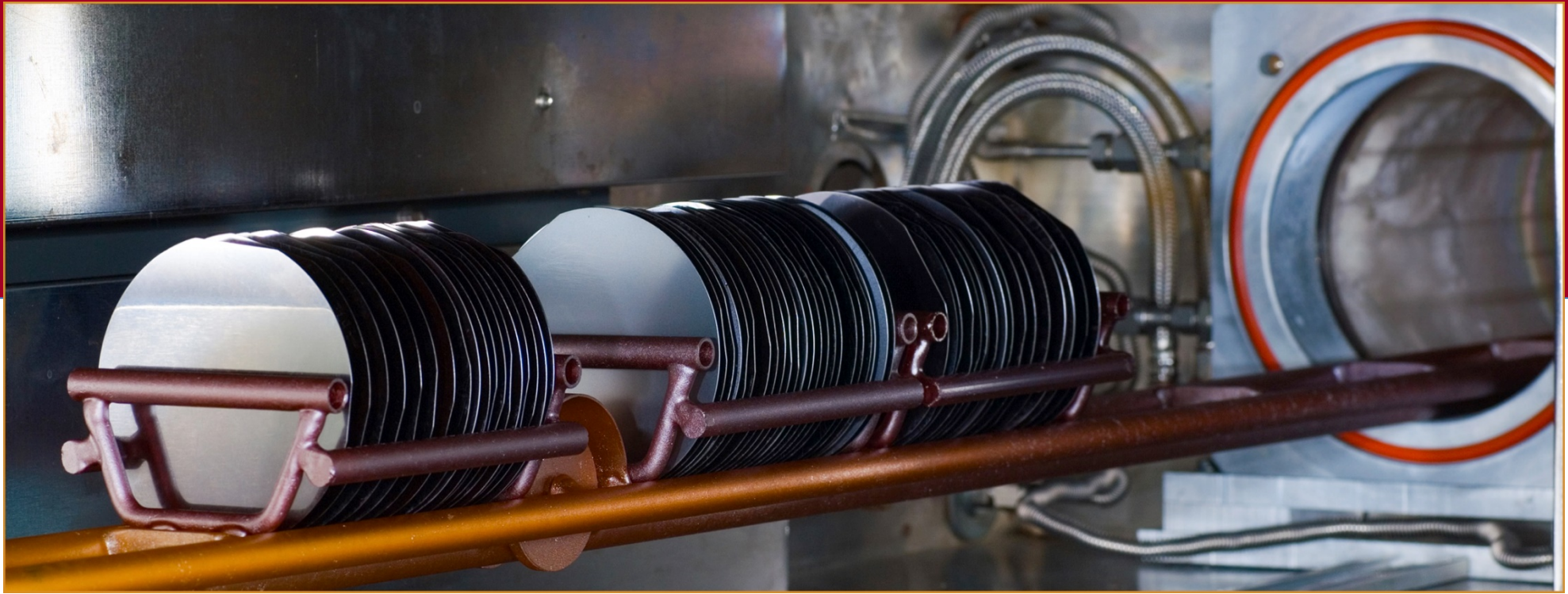
# Semiconductors and Advanced Materials

INDUSTRY REPORT

Fall 2021

CREATING  
M&A STRATEGIES  
FOR BUSINESS OWNERS  
SINCE 1956





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# Market Observations

# Market Summary

## Semiconductor Market

During the pandemic, the semiconductor industry had remarkable success and has become highly prevalent in finding solutions for a variety of economic and public health issues, but it still faces enormous hurdles. One of the most significant issues is the worldwide scarcity of semiconductors. There was an unexpected high demand for semiconductors, which were required during the pandemic to enable remote healthcare, work-at-home, and virtual learning. The scarcity is still affecting a variety of downstream industries, including automobiles, consumer electronics, household appliances, industrial robots, and a variety of other essential items. The semiconductor industry is expected to expand 17.3 % in 2021, compared to 10.8% in 2020, according to a report by International Data Corporation ("IDC"). By the middle of 2022, the industry is anticipated to be normalized and balanced, with the possibility of overcapacity in 2023. In July 2021, global semiconductor sales remained strong, with high demand in all key regional markets and semiconductor product categories. According to data published by The Semiconductor Industry Association ("SIA"), worldwide semiconductor industry sales were \$45.4 billion in July 2021, up 29.0 % from \$35.2 billion in July 2020. Europe had the largest year-over-year sales growth of 38% in 2021, followed by Asia Pacific (30.9 %), China (28.9%), the Americas (26.8%), and Japan (20.9%).

## Public Company Valuations

The CFA Select Semiconductor Index was up 6.4% in the third quarter of 2021, and the 12 months return on the Index was 54.9%. Our index for each of the subsectors of the Semiconductor increased in the third quarter of 2021, except Memory which had a drop of 13.1%, respectively. Equipment outperformed all other indices with 12.9% increase in the third quarter of 2021. EDA/Engineering Software revenue multiples were exceeding 10x, for some companies - like Ansys and Autodesk - they were significantly higher at 16.5x and 15.7x respectively. Multiples for Semiconductor Equipment were hovering around 5.1x revenue, and 16.7x EBITDA. With revenue multiples of 4.6x and EBITDA multiples of 16.0x, Fabless semiconductor companies were being valued higher than integrated device manufacturers with 4.1x to 15.3x, respectively. There were a few outliers, with Intel having a modest 2.9x revenue multiple and 6.6x EBITDA multiple, whereas NVIDIA comes in with a 23.3x revenue multiple and an EBITDA multiple of 57.8x.



*The public semiconductor market continued its growth in the third quarter of 2021...*

## Mergers and Acquisitions

The M&A activity in semiconductor industry remained strong in 2021 following a substantial increase in the number of announcements in the second half of 2020. If negotiations are concluded in possible megadeals that have been reported, the 2021 M&A total might get a major lift in the coming months. The driving factor for M&A deals was industry consolidation in several product and manufacturing segments, as well as IC companies looking to expand their presence in strong end-use applications like Internet of Things ("IoT"), artificial intelligence, self-driving technology, high speed 5G technology, and image recognition.



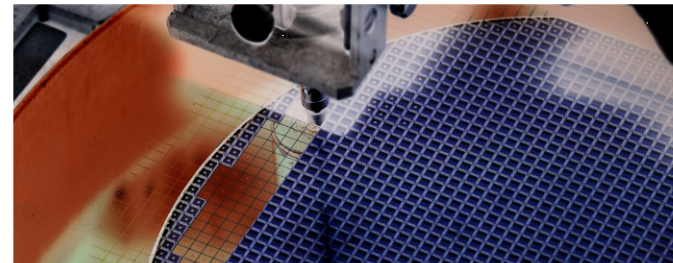
# Industry Trends

## Shortage in Auto Vehicle Production

The ongoing supply constraint of semiconductor components is having a significant impact on automotive production. The global automobile industry is expected to lose \$210 billion in revenue in 2021 due to a semiconductor chip scarcity, as per a report published by consulting firm AlixPartners. AlixPartners now expects 7.7 million units of production to be lost in 2021, up from 3.9 million in its previous forecast in May 2021. The rising number of the delta variant and Covid-19 breakouts in Malaysia and other Southeast Asian countries has worsened the situation. Global automakers like Ford and General Motors are expected to suffer huge revenue losses. However, resilient consumer demand and higher profits from higher vehicle prices is expected to offset some losses. However, the chip factories around the world increased their production capacity by 8% since early 2020 and aim to increase it by more than 16% by the end of 2022. (Source: The Washington Post).

## Semiconductors Become Political

Semiconductors are becoming increasingly important to the functioning of an economy with the rise of digitalization. Governments are becoming more involved in the semiconductor industry to help mitigate near-term manufacturing shortfalls and develop policies to protect the long-term stability of semiconductor supply chains. The US Senate recently passed a bill allocating around \$250 billion in funding for scientific research, as well as subsidies for chipmakers and robot manufacturers and a reorganization of the National Science Foundation. The bill's \$250 billion budget includes \$52 billion for semiconductor research, development, and manufacturing. Europe is also embarking on a massive project with the goal of doubling its market share in the global chip market by 2030. The Chinese government aims to spend up to \$200 billion by 2025, subsidizing semiconductor companies. Possessing domestic chip production capabilities and reducing international reliance on overseas suppliers has encouraged countries all around the globe to subsidize semiconductor production.



## Growth in Consumer Electronics

Consumer Electronics is poised for significant growth in the coming years. The demand for electronics product having lower power dissipation, faster speeds, and higher functionality, along with smaller footprints is constantly high. The smaller size and integration of semiconductors has given rise to smaller, lighter and more portable devices such as tablets, smartphones and the emerging IoT devices. Each new iteration of consumer electronics products is smarter, lighter and more energy-efficient than its predecessors. Multiple chips are now merged into a single chip which ultimately provides highly integrated solutions. Recent developments in silicon wafer materials have allowed the process of Wafer Level Packaging (WLP), where an IC is packaged while still on the wafer, resulting in a component that is practically the same size as that of the die, increasing the usage and density of semiconductor ICs across consumer electronic devices.

