

CURRENT STATE OF THE SEMICONDUCTOR ECONOMY

Q4 2009 Recap & 2010 Expectations: Is it as positive as it appears?

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Overall, things are looking up for the semiconductor industry. Sales, stock, and profit expectations for the year are up; the JPMorgan/GSA CEO Sentiment Index is back up to its August 2009 level after dipping slightly in Q4'09 and early 2010; and the supply chain is starting the year more disciplined.

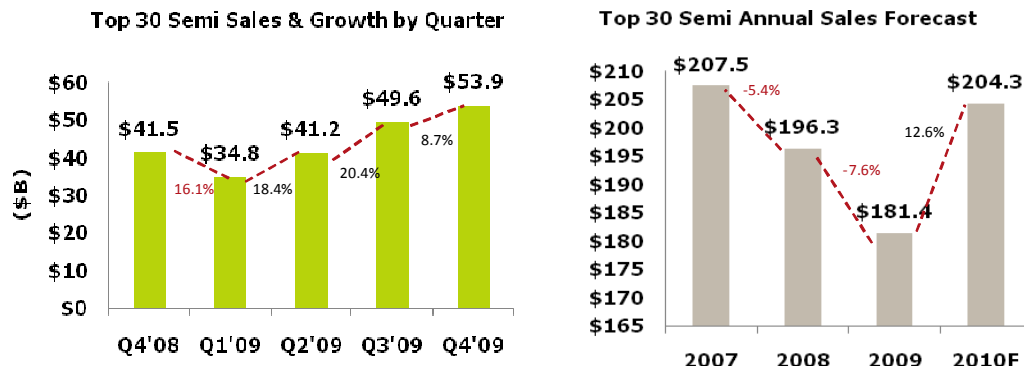
When GSA introduced the industry update for members, we noted that semiconductor companies would bounce back from this downturn because of what it learned in 2001. At the GSA Silicon Series Luncheon in February, Craig Berger of FBR Capital, chip firms responded quickly and dramatically to the 2008-2009 recession because management teams: (1) were experienced with downturns and their effects; (2) wanted to maximize and/or protect shareholder value; (3) thought global demand/consumption would fall by 20%-30% and respond to that; (4) reduced headcount; and (5) hoarded cash¹. This swift reaction created a better scenario for the industry by driving gross and operating margins back toward prior historical peaks. But are things really as positive as they appear?

SALES LEADERS²

Sales Growth

In stark contrast to Q4'08, the top 30 semiconductor companies (i.e., fabless companies and integrated device manufacturers (IDMs)) by Q4'09 sales performed particularly well in the last months of 2009, with sales totaling \$53.9 billion, an increase of 8.7% quarter-over-quarter (QoQ) and 29.9% year-over-year (YoY) (Figure 1).

However, even with a strong finish, the top 30 companies' 2009 sales decreased 7.6% YoY. Top-30 sales is expected to increase 12.6% in 2010, which is an improvement from the negative growth shown in 2009, but sales will still not reach 2007 levels and will only increase 4.1% when compared to 2008 (Figure 1).



Source: GSA, Company Reports, Investment Reports

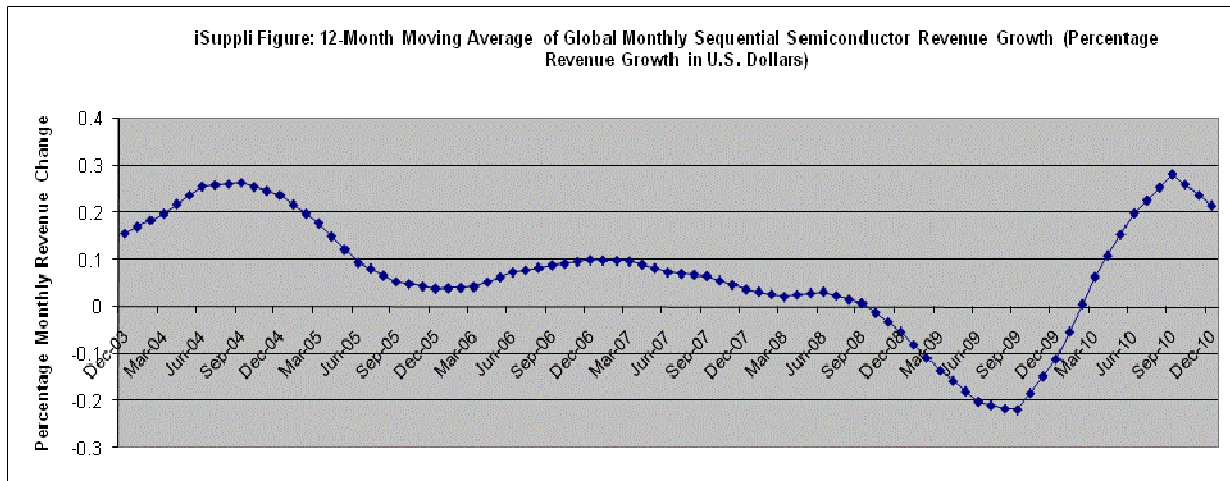
Figure 1. Sales for the top 30 increased 8.7% QoQ in Q4'09; Sales expected to increase 12.6% in 2010

¹ Presentation at GSA Silicon Series Luncheon, February 10, 2010

² Note: The top 30 sales leaders in the following section were determined by CYQ4'09 sales.

