Semiconductor Sector Valuations Examined
Growth Required to Boost Shares

What will it take to drive semiconductor sector share prices higher? The short answer is: growth.

The semiconductor sector entered this year with a counter-seasonal, cyclical downturn and share prices have outperformed broader equity markets ahead of the expected recovery. The problem is that share prices appear to have raced ahead on the expectations of a respectable upturn that is looking pretty shallow at this point, in my opinion. While pockets of investment opportunities exist, this confluence of events has turned me bearish from a sector perspective: I believe the potential for upside is relatively limited, while downside could be triggered by any one of a number of potential macroeconomic or political risks.

Instead of whining and complaining about valuation levels, punk growth rates, and macroeconomic and political pitfalls, I am choosing to approach the issue of likely share price action over the next few months from an optimistic perspective. That is: what will it take to drive stocks higher? Why? Because I believe there are some very good reasons for equities to outperform other financial asset classes over the longer-term and, frankly, my bearish disposition has put me on the defensive after last month's stock market rally. I will be using the data in my Intel valuation spreadsheet as sign-post examples for the current state of fundamental valuations across the semiconductor and broader technology sectors.

Long-Term Gain: I think equities are well positioned to outperform other asset classes over the next several years for two primary reasons. First, because central banks around the world have been printing money like crazy since the crash of 2008 and equities will eventually ride the tide of inflation in terms of both revenue and cost. Profitability and real growth won't necessarily benefit, but nominal revenue growth will always accommodate currency devaluation as a baseline. And second, because equities are the 'best house in a bad neighborhood.' I'm surprised that bonds haven't corrected over the last couple of years with interest rates hovering around all-time lows, but sooner or later those rates will rise and fixed income investors will get creamed. A side benefit for equities will be multiple expansion, since baseline rate-of-return has traditionally been weighed against those interest rates.

Short-Term Pain: In the near term, however, interest rates, inflation and growth rates remain low. And since all three of these are important factors driving valuation multiples for equities, we have seen multiple-compression in equity markets since the crash of 2008. And as long as the magnitude of those factors remains constrained, then I expect equity valuation multiples to remain constrained as well. The trick, of course, is what happens in terms of the timing and profile during the 'medium-term' as the 'short-term' transitions to the 'long-term.'

Growth Mandate: In terms of comparing historical average valuation levels for specific equities, the year 2008 marks a critical inflection point: averages over the years before 2008 are much higher than averages over the years since 2008. I consider the definition of 'equity markets returning to normal' as valuations reverting back to longer term average levels. And what will it take for that to happen? Well, any one or combination of inflation and rising interest rates or growth. And in an environment absent of inflation and rising interest rates, that leaves growth.

It turns out the semiconductor industry growth rates also matured and slowed around the same time on a macro basis. It is currently a mid-single-digit kind of growth industry, while a few years ago it was posting solid double-digits in the +15+20% range. I would argue that semiconductors (and technology in general) continue to command growth rate premiums to GDP of two- to three-times, but GDP growth under +2% still only yields chip industry growth in the mid-single-digit range.

Valuation Overview: I do not consider price-book to be a meaningful valuation ratio for the semiconductor sector, in general, because of the huge variance in book values between integrated manufacturers, foundries, fabless and IP business models, but also because of a significant portion of intangible book value reflected in goodwill and acquisition-related intangibles on balance sheets across the sector.

Price-earnings is a very robust metric, but also inherently problematic in the highly cyclical and volatile chip sector. The volatility of the business itself leads to a very wide range of earnings over the course of a business cycle and the cyclical nature of the sector results in meaningful periods of financial losses that render historical datasets