# Significant News

## Chip shortage expected to cost auto industry \$210 billion in revenue in 2021

*CNBC, September 23, 2021*

“With no end in sight, the semiconductor chip shortage is now expected to cost the global automotive industry \$210 billion in revenue in 2021, according to consulting firm AlixPartners. The forecast is almost double its previous projection of \$110 billion in May. The New York-based firm released an initial forecast of \$60.6 billion in late January when the parts problem started causing automakers to cut production at plants.”

[Read More >](#)

## Daimler CEO says carmakers could face chip shortage into 2023

*Reuters, September 05, 2021*

“Soaring demand for semiconductor chips means the auto industry could struggle to source enough of them throughout next year and into 2023, though the shortage should be less severe by then, Daimler AG's (DAIGn.DE) CEO said.”

[Read More >](#)

## Despite Semiconductor Market Exuberance, Supply Chain Asymmetry Continues

*Informa, September 03, 2021*

“While the expectations for the semiconductor market continues to trend positively, the impact of COVID-19 and global trade tensions have cast a pall on this rosy picture. For 2022, the global semiconductor market is projected to grow by 10.1 percent to US\$ 606 billion, according to some estimates. But this growth is tempered by the long-tail impact of the pandemic on supply and demand in various industries.”

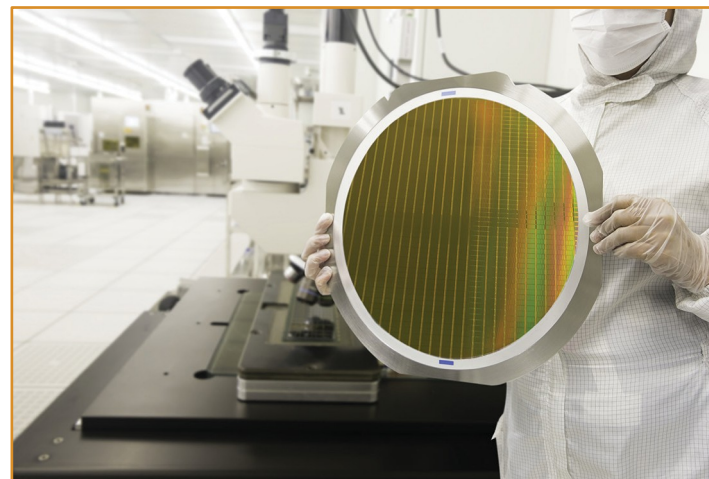
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# M&A Metrics

## Semiconductor Industry

M&A activity in the third quarter of 2021 remained flat compared to second quarter. The number of M&A transactions increased from 34 in Q1 2021 to 38 in Q2 2021 and Q3 2021, respectively. The number of large deals increased in the third quarter of 2021. The number of sub-\$50 million transactions increased from 27 in Q2 2021 to 28 in Q3 2021, whereas the number of transactions above \$100 million increased from 6 in Q2 2021 to 7 in Q3 2021. The total number of M&A transactions increased 52% year on year from 25 in Q3 2020 to 38 in Q3 2021.



## M&A Deal Summary Table | Count by Deal Size over Time

Transaction Value	Q 2018 4	Q 2019 1	Q 2019 2	Q3 2019	Q 2019 4	Q 2020 1	Q 2020 2	Q 2020 3	Q 2020 4	Q 2021 1	Q 2021 2	Q 2021 3
Not Disclosed	14	7	14	7	8	18	9	9	12	13	14	20
Under \$10 MM	7	5	4	6	5	3	2	4	11	6	6	3
\$10 - \$25 MM	1	1	3	1	2	1	3	2	5	3	3	3
\$25 - \$50 MM	2	3	3	2	2	2	3	2	9	2	4	2
\$50 - \$100 MM	3	4	1	2	4	2	0	1	4	1	5	3
\$100 - \$500 MM	6	2	2	1	5	5	1	3	5	3	3	5
\$500 MM+	1	3	3	1	1	0	0	4	4	6	3	2
<b>Total Transactions</b>	<b>34</b>	<b>25</b>	<b>30</b>	<b>20</b>	<b>27</b>	<b>31</b>	<b>18</b>	<b>25</b>	<b>50</b>	<b>34</b>	<b>38</b>	<b>38</b>

Source: FactSet

# Industry Metrics

## Industry Financial Data and Ratios

NAICs 334413 - Semiconductor and Related Device Manufacturing

Financial Metric	Last 12 Mo	2020	2019
Current Ratio	5.13	3.65	4.01
Gross Profit Margin	38.79%	44.50%	42.01%
Net Profit Margin	-14.14%	11.84%	2.70%
Accounts Receivable Days	47.84	52.65	48.9
Accounts Payable Days	36.28	46.43	42.34
Debt-to-Equity Ratio	0.26	0.91	1.16
Return on Equity	14.90%	23.84%	19.23%
Sales per Employee	--	--	--
Profit per Employee	--	--	--
Sales Growth	-3.74%	-3.45%	2.22%
Profit Growth	24.25%	17.01%	-22.92%

NAICs 511210 - Software Publishers

Financial Metric	Last 12 Mo	2020	2019
Current Ratio	3.22	3.54	2.49
Gross Profit Margin	74.16%	74.93%	76.95%
Net Profit Margin	7.05%	0.22%	-4.19%
Accounts Receivable Days	60.83	63.5	67.56
Accounts Payable Days	88.57	88.27	101.26
Debt-to-Equity Ratio	1.8	1.9	2.43
Return on Equity	39.02%	18.75%	22.25%
Sales per Employee	\$196,039	--	\$284,257
Profit per Employee	\$29,800	--	\$52,775
Sales Growth	18.64%	17.96%	18.54%
Profit Growth	38.55%	28.16%	18.72%

Source: Profit Cents

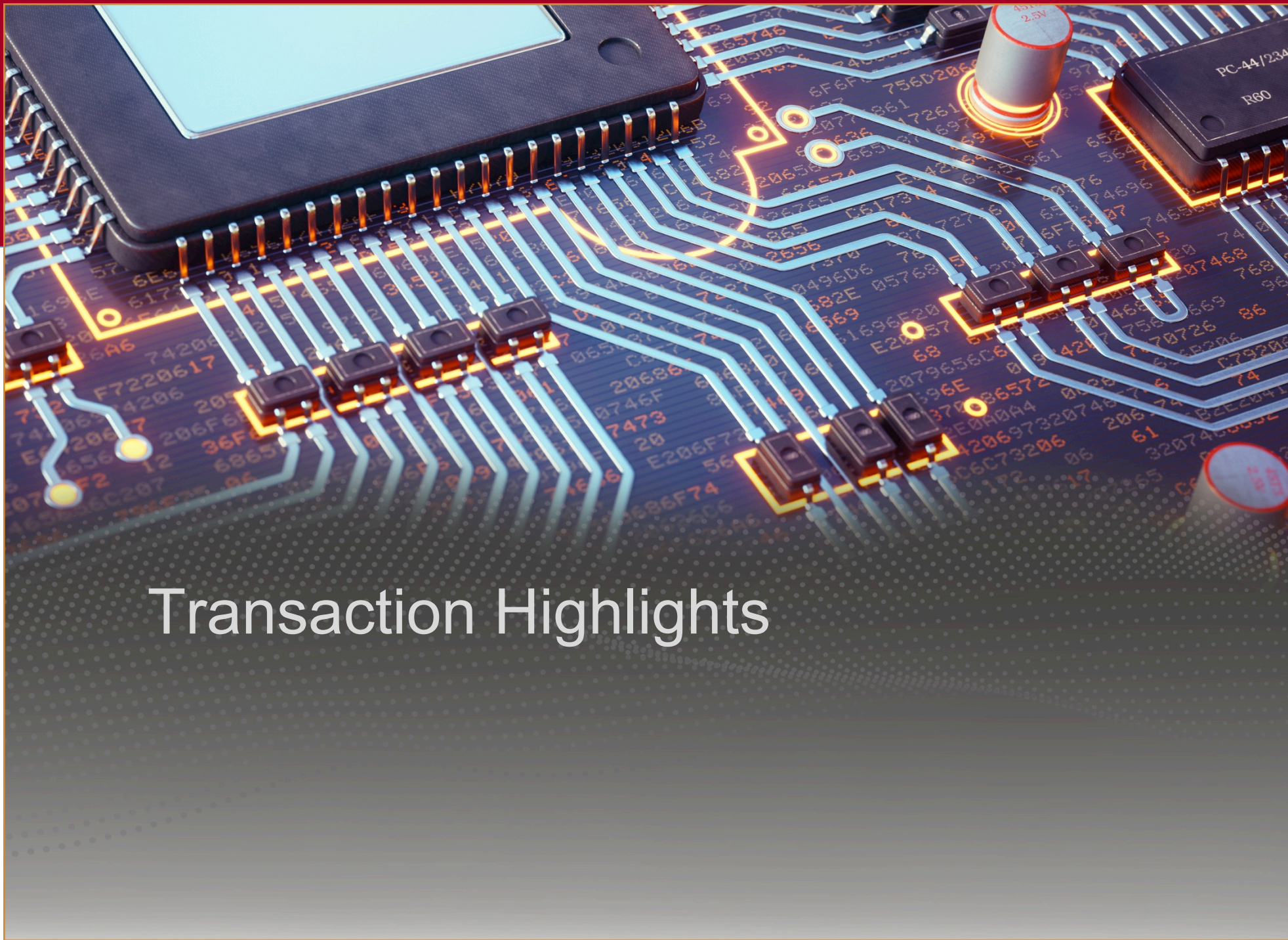
NAICs 333242 - Semiconductor Machinery Manufacturing