Looking at total semiconductor sales, Dale Ford, senior vice president of market intelligence services for iSuppli, has a similar view that "conditions in 2010 appear so fantastic only in comparison of 2009. In reality, 2010 is likely to simply be a year when semiconductor industry growth on a sequential quarterly basis returns to a more normal pattern." iSuppli estimates that 2010 semiconductor revenue will amount to \$279.7 billion, which is a 21.5% increase from \$230 billion in 2009, but only a 8% increase from \$258.9 billion in 2008 and a 2.3% increase from \$273.4 billion in 2007.

As illustrated below, for the first nine months of 2010, iSuppli is forecasting an increase in sales month-over-month, switching gears in October 2010.



Source: iSuppli Corp. March 2010

Figure 2. 12-Month Moving Average of Global Monthly Sequential Semiconductor Revenue Growth (Percentage Revenue Growth in U.S. Dollars)

Quarterly sales rankings remained relatively static QoQ, with most companies keeping the same rank or moving up/down one to three spots (Figure 3). However, two companies that leaped in Q4'09 were Elpida Memory, jumping six spots, and SanDisk's OEM division, jumping four spots. Elpida Memory's strong results were the result of increasing demand for DRAM chips for servers and PCs in the United States and Asia, which accounted for 80% of the company's total sales. SanDisk attributes its solid results to diversifying its OEM channel.

Comparing 2009 sales to 2008, five companies moved up or down at least four spots (Hynix Semiconductor; Elpida Memory; MediaTek; Semiconductor Company, Panasonic; and Fujitsu Microelectronics). Hynix Semiconductor and MediaTek posted the greatest increase, with both jumping seven spots. Hynix's press release stated that "The increase was mainly due to the shipment growth of both DRAM and NAND Flash as well as the ASP improvement of DRAM." And MediaTek had a banner year as a result of booming handset demand, market share gain in emerging markets, BD player ICs and digital TV ICs, according to their quarterly press release.

	Company	Stock Exchange	Ticker	Q4 2009 Sales (US\$000)	CY 2009 Sales (US\$000)
1	Intel	NASDAQ	INTC	\$10,569,000	\$35,127,000
2	Samsung Electronics - Semiconductor Division	KSE	005930	\$6,892,403	\$23,074,939
3	Texas Instruments	NYSE	TXN	\$3,005,000	\$10,427,000

4	Toshiba Semiconductor	Private	Private	\$2,920,958	\$10,334,475
5	STMicroelectronics	NYSE	STM	\$2,583,000	\$8,510,000
6	Hynix Semiconductor	KOSDAQ	000660	\$2,405,866	\$6,794,732
7	Sony Electronics - Semiconductor & Component Division	Private	Private	\$1,998,081	\$7,446,826
8	Micron Technology	NASDAQ	MU	\$1,740,000	\$5,141,000
9	Advanced Micro Devices	NYSE	AMD	\$1,646,000	\$5,403,000
10	Elpida Memory	TSE	6665	\$1,637,287	\$3,939,797
11	QUALCOMM - QCT Division	NASDAQ	QCOM	\$1,608,000	\$6,409,000
12	Renesas Technology	Private	Private	\$1,461,000	\$5,664,000*
13	Infineon Technologies	FSE	IFX	\$1,348,717	\$4,769,557
14	Broadcom - Product Division	NASDAQ	BRCM	\$1,283,434	\$4,272,726
15	NEC Electronics - Semiconductor Division	TSE	6723	\$1,226,629	\$4,346,828
16	NXP Semiconductors	Private	Private	\$1,161,000	\$3,843,000
17	NVIDIA	NASDAQ	NVDA	\$982,488	\$3,326,445
18	Freescale Semiconductor	Private	Private	\$951,000	\$3,508,000
19	ROHM Semiconductor	TSE	6963	\$943,142	\$3,346,144
20	MediaTek	TSE	2454	\$902,661	\$3,583,101
21	Semiconductor Company, Panasonic	Private	Private	\$878,239	\$3,285,265
22	Fujitsu Microelectronics	Private	Private	\$869,565	\$3,232,309
23	Marvell Semiconductor	NASDAQ	MRVL	\$842,535	\$2,807,687
24	SanDisk - OEM Division	NASDAQ	SNDK	\$639,500	\$1,589,800
25	LSI	NYSE	LSI	\$637,796	\$2,219,159
26	Vishay Intertechnology	NYSE	VSH	\$606,960	\$2,042,033
27	Analog Devices	NYSE	ADI	\$602,983	\$2,141,322
28	Nanya Technology	TSE	2408	\$517,712	\$1,316,955
29	Xilinx	NASDAQ	XLNX	\$513,349	\$1,699,548
30	ON Semiconductor	NASDAQ	ONNN	\$497,100	\$1,768,900

Source: GSA, Company Reports; *Source: iSuppli preliminary numbers, Nov 2009

Figure 3. Top 30 Semi Companies by Q4'09 Sales

Of the top 30 companies, 21 companies reported a positive QoQ sales growth in Q4'09, and 25 reported a positive YoY growth. This is compared to 29 of the top 30 companies in Q3'09 reporting a positive QoQ growth and nine reporting a positive YoY growth.

In Q4'09, Elpida Memory reported the largest QoQ sales growth of the top 30 at 53.7%, while SanDisk's OEM division reported the largest YoY growth at 216.7% (Figure 4).