Intel

Relative Valuation

Company	Ticker	Price 6/13/2013	52-Week Low	52-Week High	CY EPS 2011	CY EPS 2012	CY EPS 2013	CY EPS 2014	CY P/E 2011	CY P/E 2012	CY P/E 2013	CY P/E 2014	Shares (mil)	CAP ($ mil)	Price-Sales TTM	Price-Sales Cur FY	Price-Sales Nxt FY	FY Ends	Qtr Div/sh	Div Yield
Intel *	**INTC**	**24.99**	**19.23**	**27.75**	**2.39**	**2.13**	**1.84**	**2.12**	**10.5**	**11.7**	**13.6**	**11.8**	**5,080**	**126,949**	**2.4**	**2.4**	**2.2**	**Dec**	**$0.225**	**3.6%**
Apple	AAPL	435.96	385.10	705.07	35.11	44.10	40.97	43.39	12.4	9.9	10.6	10.0	946	412,418	2.4	2.4	2.2	Sep	$3.05	2.8%
Applied Materials	AMAT	15.60	9.95	15.81	1.12	0.63	0.84	1.18	13.9	24.8	18.6	13.2	1,203	18,767	2.5	2.4	2.0	Oct	$0.10	2.6%
Cisco Systems	CSCO	24.35	14.96	24.78	1.72	1.94	2.05	2.14	14.2	12.6	11.9	11.4	5,387	131,173	2.7	2.7	2.6	Jul	$0.17	2.8%
Dell	DELL	13.45	8.69	14.64	2.14	1.72	1.00	1.24	6.3	7.8	13.5	10.8	1,761	23,685	0.4	0.4	0.4	Jan	$0.08	2.4%
General Electric	GE	23.68	19.24	24.13	1.35	1.45	1.66	1.82	17.5	16.3	14.3	13.0	10,433	247,053	1.7	1.7	1.6	Dec	$0.19	3.2%
Hewlett Packard	HPQ	24.93	11.35	25.49	4.43	3.96	3.63	3.70	5.6	6.3	6.9	6.7	1,947	48,539	0.4	0.4	0.4	Oct	$0.15	2.3%
IBM	IBM	203.77	181.85	215.90	13.49	15.30	16.69	18.35	15.1	13.3	12.2	11.1	1,124	229,037	2.2	2.2	2.2	Dec	$0.95	1.9%
Microsoft	MSFT	34.72	26.26	35.78	2.76	2.79	2.84	2.80	12.6	12.4	12.2	12.4	8,429	292,655	3.8	3.7	3.4	Jun	$0.23	2.6%
Oracle	ORCL	34.25	26.51	36.43	2.31	2.61	2.80	2.96	14.8	13.1	12.2	11.6	4,812	164,811	4.4	4.4	4.2	May	$0.06	0.7%
Average									12.5	12.9	12.5	11.1			2.3	2.3	2.1			2.4%

Company	Ticker	Price 6/13/2013	52-Week Low	52-Week High	CY EPS 2011	CY EPS 2012	CY EPS 2013	CY EPS 2014	CY P/E 2011	CY P/E 2012	CY P/E 2013	CY P/E 2014	Diluted Shares(mil)	CAP ($ mil)	Price-Sales TTM	Price-Sales Cur FY	Price-Sales Nxt FY	FY Ends	Qtr Div/sh	Div Yield	History Avg P/S
Intel *	**INTC**	**24.99**	**19.23**	**27.75**	**2.39**	**2.13**	**1.84**	**2.12**	**10.5**	**11.7**	**13.6**	**11.8**	**5,080**	**126,949**	**2.4**	**2.4**	**2.2**	**Dec**	**$0.225**	**3.6%**	**4.3**
Advanced Micro Devices	AMD	3.95	1.81	6.09	0.51	-0.16	-0.25	0.03	7.7	NM	NM	NM	749	2,959	0.6	0.6	0.6	Dec			1.2
Broadcom	BRCM	33.54	28.60	37.85	2.89	2.92	2.89	3.14	11.6	11.5	11.6	10.7	614	20,594	2.5	2.4	2.2	Dec	$0.11	1.3%	11.1
Micron Technology	MU	12.91	5.16	13.20	-0.19	-1.12	0.25	1.55	NM	NM	51.6	8.3	1,016	13,117	1.6	1.6	1.3	Aug			2.3
NVIDIA	NVDA	14.37	11.15	15.22	1.20	1.17	0.72	0.82	12.0	12.3	20.0	17.5	619	8,899	2.1	2.1	2.0	Jan	$0.08	2.1%	3.0
Qualcomm	QCOM	61.96	53.09	68.50	3.36	4.01	4.61	4.74	18.4	15.5	13.4	13.1	1,763	109,235	5.0	4.5	4.0	Sep	$0.35	2.3%	7.6
SanDisk	SNDK	59.42	32.08	60.75	4.66	2.37	4.12	4.76	12.8	25.1	14.4	12.5	246	14,594	2.8	2.5	2.3	Dec			3.5
STMicroelectronics	STM	9.62	4.51	9.90	0.42	-0.33	0.01	0.71	22.9	NM	NM	13.5	888	8,543	1.0	1.0	1.0	Dec-ADR	$0.10	4.2%	2.9
Taiwan Semiconductor Mfg.	TSM	18.27	12.14	20.30	0.88	1.09	1.22	1.38	20.8	16.8	15.0	13.2	5,186	94,745	5.2	4.6	4.1	Dec-ADR	$0.03	0.5%	8.7
Texas Instruments *	TXN	35.48	26.06	37.36	2.19	1.50	1.61	2.01	16.2	23.7	22.0	17.7	1,123	39,844	3.2	3.3	3.1	Dec	$0.28	3.2%	3.0
Average									15.3	17.5	21.2	13.3			2.7	2.5	2.3			2.3%	4.8

** Tokeneke estimate*

Source: First Call as of 6/13/13

incomplete and truncated to a significant degree. Even worse, periods of highly depressed earnings render meaningless quadruple-digit price-earnings ratios that skew averages into useless magnitudes in the mid- and high-double digits. Complicating matters even further is the extensive use of pro forma earnings with the lack of consistent definitions thereof. As a practical matter, price-earnings seems to have more use limiting the upper range of a stock during peak earnings rather than supporting it during trough earnings, in my opinion.