Financial Metric	Last 12 Mo	2020	2019
Current Ratio	1.52	2.38	4
Gross Profit Margin	34.39%	42.19%	46.53%
Net Profit Margin	5.99%	15.20%	15.36%
Accounts Receivable Days	35.13	39.27	61.68
Accounts Payable Days	75.96	44.68	47.59
Debt-to-Equity Ratio	1.12	1.37	1
Return on Equity	19.08%	25.06%	28.54%
Sales per Employee	--	--	--
Profit per Employee	--	--	--
Sales Growth	--	34.16%	-7.15%
Profit Growth	--	-58.88%	-57.09%

NAICs 334515 - Instrument Mfg for Measuring & Testing Electricity

Financial Metric	Last 12 Mo	2020	2019
Current Ratio	4.7	3.97	4.13
Gross Profit Margin	62.48%	73.18%	74.57%
Net Profit Margin	17.34%	14.40%	10.50%
Accounts Receivable Days	69.02	60.28	46.05
Accounts Payable Days	30.79	23.94	18.2
Debt-to-Equity Ratio	0.62	0.64	0.89
Return on Equity	30.02%	19.65%	15.60%
Sales per Employee	--	--	--
Profit per Employee	--	--	--
Sales Growth	5.54%	7.46%	-14.98%
Profit Growth	33.03%	62.91%	-5.91%





# Transaction Highlights

# Notable Transactions



In September 2021, Materion Corp agreed to acquire HCS-Electronic Materials, a subsidiary of H.C. Starck, Inc and ultimately owned by Opus Investment SARL, for US\$380 million in cash. The acquisition was funded through credit facility. The transaction expands Materion Corp's growth opportunities and market reach. The transaction is immediately accretive to Materion Corp's EBITDA margin and adjusted EPS. HCS-Electronic Materials is located in United States and manufactures semiconductor chips.



In September 2021, JSR Corp agreed to acquire the remaining 78.7% stake that it does not own Inpria Corp for US\$514 million. The acquisition will bring a key enhancement to JSR's product portfolio of leading-edge material solutions, which enables its semiconductor manufacturing customers and partners to continue to scale efficiently and reduce cost. Inpria Corp is located in Corvallis, Oregon, United States and develops advanced semiconductor materials.



In September 2021, MoSys Inc entered into a definitive agreement to acquire Peraso Technologies Inc for CAD96.1 million (US\$75.8 million) in stock, via reverse takeover. The deal expands the business services of both the companies. Peraso Technologies Inc is located in Toronto, Ontario, Canada and develops wireless chip sets.



In August 2021, Marvell Technology Inc entered into a definitive agreement to acquire Innovium Inc for US\$1.1 billion in stock. The transaction expands the Marvell Technology Inc business portfolio. Following the transaction, Puneet Agarwal, chief technology officer and founder of Innovium Inc will join Marvell Technology Inc. Innovium Inc is located in San Jose, California, United States and develops disruptive semiconductor-based solutions.



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# Select M&A Transactions

Date	Target Name	Acquirer Name	Enterprise Value (MM)	Revenue	EBITDA
09/21/21	Beijing Xinneng Electronic Technology Co. Ltd.	Toread Holdings Group Co. Ltd.	67	NM	NM
09/20/21	HCS-Electronic Materials	Materion Corp.	380	NM	NM
09/17/21	Inpria Corp.	JSR Corp.	653	NM	NM
09/15/21	Peraso Technologies, Inc.	MoSys, Inc.	76	NM	NM
09/08/21	Redlen Technologies, Inc.	Canon, Inc.	320	NM	NM
08/31/21	Wasco GmbH	Glamox AS	15	5	NM
08/30/21	DSP Group, Inc.	Synaptics, Inc.	479	126	-2
08/26/21	Celadon Systems, Inc.	MPI America, Inc.	10	NM	NM
08/25/21	GT Advanced Technologies, Inc.	Semiconductor Components Industries LLC	415	NM	NM
08/17/21	FIBERPRO, Inc.	Korea No. 9 Special Purpose Acquisition Co., Ltd.	58	NM	NM
08/05/21	Macronix International Co. Ltd. /6 Inch Wafer Fab/	Hon Hai Precision Industry Co., Ltd.	91	NM	NM
08/03/21	Innovium, Inc.	Marvell Technology, Inc.	1,154	NM	NM
08/03/21	Allegro MicroSystems (Thailand) Co., Ltd.	InnoLight Technology Corp.	27	NM	NM
07/29/21	Zhejiang Jolan Energy-Saving Technology Co., Ltd.	Zhejiang Guangsha Co., Ltd.	45	NM	NM
07/08/21	Lion Semiconductor, Inc.	Cirrus Logic, Inc.	335	NM	NM
(\$ in millions) <i>Source: Factset</i>					



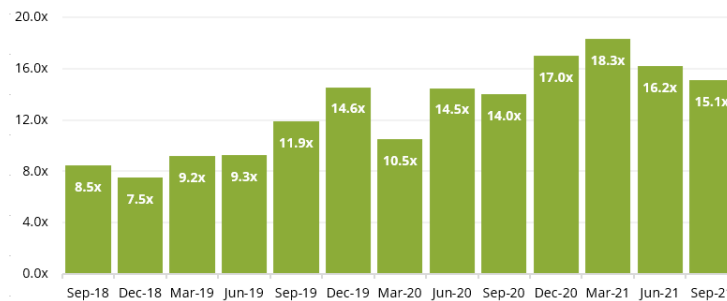
# Public Companies



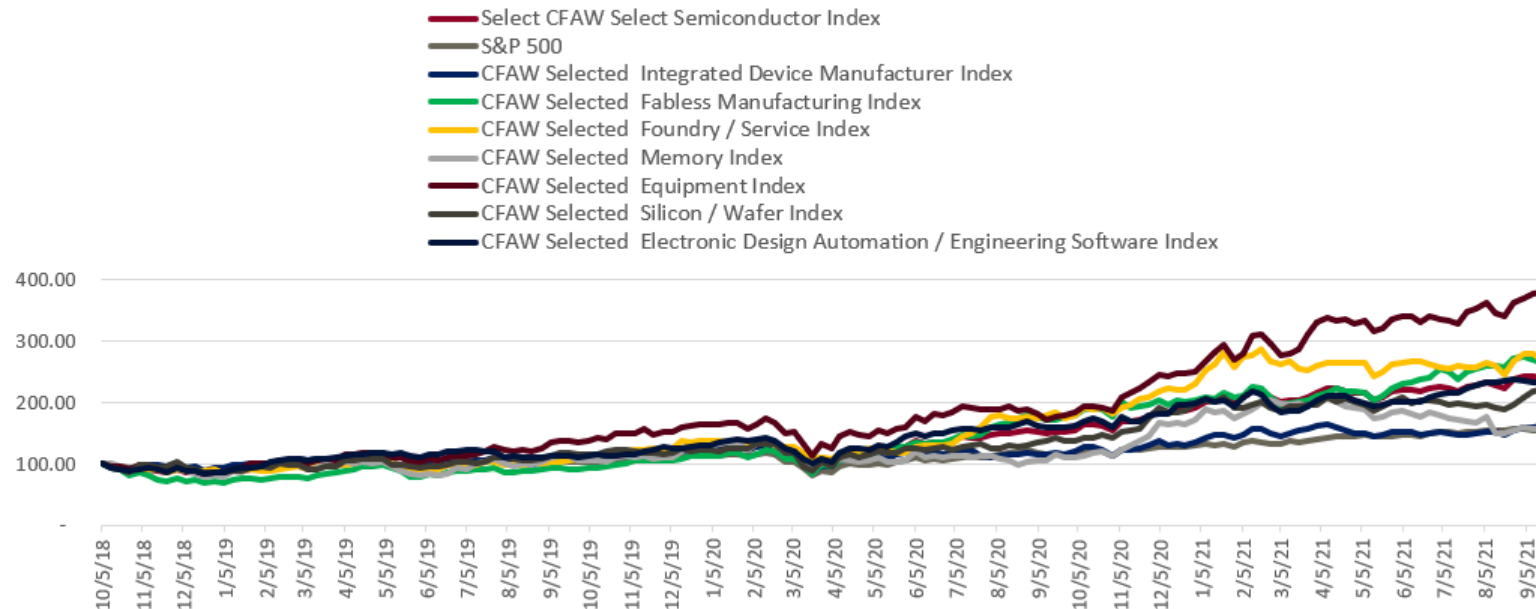
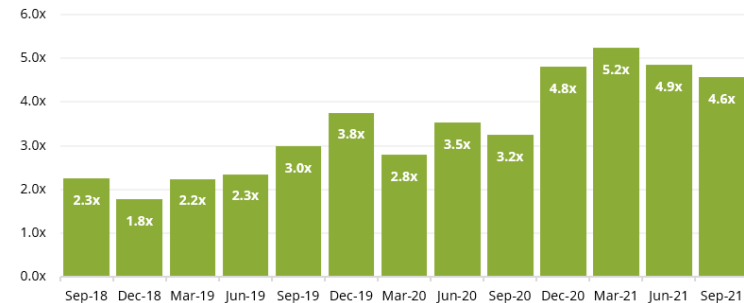
# Industry Performance