As seen in Figure 4, memory chipmakers make up most of the list as a result of the memory recovery—a rise in PC shipments, tightened supply and a jump in average selling prices (ASPs). Many of these companies achieved record-high or “first-time” numbers:

Elpida Memory's Q4'09 sales surged 2.4-fold from 2008 to JPY 151 billion. As previously explained, this increase came from a healthy DRAM industry.

Nanya Technology achieved its first net profit since Q1'07. According to the company's earnings release, Q4'09 net income reached NTD 211 million “due to a 44% increase in DRAM ASP QoQ.” And Nanya's Q4'09 sales totaled NTD 16,690 million, an increase of 45% QoQ and 172% YoY.

According to *Financial Times*, Hynix Semiconductor reported its largest quarterly profit in three years. Its company press release states that Q4'09 net income totaled KRW 657 billion from KRW 246 billion in Q3'09. Consolidated sales for Q4'09 also reached a record high of KRW 2.8 trillion, an increase of 32% from the third quarter's KRW 2.12 trillion. As previously explained, this increase was mainly due to increased shipments of both DRAM and NAND Flash as well as increased DRAM ASPs.

For the quarter ended December 3, 2009, Micron Technology achieved its first quarterly profit in three years. Net income totaled \$204 million for FYQ1'10, compared to a loss of \$100 million in FYQ4'09 and a loss of \$718 million in FYQ1'09. "We realize there are still challenges in the global economy, but our team members deserve a lot of credit for generating positive operating cash flow throughout the downturn," said Steve Appleton, Micron chairman and chief executive officer. "Our technology, cost competitiveness and strong balance sheet will provide a great foundation for taking advantage of improving market conditions."

With the introduction of new, innovative products, for example the recent launch of the iPad; a strong PC market; and better-than-expected handset shipments in Q4'09, GSA expects the memory market to again come to the forefront. And that is why in March we partnered with the Chinese Institute of Electrical Engineering (CIEE) to hold the first-ever GSA event dedicated solely to the memory industry.

	Company	Stock Exchange	Ticker	Q4 2009 Sales (US\$000)	QoQ Growth (%)	YoY Growth (%)
1	Elpida Memory	TSE	6665	\$1,637,287	53.7%	139.6%
2	Nanya Technology	TSE	2408	\$517,712	45.9%	177.0%
3	SanDisk - OEM Division	NASDAQ	SNDK	\$639,500	40.2%	216.7%
4	Hynix Semiconductor	KOSDAQ	000660	\$2,405,866	35.2%	101.5%
5	Micron Technology	NASDAQ	MU	\$1,740,000	33.6%	24.1%

Source: GSA, Company Reports

Figure 4. Highest Quarterly Sales Growth among Top 30 Semi Companies

Of the top 30 companies, only six companies (primarily memory-focused companies) reported a positive YoY sales growth in 2009 (Figure 5). And only seven companies reported a positive YoY sales growth in 2009 over 2007 (MediaTek, SanDisk's OEM division, Broadcom's product division, QUALCOMM's QCT division, ON Semiconductor, Samsung Electronics' semiconductor division and ROHM Semiconductor).

	Company	Stock Exchange	Ticker	CY 2009 Sales (US\$000)	YoY Growth (%)
1	SanDisk - OEM Division	NASDAQ	SNDK	\$1,589,800	54.3%
2	Samsung Electronics - Semiconductor Division	KSE	005930	\$23,074,939	30.7%
3	MediaTek	TSE	2454	\$3,583,101	30.1%
4	Hynix Semiconductor	KOSDAQ	000660	\$6,794,732	26.2%
5	Nanya Technology	TSE	2408	\$1,316,955	19.0%
6	Elpida Memory	TSE	6665	\$3,939,797	6.6%

Source: GSA, Company Reports

Figure 5. Top 30 Semi Companies Posting Annual Sales Growth in 2009

Figure 6 shows analysts' high expectations for 2010, with 18 out of the 19 companies that estimate a positive YoY sales growth achieving double-digit sales growth in 2010 over 2009. Elpida Memory currently leads the pack with a 61.5% YoY growth. *Note: CY2010 estimates could not be found for some of the top 30, which may affect results.*

	Company	2009 Sales (US\$000)	2010 Sales Forecast (US\$000)	Estimate Covering Firm	YoY Growth (%)
1	Elpida Memory	\$3,939,797	\$6,364,000	Merrill Lynch	61.5%
2	Nanya Technology	\$1,316,955	\$1,973,913	Bank of America/Merrill Lynch	49.9%
3	Micron Technology	\$5,141,000	\$7,619,300	Wedbush Morgan Securities	48.2%
4	Marvell Semiconductor	\$2,807,687	\$3,713,900	Bank of America/Merrill Lynch	32.3%
5	Broadcom - Product Division	\$4,272,726	\$5,608,900	Bank of America/Merrill Lynch	31.3%
6	Hynix Semiconductor	\$6,794,732	\$8,907,271	Shinhan Investment Corp	31.1%
7	Vishay Intertechnology	\$2,042,033	\$2,613,400	Thomas Weisel Partners	28.0%
8	MediaTek	\$3,583,101	\$4,507,972	Bank of America/Merrill Lynch	25.8%
9	Advanced Micro Devices	\$5,403,000	\$6,598,000	Wedbush Morgan Securities	22.1%
10	Xilinx	\$1,699,548	\$2,048,000	Bank of America/Merrill Lynch	20.5%
11	Infineon Technologies	\$4,769,557	\$5,723,468	GSA	20.0%
12	Analog Devices	\$2,141,322	\$2,513,000	Bank of America/Merrill Lynch	17.4%
13	LSI	\$2,219,159	\$2,602,000	Bank of America/Merrill Lynch	17.3%
14	STMicroelectronics	\$8,510,000	\$9,940,000	Yahoo Finance Avg Estimate	16.8%
15	Intel	\$35,127,000	\$40,000,000	Wells Fargo Securities	13.9%
16	ON Semiconductor	\$1,768,900	\$2,010,000	Needham	13.6%
17	Texas Instruments	\$10,427,000	\$11,695,000	Needham	12.2%
18	NVIDIA	\$3,326,445	\$3,695,100	Hudson Square Research	11.1%