Price-sales is by far the best fundamental valuation metric to employ when addressing the semiconductor sector: the historical datasets are comprehensive and extensive, and the inherent volatility of the sector is limited to the single-digit multiple variances in revenue gyrations across business cycles.

INTC and its Peers: Several years ago, after Intel was added to the Dow Jones Industrial Index (DOW), I discovered the shares began to trade more consistently with its large-cap technology peers rather than its semiconductor industry peers. And at around 25% of total industry revenues at the time, INTC was so big that it simply had no 'peers' in the chip industry. So I created two different sets of peers from which to compare relative valuations: large-cap technology stocks that today includes AAPL, AMAT, CSCO, DELL, GE, HPQ, IBM, MSFT and ORCL; and large semiconductor suppliers that today includes AMD, BRCM, NVDA, QCOM, SNDK, STM, TSM and TXN. It turns out the first set of large-cap technology peers also provided me with extremely helpful insight into broader technology sector and equity market characteristics.

Observing INTC and its large-cap technology peers in the adjacent tables, I see that price-earnings multiples are averaging in a range from 11x to 13x depending on whether trailing, current or future earnings are considered, with trailing at the high-end (the certainty of history) and future discounted to the low-end (the uncertainty of forecasting). Price-sales average multiples range from 2.1x to 2.3x with the certainty of history claiming the high ground and the uncertainty of forecast discounted to the low-end, once again. Notice DELL and HPQ bringing up the rear on both metrics, reflecting the troublesome lack of growth in PC markets. Also notice MSFT and ORCL trumping the pack due to the inflated profitability of software as well as better expected growth on a relative basis, in my opinion. Dividend yield is also interesting, although typically more tangential to share price valuation arguments. For example: INTC looks pretty attractive with its 3.6% dividend yield, although it's probably lucky to claim peer-average price-sales ratios in the 2.2x to 2.4x range given its exposure to PC markets.

The semiconductor peer group has higher average valuation multiples, but also much larger variances within the group—at lease with respect to price-earnings. Price-earnings averages range from 13x to 21x with current year claiming the peak of 21.2x, next year the trough of 13.3x, and last year in-between at 17.5x. But also notice the wide variance for both last year and this year reflecting cyclical trough earnings leading to inflated multiples, in my opinion. There is actually a tighter range of price-earnings multiples in the forecasted out-year of 2014. Why? Probably due to the smoothing nature of forecasting and despite its inherent uncertainty (and I should know, since I create those darn things). This is why I consider price-sales to be a better primary valuation metric for the semiconductor industry: price-earnings ratios just get jerked around too much in this cyclically volatile business. At least price-earnings levels seem to reflect a certain degree of logic amongst large-cap technology companies.

Semiconductor peer group average price-sales ratios command a premium of 20-40 basis points over the large-cap technology group, ranging from 2.3x to 2.7x, with a much more logical spread of trailing sales claiming the high-ground at 2.7x, next year's sales discounted to the low-end at 2.3x, and this year in the middle at 2.5x. The variance within the semiconductor peer group is also generally consistent with that of the large-cap tech companies. Notice AMD and STM bringing up the rear due to the currently distressed condition of their respective businesses posting losses instead of earnings and facing troublesome growth prospects due to strategic transformations. Also notice QCOM and TSM standing out from the rest of the group consistent with their growth premiums associated with smartphone and foundry markets, respectively. The message across both peer groups is pretty clear: growth is rewarded with significantly higher valuation multiples.

Notice on the far right column of the semiconductor peer group I have added historical average price-sales ratios since the inception of the equity. Specifically, I collect trailing 12-month data points on a weekly basis from the Bloomberg data base that stretches back to 1990 as specified in my Valuation Update 2/02/13. To a first order approximation, current price-sales ratios are running at half their historical average levels—albeit with one exception: TXN. I have not gathered this data for the large-cap tech stocks since I do not make specific investment recommendations for them.

As I noted on the first line of this report, we need growth to drive chip share prices higher: GDP would be ideal, industry would be nice, inflationary nominal would work, but all we have today are sub-sector pockets like smartphones and tablets. Until we get some growth, it's not clear to me that chip sector share price upside potential is significantly more likely than downside risk under current equity market conditions.

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