## CFAW Select Semiconductor Index

CFAW Select Semiconductor Index | Median EBITDA Multiples



CFAW Select Semiconductor Index | Median Revenue Multiples

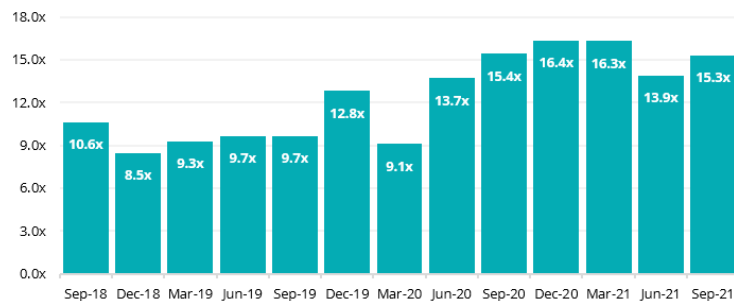


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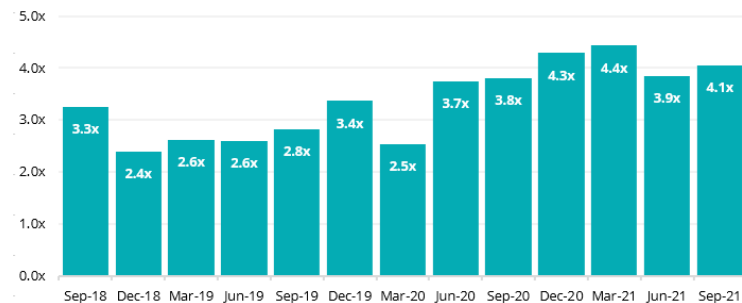
# Public Comparables

## Integrated Device Manufacturer

Integrated Device Manufacturer | Median EBITDA Multiples



Integrated Device Manufacturer | Median Revenue Multiples



Company \$USD in Millions	Share Price	Shares O/S	Market Cap	Enterprise Value	Revenues (LTM)	EBITDA (LTM)	Enterprise Value /	
							Revenues	EBITDA
ams AG	\$18.28	274	\$5,015	\$6,963	\$6,143	\$1,315	1.1x	5.3x
Analog Devices, Inc.	\$167.48	537	\$90,006	\$93,674	\$6,505	\$2,923	14.4x	32.0x
Infineon Technologies AG	\$41.17	1,306	\$53,767	\$58,846	\$12,571	\$3,050	4.7x	19.3x
Intel Corporation	\$53.28	4,057	\$216,157	\$226,709	\$77,615	\$34,445	2.9x	6.6x
Microchip Technology Incorporated	\$153.49	274	\$42,062	\$50,348	\$5,698	\$2,293	8.8x	22.0x
NXP Semiconductors NV	\$195.87	265	\$51,932	\$58,840	\$9,965	\$3,175	5.9x	18.5x
ON Semiconductor Corporation	\$45.77	431	\$19,705	\$21,878	\$5,915	\$1,392	3.7x	15.7x
Qorvo, Inc.	\$167.19	111	\$18,582	\$19,128	\$4,338	\$1,552	4.4x	12.3x
Renesas Electronics Corporation	\$12.51	1,936	\$24,228	\$25,418	\$7,433	\$2,249	3.4x	11.3x
Rohm Co., Ltd.	\$95.36	103	\$9,822	\$6,900	\$3,663	\$825	1.9x	8.4x
STMicroelectronics NV	\$43.77	911	\$39,853	\$38,483	\$11,988	\$2,577	3.2x	14.9x
Texas Instruments Incorporated	\$192.21	923	\$177,450	\$176,311	\$16,762	\$8,550	10.5x	20.6x
Mean				\$65,292	\$14,050	\$5,362	5.4x	15.6x
Median				\$44,416	\$6,969	\$2,435	4.1x	15.3x

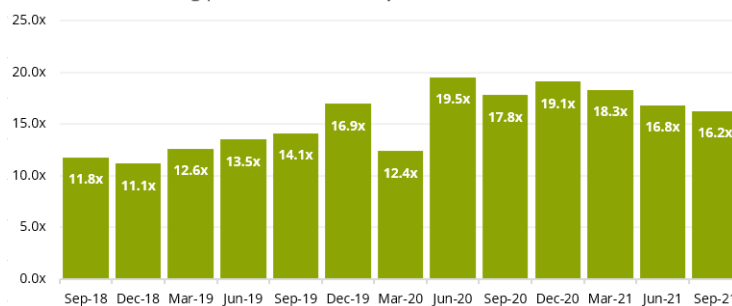
Source: FactSet



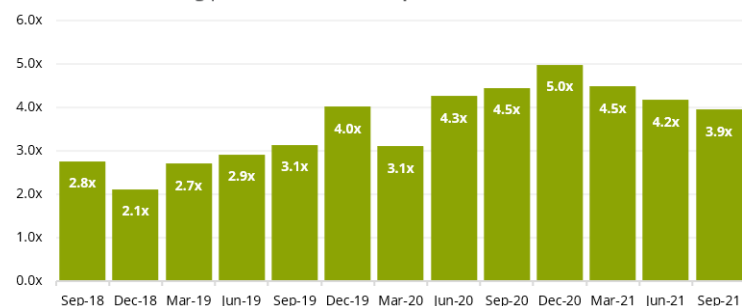
# Public Comparables

## Fabless Manufacturing

Fabless Manufacturing | Median EBITDA Multiples



Fabless Manufacturing | Median Revenue Multiples



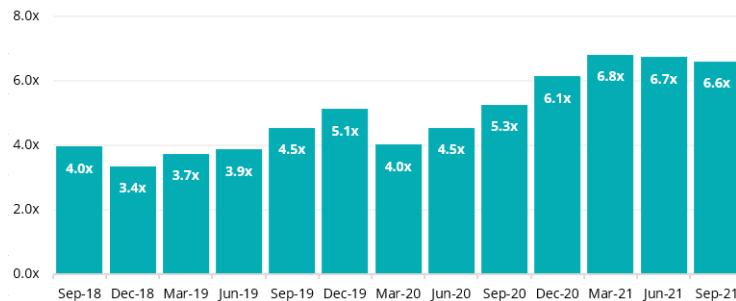
Company \$USD in Millions	Share Price	Shares O/S	Market Cap	Enterprise Value	Revenues (LTM)	EBITDA (LTM)	Enterprise Value /	
							Revenues	EBITDA
Marvell Technology, Inc.	\$60.31	824	\$49,673	\$54,232	\$3,456	\$619	15.7x	87.6x
MediaTek Inc	\$32.48	1,599	\$51,933	\$44,417	\$15,010	\$3,135	3.0x	14.2x
Qualcomm Inc	\$128.98	1,128	\$145,489	\$148,322	\$32,576	\$11,830	4.6x	12.5x
Advanced Micro Devices, Inc.	\$102.90	1,213	\$124,814	\$121,575	\$13,340	\$2,943	9.1x	41.3x
Broadcom Inc.	\$484.93	412	\$199,605	\$228,984	\$26,510	\$13,911	8.6x	16.5x
Cirrus Logic, Inc.	\$82.35	58	\$4,743	\$4,439	\$1,404	\$277	3.2x	16.0x
Dialog Semiconductor plc	\$78.14	77	\$5,992	\$5,085	\$1,523	\$297	3.3x	17.1x
Novatek Microelectronics Corp.	\$14.72	609	\$8,955	\$7,937	\$3,686	\$1,028	2.2x	7.7x
NVIDIA Corporation	\$207.16	2,500	\$517,900	\$510,909	\$21,897	\$8,842	23.3x	57.8x
Realtek Semiconductor Corp	\$17.79	511	\$9,083	\$7,768	\$3,290	\$513	2.4x	15.1x
Skyworks Solutions, Inc.	\$164.78	165	\$27,213	\$25,900	\$4,755	\$1,911	5.4x	13.6x
Mean				\$105,415	\$11,586	\$4,119	7.3x	27.2x
Median				\$44,417	\$4,755	\$1,911	4.6x	16.0x