Source: GSA, Company Reports, Investment Reports

Figure 6. Double-Digit Sales Growth Expectations for 2010

Net Profit

Seventeen of the top 30 that reported net income in Q4'09 (20 companies) improved net profit margin in Q4'09 over Q3'09, increasing their margin of safety.

Of the 20 companies that publicly reported Q4'09 net income, 17 reported a positive net profit margin and 13 posted a positive double-digit net profit margin. Advanced Micro Devices reported the highest net profit margin at 71.6% (Figure 7). AMD attributes its record YoY quarterly profits to having received \$1.25 billion from the Intel settlement.

	Company	Q4 2009 Sales (US\$000)	Q4 2009 Net Income (US\$000)	Net Profit Margin (%)
1	Advanced Micro Devices	\$1,646,000	\$1,178,000	71.6%
2	MediaTek	\$902,661	\$271,295	30.1%
3	Marvell Semiconductor	\$842,535	\$204,821	24.3%
4	Hynix Semiconductor	\$2,405,866	\$560,372	23.3%
5	Texas Instruments	\$3,005,000	\$655,000	21.8%

Source: GSA, Company Reports

Figure 7. Highest Quarterly Net Profit Margin among Top 30 Semi Companies

Semiconductor companies also improved their overall profitability in Q4'09. Many of the larger IDMs that formerly spent billions of dollars on fabrication facilities have experienced lower costs as a result of adopting an outsourced business model as part of operations. According to iSuppli, operating profitability in the industry surged to 21.4% in Q4'09, "the highest level since the fourth quarter of 2000 when it reached 24.7%," as a sales rebound helped companies offset previous 2009 losses.

"Chipmakers in 2009 reacted quickly and aggressively to meet the downturn by cutting costs and improving cash flow," said Derek Lidow, president and CEO at iSuppli. "As the market began to turn back up, the industry showed great restraint against adding production in order to avoid any overcapacity situations. This allowed the companies to recapture their pricing power to boost profitability."³

Balance Sheets: Cash, Current Ratio, Debt

For the second consecutive quarter, only two of the 16 measurable companies within the top 30 reported a healthy current ratio above 1.0, zero long-term debt and a healthy cash-to-market cap ratio of at least 20%: ROHM Semiconductor and LSI (Figure 8). *Note: various companies with semi divisions or that are private could not be analyzed as cash, current assets, current liabilities, long-term debt, stock price, etc. could not be found.*

	Company	Current Ratio	Long-Term Debt (US\$)	Cash (Q4'09) (US\$000)	Cash-to-Market Cap Ratio
1	ROHM Semiconductor	7.63	\$0	\$2,622,878	0.36
2	LSI	1.86	\$0	\$778,291	0.20

Source: GSA, Company Reports; Stock prices pulled 12/31/09

Figure 8. Top Semi Companies with Zero Debt, Strong Current Ratios, Strong Cash-to-Market Cap Ratios

The top 10 companies by Q4'09 cash and cash equivalents combined for \$20.9 billion, an increase of 5.9% QoQ. Of the top 10, six companies reported higher cash amounts in Q4'09 over Q3'09, with NVIDIA posting the highest QoQ growth at 181.2% (Figure 9). *Note: various companies with semi divisions or that are private could not be analyzed as cash and cash equivalents could not be found.*

	Company	Cash (Q4'09) (US\$000)	Cash (Q3'09) (US\$000)	QoQ Growth
1	Intel	\$3,987,000	\$4,109,000	-3.0%
2	MediaTek	\$2,935,914	\$2,567,433	14.4%
3	ROHM Semiconductor	\$2,622,878	\$2,855,365	-8.1%
4	Infineon Technologies AG	\$2,277,483	\$2,063,089	10.4%
5	NVIDIA	\$1,728,200	\$614,490	181.2%
6	Advanced Micro Devices	\$1,657,000	\$1,847,000	-10.3%
7	STMicroelectronics	\$1,588,000	\$1,576,000	0.8%
8	Micron Technology	\$1,565,000	\$1,485,000	5.4%
9	Freescale Semiconductor	\$1,363,000	\$1,334,000	2.2%
10	Texas Instruments	\$1,182,000	\$1,294,000	-8.7%

Source: GSA, Company Reports

Figure 9. Top 10 Semi Companies with the Largest Amounts of Cash & Cash Equivalents

³ "Chip profitability jumps to decade high", EETimes.com, March 16, 2010

EMERGING FABLESS COMPANIES

Sales Growth⁴

Looking at the top 30 emerging fabless companies by Q4'09 sales, all but seven companies posted a positive QoQ sales growth in Q4'09, compared to only four posting a negative YoY growth.