Source: FactSet

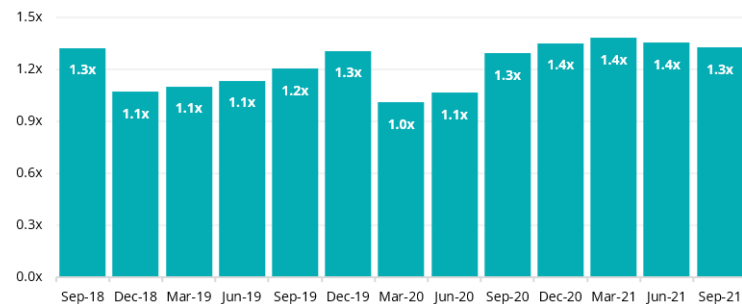
# Public Comparables

## Foundry / Service

Foundry / Service | Median EBITDA Multiples



Foundry / Service | Median Revenue Multiples



Company \$USD in Millions	Share Price	Shares O/S	Market Cap	Enterprise Value	Revenues (LTM)	EBITDA (LTM)	Enterprise Value /	
							Revenues	EBITDA
Taiwan Semiconductor Manufacturing Co., Ltd.	\$20.82	25,930	\$539,819	\$529,303	\$51,020	\$35,113	10.4x	15.1x
Amkor Technology, Inc.	\$24.95	244	\$6,096	\$6,485	\$5,458	\$1,144	1.2x	5.7x
ASE Technology Holding Co., Ltd.	\$3.91	4,383	\$17,148	\$22,451	\$18,210	\$3,402	1.2x	6.6x
Powertech Technology Inc.	\$3.75	779	\$2,922	\$3,583	\$2,705	\$910	1.3x	3.9x
United Microelectronics Corp.	\$2.30	12,423	\$28,538	\$25,884	\$6,609	\$2,544	3.9x	10.2x
Mean				\$117,541	\$16,800	\$8,623	3.6x	8.3x
Median				\$22,451	\$6,609	\$2,544	1.3x	6.6x

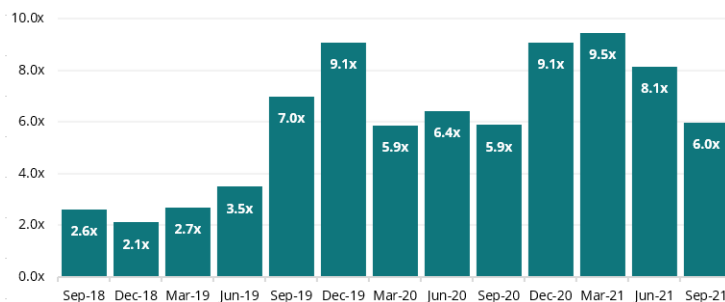
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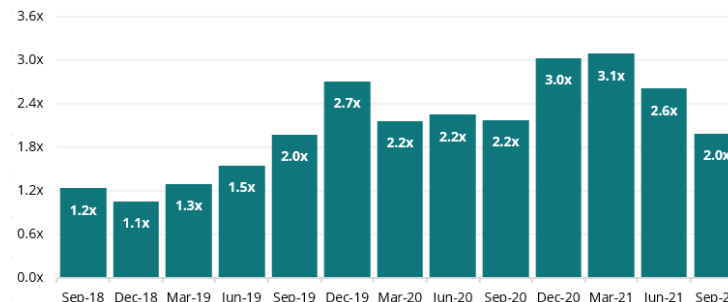
# Public Comparables

## Memory

Memory | Median EBITDA Multiples



Memory | Median Revenue Multiples



Company \$USD in Millions	Share Price	Shares O/S	Market Cap	Enterprise Value	Revenues (LTM)	EBITDA (LTM)	Enterprise Value /	
							Revenues	EBITDA
SK hynix Inc	\$86.99	728	\$63,331	\$67,676	\$30,736	\$14,527	2.2x	4.7x
Macronix International Co., Ltd.	\$1.32	1,856	\$2,455	\$2,515	\$1,481	\$381	1.7x	6.6x
Micron Technology, Inc.	\$70.98	1,119	\$79,400	\$78,074	\$27,705	\$13,053	2.8x	6.0x
Nanya Technology Corporation	\$2.37	3,097	\$7,326	\$4,929	\$2,475	\$997	2.0x	4.9x
Winbond Electronics Corp.	\$0.95	3,980	\$3,786	\$3,966	\$2,913	\$626	1.4x	6.3x
Mean				\$31,432	\$13,062	\$5,917	2.0x	5.7x
Median				\$4,929	\$2,913	\$997	2.0x	6.0x

Source: FactSet

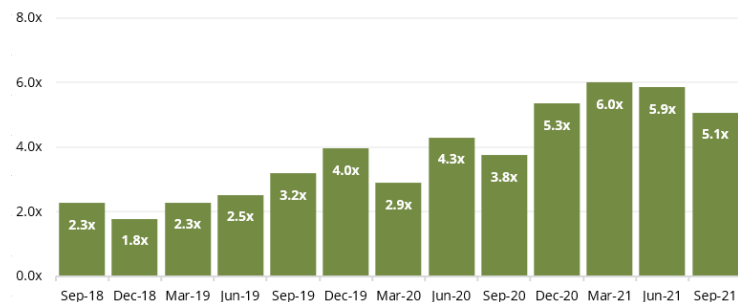
# Public Comparables

## Equipment

Equipment | Median EBITDA Multiples



Equipment | Median Revenue Multiples



Company \$USD in Millions	Share Price	Shares O/S	Market Cap	Enterprise Value	Revenues (LTM)	EBITDA (LTM)	Enterprise Value /	
							Revenues	EBITDA
Advantest Corp.	\$89.89	199.5	\$17,938	\$16,481	\$3,222	\$826	5.1x	20.0x
Applied Materials, Inc.	\$128.73	902.9	\$116,234	\$115,443	\$21,633	\$6,857	5.3x	16.8x
ASM Pacific Technology Limited	\$11.07	410.8	\$4,546	\$4,622	\$2,129	\$350	2.2x	13.2x
ASML Holding NV	\$748.57	413.3	\$309,404	\$306,277	\$19,789	\$7,132	15.5x	42.9x
KLA Corporation	\$334.51	152.0	\$50,843	\$51,893	\$6,918	\$2,833	7.5x	18.3x
Lam Research Corporation	\$569.15	140.8	\$80,138	\$79,574	\$14,625	\$4,781	5.4x	16.6x
SCREEN Holdings Co., Ltd	\$86.13	50.8	\$4,375	\$3,724	\$3,157	\$384	1.2x	9.7x
Teradyne, Inc.	\$109.17	165.0	\$18,010	\$17,201	\$3,446	\$1,186	5.0x	14.5x
Tokyo Electron Ltd.	\$445.17	157.2	\$69,986	\$66,261	\$14,423	\$3,975	4.6x	16.7x
ASM International N.V.	\$391.96	49.3	\$19,322	\$18,362	\$1,749	\$560	10.5x	32.8x
Coherent, Inc.	\$250.09	24.5	\$6,136	\$6,261	\$1,413	\$179	4.4x	35.0x
IPG Photonics Corporation	\$158.40	53.5	\$8,474	\$7,019	\$1,372	\$417	5.1x	16.8x
Ultra Clean Holdings, Inc.	\$42.60	44.7	\$1,904	\$2,139	\$1,666	\$202	1.3x	10.6x
Disco Corporation	\$280.98	36.1	\$10,141	\$9,232	\$1,835	\$622	5.0x	14.8x
Mean				\$50,321	\$6,955	\$2,165	5.6x	19.9x
Median				\$16,841	\$3,189	\$724	5.1x	16.7x