In Q4'09, Ikanos Communications reported the largest QoQ and YoY sales growth of the top 30 at 98.4% and 155.5%, respectively (Figure 10). According to Michael Gulett, president and CEO of Ikanos, "We completed our first full quarter since the acquisition of the Conexant broadband business and effectively executed our business plan. We grew and diversified our revenue base across multiple regions, customers and product lines, we consolidated development efforts and reduced operating expenses, and we were able to begin redirecting engineering investments towards new markets for future growth."

	Company	Stock Exchange	Ticker	Q4 2009 Sales (US\$000)	QoQ Growth (%)	YoY Growth (%)
1	Ikanos Communications	NASDAQ	IKAN	\$58,191	98.4%	155.5%
2	Sigma Designs	NASDAQ	SIGM	\$68,093	92.0%	43.9%
3	NetLogic Microsystems	NASDAQ	NETL	\$69,524	64.3%	125.0%
4	Power-One	NASDAQ	PWER	\$142,434	42.3%	9.3%
5	Dialog Semiconductor	FWB	DLG	\$77,590	31.4%	49.5%

Source: GSA, Company Reports

Figure 10. Highest Quarterly Sales Growth among Top 30 Emerging Fabless Companies

Of the top 30, 11 companies reported a positive YoY sales growth in 2009. And 14 companies reported a positive YoY sales growth in 2009 over 2007.

Dialog Semiconductor reported the largest YoY sales growth of the top 30 at 34.5% (Figure 11). Dialog CEO Dr. Jalal Bagherli said, "2009 was a very successful year for Dialog where we led the industry and continued to grow. We focused our efforts on solidifying our position as the leading power management IC provider to the industry's leading smartphone manufacturers, 3G/HSPA cellphones and portable media devices while delivering strong revenue growth and improved profitability through the economic downturn. We also reinforced our customer relationships and strengthened our already robust balance sheet."

	Company	Stock Exchange	Ticker	CY 2009 Sales (US\$000)	YoY Growth (%)
1	Dialog Semiconductor	FWB	DLG	\$217,613	34.5%
2	Raydium Semiconductor	Taiwan ESM	3592	\$242,261	25.4%
3	NetLogic Microsystems	NASDAQ	NETL	\$174,689	24.8%
4	Sunplus Technology	TSE	2401	\$227,979	22.8%
5	Ikanos Communications	NASDAQ	IKAN	\$130,688	22.7%

Source: GSA, Company Reports

Figure 11. Highest Annual Sales Growth among Top 30 Emerging Fabless Companies

⁴ The top 30 sales leaders in the following section were determined by CYQ4'09 sales. GSA has defined an emerging fabless company as a public company that generates less than \$500 million in annual sales.

All but one (MegaChips Corporation) of the top 30 emerging fabless companies are expecting positive sales growth in 2010 over 2009. However, when comparing 2010 sales to 2007 levels, the number of companies posting a YoY growth decreases. As shown in Figure 12, NetLogic Microsystems currently leads the pack with an expected 100.4% annual growth. NetLogic forecasts a solid 2010 due to the sales boost from its RMI acquisition and a healthy network equipment market as a result of the increase in data traffic. *Note: CY2010 estimates could not be found for some of the top 30, which may affect results.*

	Company	2009 Sales (US\$000)	2010 Sales Forecast (US\$000)	Estimate Covering Firm	YoY Growth (%)
1	NetLogic Microsystems	\$174,689	\$350,000	Pacific Crest Securities	100.4%
2	Ikanos Communications	\$130,688	\$232,500	Needham	77.9%
3	Power Integrations	\$215,701	\$300,000	Roth Capital Partners	39.1%
4	Lattice Semiconductor	\$194,420	\$267,090	Reuters Mean Estimate	37.4%
5	Dialog Semiconductor	\$217,613	\$296,400	Jefferies International Ltd.	36.2%

Source: GSA, Company Reports, Investment Reports

Figure 12. Highest Sales Growth Expectations for 2010

Net Profit

Of the 25 emerging fabless companies that publicly reported Q4'09 net income, 19 reported a positive net profit margin and 13 of these companies posted a positive double-digit net profit margin. Silicon Laboratories reported the largest net profit margin at 31.6% (Figure 13); however, it is 40 percentage points lower than the "big" (Top 30) net profit margin leader's margin (Advanced Micro Devices).

	Company	Q4 2009 Sales (US\$000)	Q4 2009 Net Income (US\$000)	Net Profit Margin (%)
1	Silicon Laboratories	\$127,190	\$40,251	31.6%
2	Dialog Semiconductor	\$77,590	\$19,888	25.6%
3	Sunplus Technology	\$75,809	\$13,954	18.4%
4	Cirrus Logic	\$65,162	\$11,055	17.0%
5	Melexis NV	\$60,616	\$8,786	14.5%

Source: GSA, Company Reports

Figure 13. Highest Quarterly Net Profit Margin among Top 30 Emerging Fabless Companies

Balance Sheets: Cash, Current Ratio, Debt

In Q4'09, emerging fabless companies had healthier balance sheets than those of industry sales leaders. Thirty-two percent (eight companies) of measurable *emerging* companies within the top 30 reported a healthy current ratio above 1.0, zero long-term debt and a healthy cash-to-market cap ratio of at least 20% (Figure 14), compared to 12.5% of measurable "big" (Top 30) sales leaders. *Note: various companies that breakout product sales or have not yet released balance sheet numbers could not be analyzed as current assets, current liabilities, long-term debt, etc. could not be found.*