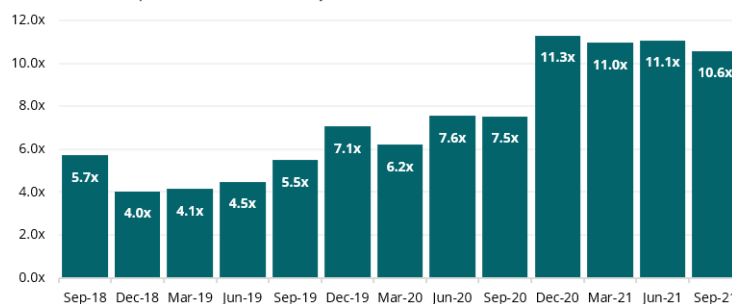
Source: FactSet



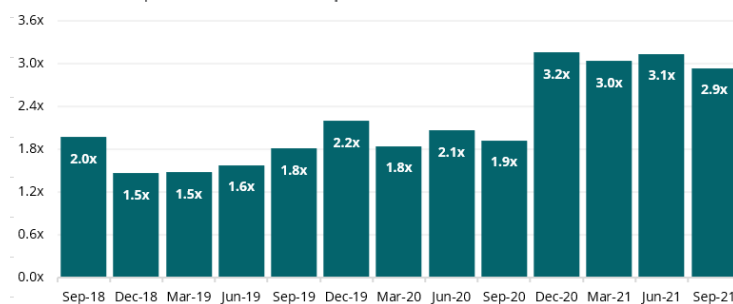
# Public Comparables

## Silicon / Wafer

Silicon / Wafer | Median EBITDA Multiples



Silicon / Wafer | Median Revenue Multiples



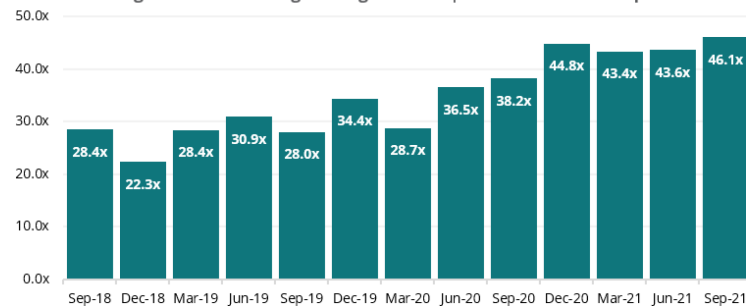
Company \$USD in Millions	Share Price	Shares O/S	Market Cap	Enterprise Value	Revenues (LTM)	EBITDA (LTM)	Enterprise Value /	
							Revenues	EBITDA
Elkem ASA	\$4.34	639	\$2,778	\$3,436	\$3,089	\$458	1.1x	7.5x
Shin-Etsu Chemical Co Ltd	\$168.87	417	\$70,362	\$60,902	\$14,742	\$5,425	4.1x	11.2x
GlobalWafers Co., Ltd.	\$28.54	437	\$12,477	\$12,313	\$2,043	\$756	6.0x	16.3x
Siltronic AG	\$158.78	30	\$4,763	\$4,344	\$1,479	\$411	2.9x	10.6x
Sino-American Silicon Products Inc.	\$6.51	586	\$3,819	\$4,513	\$2,259	\$777	2.0x	5.8x
Soitec SA	\$217.77	34	\$7,313	\$7,310	\$680	\$156	10.7x	47.0x
SUMCO Corporation	\$20.17	290	\$5,854	\$6,686	\$2,835	\$806	2.4x	8.3x
Mean				\$14,215	\$3,875	\$1,255	4.2x	15.2x
Median				\$6,686	\$2,259	\$756	2.9x	10.6x

Source: FactSet

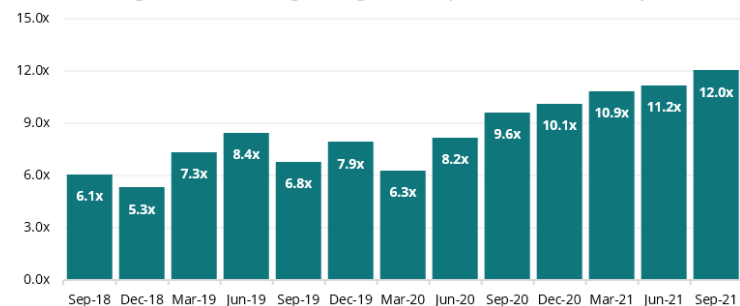
# Public Comparables

## Electronic Design Automation / Engineering Software

Electronic Design Automation / Engineering Software | Median EBITDA Multiples



Electronic Design Automation / Engineering Software | Median Revenue Multiples



Company \$USD in Millions	Share Price	Shares O/S	Market Cap	Enterprise Value	Revenues (LTM)	EBITDA (LTM)	Enterprise Value /	
							Revenues	EBITDA
ANSYS, Inc.	\$340.45	87.3	\$29,705	\$29,632	\$1,801	\$643	16.5x	46.1x
Autodesk, Inc.	\$285.17	219.9	\$62,695	\$63,855	\$4,056	\$804	15.7x	79.5x
AVEVA Group plc	\$48.54	301.4	\$14,629	\$15,261	\$1,071	\$320	14.2x	47.7x
Cadence Design Systems, Inc.	\$151.44	276.8	\$41,916	\$41,416	\$2,891	\$903	14.3x	45.8x
Dassault Systemes SA	\$52.69	1,329.6	\$70,060	\$71,411	\$5,464	\$1,777	13.1x	40.2x
PDF Solutions, Inc.	\$23.04	37.2	\$858	\$723	\$97	(\$12)	7.4x	NM
PTC Inc.	\$119.79	117.4	\$14,061	\$15,377	\$1,717	\$432	9.0x	35.6x
Synopsys, Inc.	\$299.41	152.5	\$45,661	\$44,807	\$4,075	\$948	11.0x	47.3x
Zuken Inc.	\$36.61	23.3	\$852	\$592	\$281	\$40	2.1x	14.8x
Rambus Inc.	\$22.20	108.9	\$2,418	\$2,138	\$274	\$36	7.8x	59.0x
Mean				\$28,521	\$2,173	\$589	11.1x	46.2x
Median				\$22,505	\$1,759	\$538	12.0x	46.1x

Source: FactSet

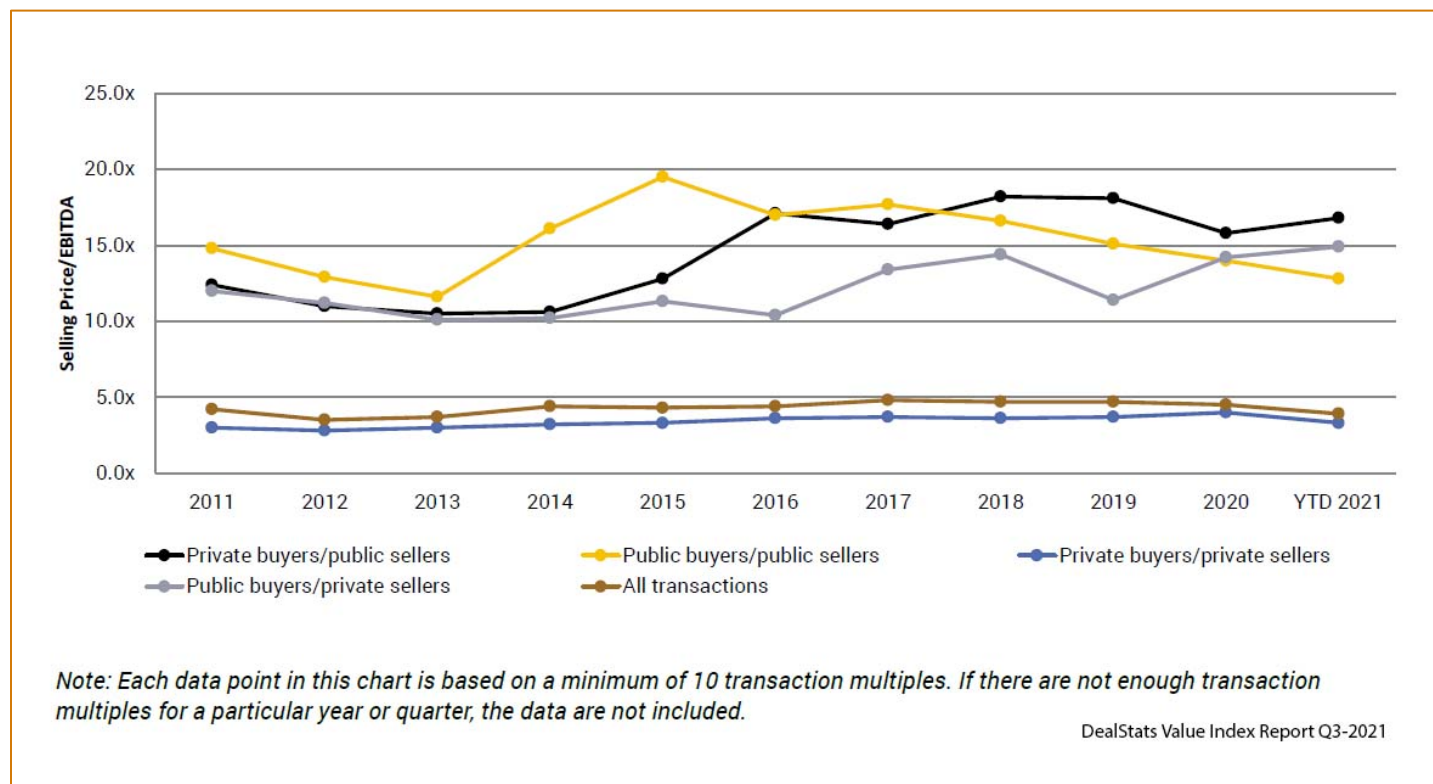


# Public Vs. Private Comparables

## Valuation Premiums Can Be Considerable

Regardless of industry, publicly traded companies often trade at premium valuations to privately held companies. This is reflected in M&A transactions and can lead to unrealistic value expectations for some business owners. The chart below illustrates this variance and shows that the variance has been both long term and growing.

Transactions between private buyer and private seller tend to be small by comparison and thus do not benefit from a “size” premium that is associated with transactions in general. While this chart does not breakout private equity transactions, our analysis indicates those transactions usually fall between public and private and move closer to public as size increases.





# CFA Overview



# About CFA

## Who We Are / What We Do

Corporate Finance Associates (CFA) is an independent international investment banking firm serving middle-market businesses. For over 60 years Corporate Finance Associates has been advocating on behalf of business owners who are restructuring a company, either through divestiture, merger, acquisition or recapitalization. Combining the knowledge and leverage of a larger bank with the customer focused detail of a boutique firm, from inception to completion, our senior principals provide hands-on expertise to clients buying, selling or recapitalizing a business.

This Semiconductors and Advanced Materials Industry Practice Group was established to draw on the experience of CFA advisors, many of whom as former business owners and CEOs, have first-hand knowledge and have completed many transactions in this industry. Working with your local CFA representative, you can be sure that the collective wealth of knowledge is available to every CFA client.



### Sell-Side Advisory

Whether as a divestiture strategy or a recapitalization strategy selling all or part of a business requires equal parts creative thinking, critical analysis, expert advice, sound planning and flawless execution. Having the right team of investment banking professionals working for you is critical to ensure success.



### Capital Markets

Our commitment to remaining independent from any investment or lending affiliates ensures that we deliver unbiased guidance. It also promotes maximum competition among lending sources, helping to fully leverage value for our clients. Our role is to help you raise the type of capital that best fits your needs.



### Buy-Side Advisory

Growth through acquisition is a complex process. It involves strategy, planning, critical analysis, coordination and negotiation. When you want to take advantage of the fast growth offered by a consolidation or roll-up, CFA's broad reach, sources of financing and efficient closings can help you achieve your business growth goals.



### Financial Advisory

Now that you have made the decision to raise capital for your business, choosing the right investment banker is critical. Whether you are buying out a partner, financing an acquisition or seeking growth capital, CFA is the right choice to help you achieve your financing goals.



### Exit Planning

Every business will ultimately undergo a transfer via sale or merger, a charitable donation, a transfer to a child or relative or even bankruptcy, liquidation or death. Every ownership transfer carries with it a unique set of consequences and the best consequences usually begin with a clearly defined exit plan.



### Business Valuation

"What is my business worth" is a question we often hear from business owners contemplating a business sale, merger or recapitalization. Answering this question depends on many factors, including the business valuation methods that are employed in the calculation.

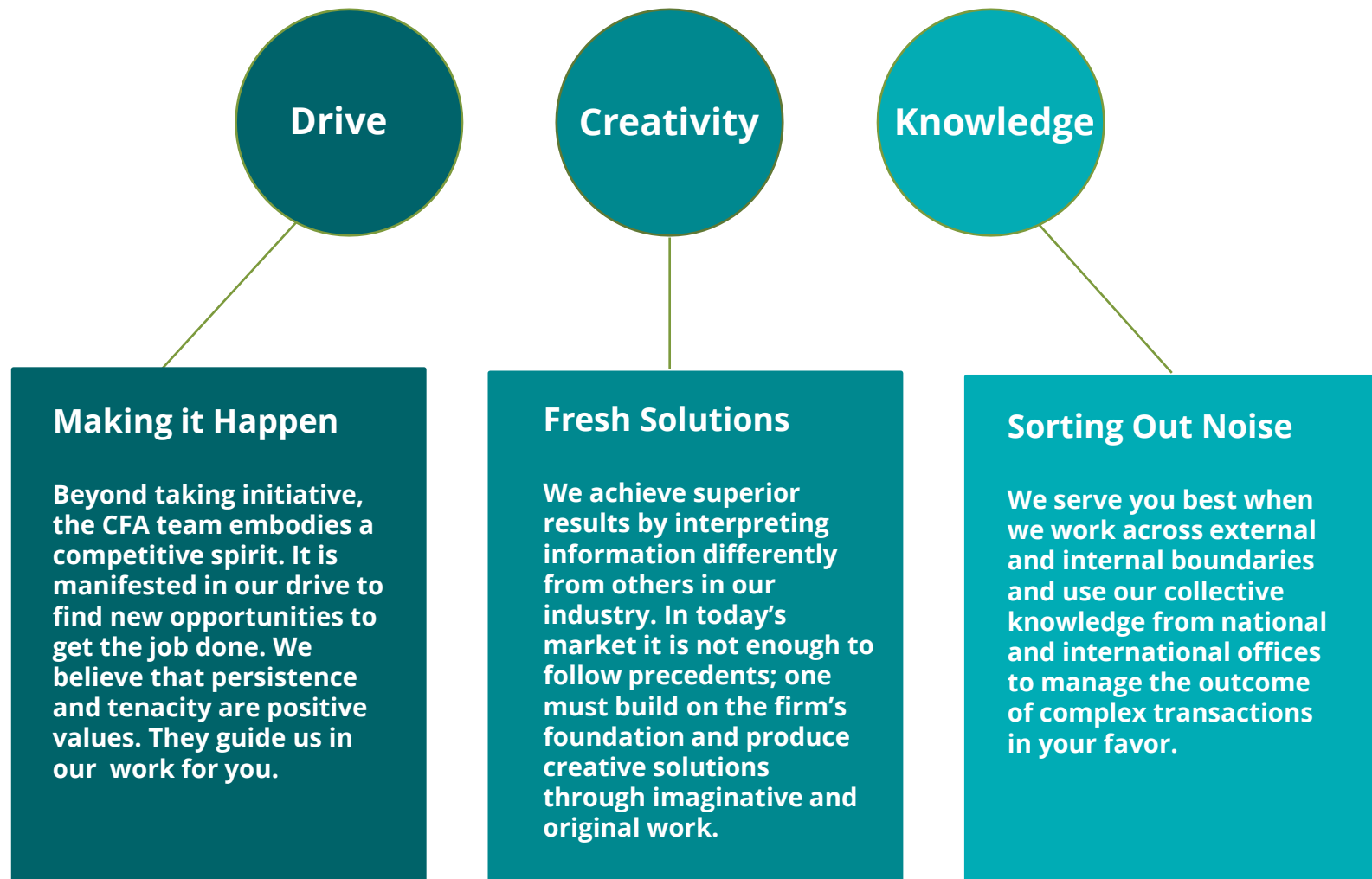
# Local Service, Global Reach

## Where We Are

With offices across the USA and in Mexico, India, Austria, Belgium, Denmark, France, Germany, Ireland, Italy, Netherlands, Portugal, Switzerland and the United Kingdom providing middle-market companies with a wide range of M&A, financial advisory services and access to capital resources.