	Company	Current Ratio	Long-Term Debt (US\$)	Cash (Q4'09) (US\$000)	Cash-to-Market Cap Ratio
1	AppliedMicro	7.36	\$0	\$123,971	0.25
2	EMULEX	6.94	\$0	\$252,737	0.29
3	Lattice Semiconductor	6.41	\$0	\$156,069	0.50
4	Sigma Designs	5.87	\$0	\$81,947	0.25
5	Integrated Silicon Solution	3.52	\$0	\$55,993	0.40
6	Standard Microsystems	3.08	\$0	\$132,634	0.29
7	DSP Group	2.59	\$0	\$37,986	0.29
8	Ikanos Communications	2.28	\$0	\$27,540	0.27

Source: GSA, Company Reports; Stock prices pulled 12/31/09

Figure 14. Emerging Fabless Companies with Zero Debt, Strong Current Ratios, Strong Cash-to-Market Cap Ratios

The top 10 emerging fabless companies by Q4'09 cash and cash equivalents combined for \$1.5 billion, an increase of 13.4% QoQ. Of the top 10, seven companies reported higher cash amounts in Q4'09 over Q3'09, with Dialog Semiconductor posting the highest QoQ growth at 177.0% (Figure 15). *Note: various companies that breakout product sales or have not yet released balance sheet numbers could not be analyzed as cash and cash equivalents could not be found.*

	Company	Cash (Q4'09) (US\$000)	Cash (Q3'09) (US\$000)	QoQ Growth
1	EMULEX	\$252,737	\$271,152	-6.8%
2	Silicon Laboratories	\$195,737	\$149,072	31.3%
3	PMC-Sierra	\$192,841	181,044.00	6.5%
4	Lattice Semiconductor	\$156,069	\$115,064	35.6%
5	Power Integrations	\$134,974	150,024.00	-10.0%
6	Standard Microsystems	\$132,634	117,190.00	13.2%
7	AppliedMicro	\$123,971	\$112,544	10.2%
8	Dialog Semiconductor	\$120,148	\$43,376	177.0%
9	Power-One	\$89,553	75,767.00	18.2%
10	Zoran	\$89,318	\$96,859	-7.8%

Source: GSA, Company Reports

Figure 15. Top 10 Emerging Fabless Companies with the Largest Amounts of Cash & Cash Equivalents

STOCK PERFORMANCE

Semiconductor stocks are up more than 150%, on average, year-over-year; but they are still 3.5% lower than January 2010 stock prices (Figure 16).

NASDAQ is back at its March 2008 level before the downturn hit. However, when compared to the tech bubble, on March 10, 2000, the NASDAQ reached a record high of 5,132, fueled mainly by gains from Internet companies overflowing with IPO dollars. To put this into perspective, on March 10, 2010, NASDAQ rose more than 18 points to close at 2,358, down more than 50% from its all-time high.

The NASDAQ Index still remains ahead of the Dow Jones and S&P 500, which are both down 15% over 2008 levels (Figure 17).

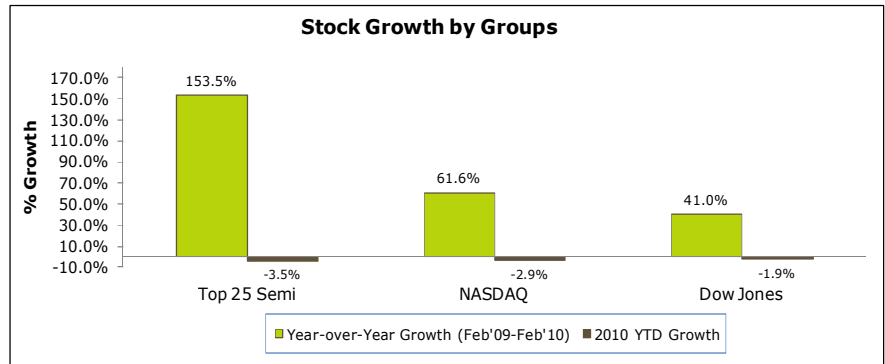


Figure 16. NASDAQ, Dow Jones & Top 25 Semiconductor Companies up Year over Year, but Down from the beginning of 2010