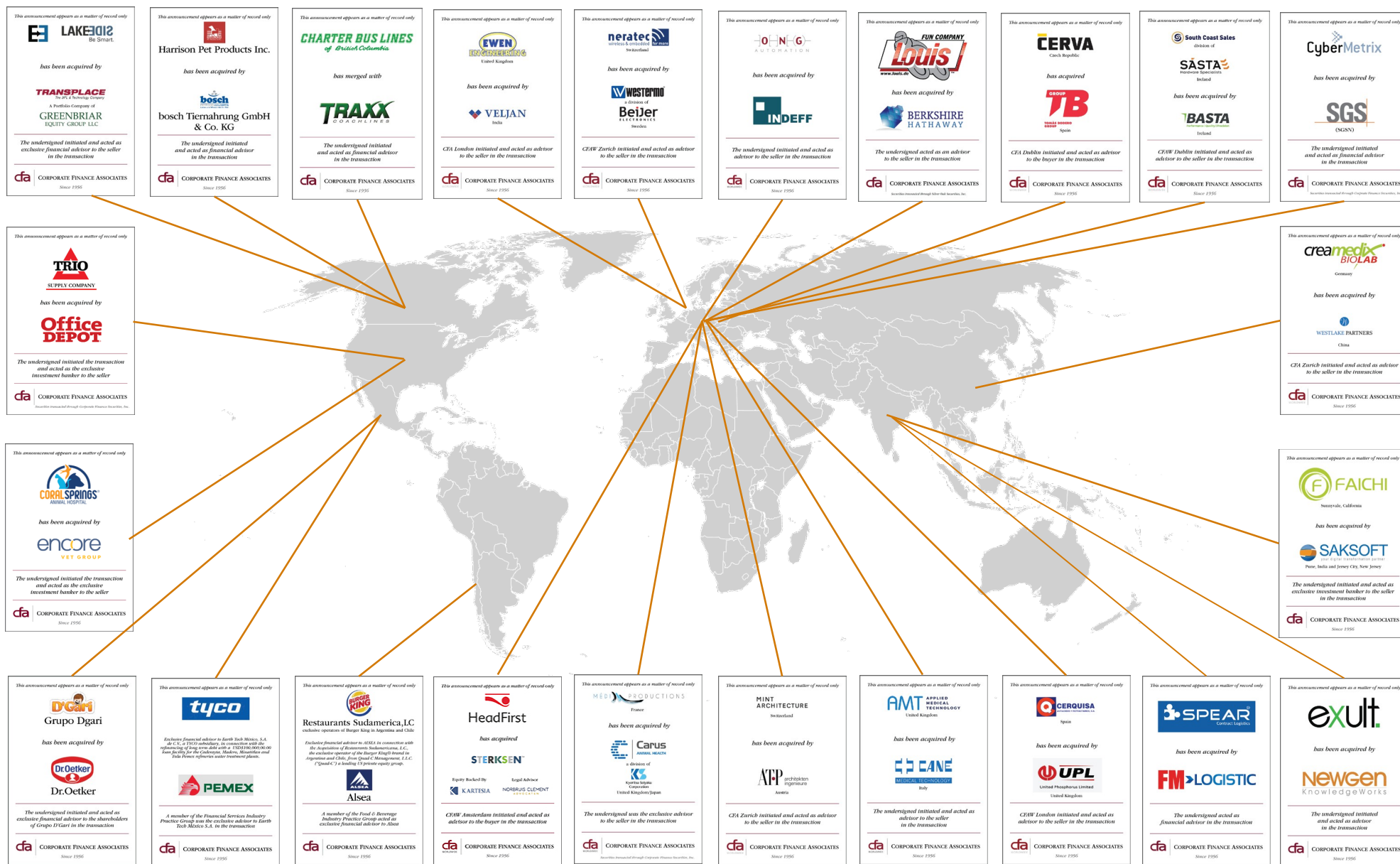
# Delivering Results



**Founded in 1956 • 70 Managing Directors • 37 Offices Worldwide • Billions in M&A Transactions**

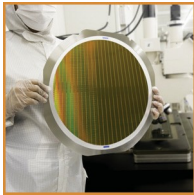


# Worldwide Transactions



# Industry Practice Groups

## Semiconductors and Advanced Materials



The Semiconductors and Advanced Materials practice group is comprised of accomplished dealmakers with extensive experience in advising both public and private companies in the industry. These dealmakers offer expert service in acquisitions, divestitures, financing, and strategic planning to a wide range of companies operating in multiple subsectors including:

- Semiconductor Equipment
- Fabless Semiconductor Companies
- Integrated Device Manufacturers
- Electronic Design Automation
- Advanced Materials, Chemicals and Consumables
- Micro-Electro-Mechanical Systems (MEMS)
- Photonics
- Discrete Devices
- Renewable Energy Technology

Whether you want to acquire, merge, sell, or finance, let CFA's industry knowledge, international resources and proven dealmaking skills work for you. We research, identify, qualify, advocate, negotiate and help steer you through the mine fields of due diligence to maximize your value and secure your objective.

Agriculture  
Aerospace/Defense/Government  
Business Services  
Commercial Real Estate  
Consumer Retail  
Energy  
Engineering/Construction  
Equipment  
Financial Services  
Food/Beverage  
Healthcare  
Hospitality/Leisure  
Industrials  
Metal Fabrication  
Plastics/Rubber  
Print/Packaging  
Semi Conductor  
Technology/Media/Telecom  
Transportation/Logistics/Supply Chain  
Wholesale Distribution

# Selected Industry Transactions

<p><i>This announcement appears as a matter of record only</i></p> <p><b>IC ENABLE</b> Semiconductor Layout and Design Services</p> <p><i>has been acquired by</i></p> <p><b>SYNERGUS</b></p> <p><i>The undersigned initiated the transaction and acted as the exclusive investment banker to the seller</i></p> <p><b>cfa</b>   CORPORATE FINANCE ASSOCIATES <small>Securities transacted through Corporate Finance Securities, Inc.</small></p>	<p><i>This announcement appears as a matter of record only</i></p> <p>\$22,000,000</p> <p><b>Semiconductor Systems, Inc.</b></p> <p><i>has been acquired by</i></p> <p><b>International, Inc.</b> (NASDAQ: FSID)</p> <p><i>A CFA Managing Director acted as exclusive financial and strategic advisor to Semiconductor Systems, Inc. and managed this transaction</i></p> <p><b>cfa</b>   CORPORATE FINANCE ASSOCIATES <small>Since 1956</small></p>	<p><i>This announcement appears as a matter of record only</i></p> <p>\$42,500,000</p> <p><b>NOAH PRECISION, INC.</b></p> <p><i>has been acquired by</i></p> <p><b>ADVANCED ENERGY</b> (NASDAQ: AEIS)</p> <p><i>A CFA Managing Director acted as exclusive financial and strategic advisor to Noah Precision, Inc. and managed this transaction</i></p> <p><b>cfa</b>   CORPORATE FINANCE ASSOCIATES <small>Since 1956</small></p>	<p><i>This announcement appears as a matter of record only</i></p> <p><b>rodel, Inc.</b></p> <p><i>has licensed certain technology from and entered into a joint venture with</i></p> <p><b>CLARIANT</b> (SWL: CHE; CLN)</p> <p><i>A CFA Managing Director acted as exclusive financial and strategic advisor to rodel, Inc. and managed this transaction</i></p> <p><b>cfa</b>   CORPORATE FINANCE ASSOCIATES <small>Since 1956</small></p>	<p><i>This announcement appears as a matter of record only</i></p> <p>\$25,000,000</p> <p><b>Supercritical Systems, Inc.</b></p> <p><i>has been acquired by</i></p> <p><b>TOKYO ELECTRON LIMITED</b> (OTN: TOELF)</p> <p><i>A CFA Managing Director acted as exclusive financial and strategic advisor to Supercritical Systems, Inc. and managed this transaction</i></p> <p><b>cfa</b>   CORPORATE FINANCE ASSOCIATES <small>Since 1956</small></p>
<p><i>This announcement appears as a matter of record only</i></p> <p>\$45,000,000</p> <p><b>Ion Systems, Inc.</b></p> <p><i>has received an investment from</i></p> <p><b>Thomas Weisel Partners</b></p> <p><i>A CFA Managing Director acted as exclusive financial and strategic advisor to Ion Systems, Inc. and managed this transaction</i></p> <p><b>cfa</b>   CORPORATE FINANCE ASSOCIATES <small>Since 1956</small></p>	<p><i>This announcement appears as a matter of record only</i></p> <p><b>Sumitomo Heavy Industries, Ltd.</b></p> <p><i>has sold the assets and electron beam technology of its subsidiary RPC Industries, Inc. to</i></p> <p><b>INTEVAC</b> (NASDAQ: IVAC)</p> <p><i>A CFA Managing Director acted as exclusive financial advisor to Sumitomo Heavy Industries, Ltd. and managed this transaction</i></p> <p><b>cfa</b>   CORPORATE FINANCE ASSOCIATES <small>Since 1956</small></p>	<p><i>This announcement appears as a matter of record only</i></p> <p><b>PLANAR SEMICONDUCTOR AG</b></p> <p><i>Provided strategic and financial advisory services</i></p> <p><i>A CFA Managing Director acted as exclusive strategic and financial advisor</i></p> <p><b>cfa</b>   CORPORATE FINANCE ASSOCIATES <small>Since 1956</small></p>	<p><i>This announcement appears as a matter of record only</i></p> <p><b>MICRONIC LASER SYSTEMS</b></p> <p><i>has entered into an alliance for joint development of new lithography tools, including direct write systems, and has received a convertible loan from</i></p> <p><b>ASML</b> (NASDAQ: ASML)</p> <p><i>A CFA Managing Director acted as exclusive financial advisor to Micronic Laser Systems and managed this transaction</i></p> <p><b>cfa</b>   CORPORATE FINANCE ASSOCIATES <small>Since 1956</small></p>	<p><i>This announcement appears as a matter of record only</i></p> <p><b>Semifab, Inc.</b></p> <p><i>has been acquired by</i></p> <p><b>ASYST</b> ASYST TECHNOLOGIES, INC. (NASDAQ: ASYT)</p> <p><i>A CFA Managing Director acted as exclusive financial and strategic advisor to Semifab, Inc. and managed this transaction</i></p> <p><b>cfa</b>   CORPORATE FINANCE ASSOCIATES <small>Since 1956</small></p>