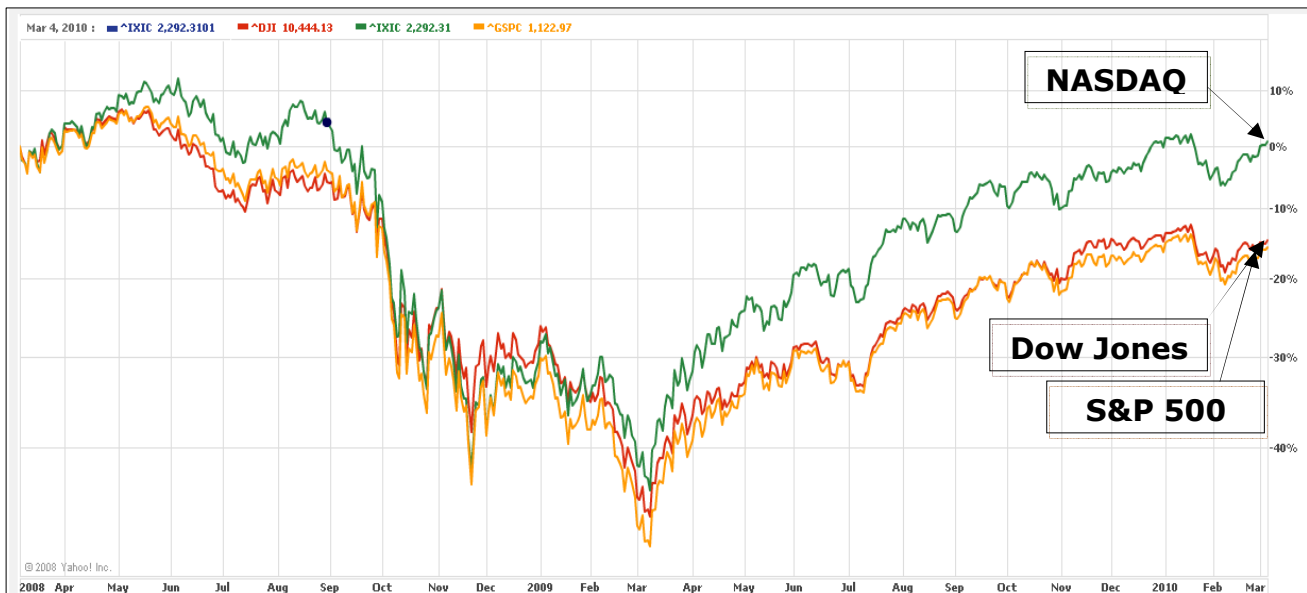


Figure 17. Stock Performance: NASDAQ, S&P500, Dow Comparisons (2-Year)

Dividends

Historically, tech stocks rarely offered dividends, preferring instead to reinvest that cash into their growing businesses or to fund growth through M&A activity. Only a handful of fabless companies have been offering dividends to investors over the years (e.g., Altera, Xilinx, Qualcomm, Power Integrations); however, the sector has recently become much more attractive to yield-focused investors.

Qualcomm

In early March, Qualcomm's stock spiked due to its announcement the company was hiking its quarterly cash dividend by 12%. Qualcomm also announced a new \$3 billion stock repurchase program to replace a \$2 billion stock repurchase program, which was recently completed with \$1.7 billion of repurchase activity.⁵

The Board of Directors approved the quarterly cash dividend increase from \$0.17 to \$0.19 per share of common stock. The dividend increase will raise the annualized dividend payout to 76 cents per share of common stock.

Qualcomm has returned \$12.6 billion to the company's stockholders through a combination of dividends and stock repurchases since commencing the program in 2003. Qualcomm had about 1.64 billion shares of common stock outstanding as of February 26, 2010.

FABLS & mFABLS

The FABLS stock index (public fabless companies with sales greater than \$500M) is 9% higher than it was two years ago, and the mFABLS stock index (fabless companies with sales less than \$500) is at an even level as it was in March of 2008.

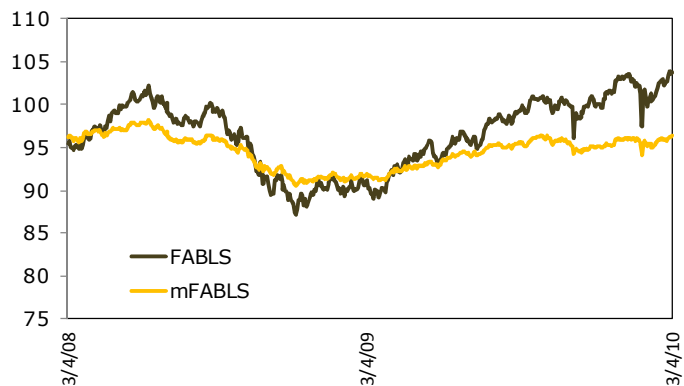


Figure 18. FABLS & mFABLS 2-Year Stock Performance

FOUNDRY NEWS

Major Taiwan-based companies are hiring thousands. TSMC, UMC, ASE and Siliconware Precision Industries (SPIL), specifically, announced they are gearing up for expansion projects by filling positions with new employees.

TSMC previously announced it would hire more than 3,000 employees, mostly engineers, in 2010. As of March 11, 2010, the foundry chipmaker has posted nearly 6,000 job openings, equivalent to about 30% of its global workforce.

UMC revealed plans to recruit a total of 1,000 engineers for one of its 300mm fabs, Fab 12A to boost 45/40nm process capacity at the facility.

ASE has said it is looking to expand its workforce in 2010 by hiring at least 300 more staff, mostly engineers. The chip packaging specialist added an additional 400 workers at its Kaohsiung operations at the end of 2009. SPIL also plans to recruit 1,800 new staff members (1,000 engineers and 800 management staff) in 2010.⁶

⁵ "Qualcomm Surges on Dividend Hike", www.thestreet.com, March 2, 2010

⁶ "Semiconductor firms step up hiring of new employees", DigiTimes.com, March 12, 2010

Capex

Capital spending (capex) has been a concern among the semiconductor community since foundries and IDMs slashed spending during the downturn. Many are wondering how a recovery will be affected without the needed capacity to support it. This year capex levels are forecasted to grow more than 50% after a couple years of drought. However, with the slowdown in chip sales, semiconductor manufacturers will trim capex to the 20%.⁷

In total, capex is expected to reach \$37 billion in 2010, up 45% YoY, according to IC Insights. The increase follows a 41% decline in 2009. The "Billion-Dollar Capex Club" includes 10 companies in 2010, compared with only three companies in 2009, and four in 2008.

iSuppli indicated that spending on chip equipment fell three years in a row from 2006 to 2009, and although capex was forecast to rise in 2009 they would be less than half of what they were in 2007 and 2008. This is a result of larger IDMs not investing so heavily in fabrication facilities and choosing instead to outsource manufacturing needs to foundries.⁸

The top three spenders this year are expected to include Samsung, Intel and TSMC, respectively, and are separated by \$200M. TSMC, GlobalFoundries and UMC are the three foundries in the top 10 list, among IDMs and mainly memory companies. TSMC is planning their largest capital investment ever in 2010 – announcing \$4.8 billion in capex this year (Figure 19).

Top-10 Semiconductor Industry Capital Spenders* 2007-2010 (US\$M)										
2010 Rank	Company	Major Product	2007	'07/'06 Change	2008	'08/'07 Change	2009	'09/'08 Change	2010 (F)	'10/'09 Change
1	Samsung	Memory	7,964	16%	6,750	(15%)	3,518	(48%)	5,000	42%
2	Intel	MPU	5,000	(13%)	5,197	4%	4,515	(13%)	4,900	9%
3	TSMC	Foundry	2,557	6%	1,877	(27%)	2,687	43%	4,800	79%
4	AMD/ Global- Foundries**	MPU/ Foundry	1,683	(9%)	621	(63%)	466	(25%)	2,500	436%
5	Toshiba	Memory	3,595	18%	2,210	(39%)	950	(57%)	1,950	105%
6	Hynix	Memory	5,145	8%	2,900	(44%)	855	(71%)	1,840	115%
7	Micron	Memory	3,700	23%	2,300	(38%)	800	(65%)	1,715	114%
8	Nanya	Memory	2,098	131%	695	(67%)	640	(8%)	1,415	121%
9	UMC	Foundry	850	(15%)	349	(59%)	551	58%	1,350	145%
10	Elpida	Memory	2,111	59%	890	(58%)	535	(40%)	1,000	87%

* Includes company's share of joint-venture spending

** Includes Chartered in 2010

Source: IC Insights, compiled by Digitimes, February 2010 ; updated March 15, 2010

Figure 19. Capex expected to reach \$37 billion in 2010

Utilization Rates

Wafer fab capacity utilization hit 89% Q4'09, up from 87% Q3'09, according to Semiconductor International Capacity Statistics (SICAS)⁹. Leading-edge (<0.16µm, CMOS, 200mm wafers are only at

⁷ "Mid-Year Slump to limit chip market growth", EETimes, March 5, 2010

⁸ "Chip profitability jumps to decade high", EETimes.com, February 25, 2010

⁹ "Wafer fab utilization stays high, says SICAS", EETimes.com, March 10, 2010

about 80%, and production on 300mm wafers capacity utilization exceeded 95%. Such high utilization rates typically lead to rising IC average selling prices (ASPs) and a fast-growing IC market.¹⁰

Foundries concerned about double ordering. An article in *DigiTimes*¹¹ reported that foundries have become increasingly concerned about the potential of double ordering following an increase in lead times thus far in 2010. If double ordering is taking place, these companies fear that demand could slow down in the back half of the year. Foundries have seen demand from IC designers and IDMs picking up quickly following last year's market downturn.

Foundries expected to see oversupply of 300mm wafers in 2012. An article in *DigiTimes*¹² reported that foundries are expected to see excess 300mm wafer capacity in 2012 due to aggressive capacity expansion plans. Global capacity is expected to reach 1.5 million 300mm equivalent wafers per quarter in 2012, compared to 1.0 million units in 2009.

Capacity Survey Results

According to the GSA's latest Wafer Fabrication Pricing Report, nearly all respondents to the capacity survey section are still getting the capacity they need from their wafer foundry partners; the "Yes" percentage increased by one percentage point QoQ.

Most of the survey participants reported that the 0.13µm technology node will maintain or increase their market share in the future, while the 0.18µm technology node followed closely behind.

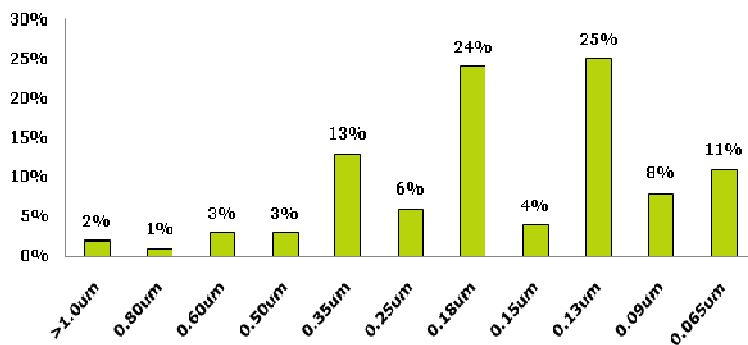


Figure 21. Technology Nodes Needed to Maintain/Increase Market Share in Upcoming Quarters

Wafer Pricing

Wafer pricing is likely to go nowhere by up, up, up this year due to foundry utilization rates being near 100% at some major foundries.

Tristan Gerra, senior analyst at Robert W. Baird said, "Component pricing could pick up a little bit, particularly on the commodity side, which would be the first time in several years we have seen that."

% of Participants Getting the Capacity They Need Q4 2009

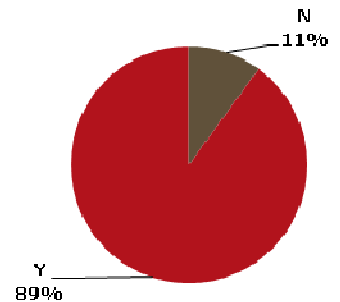


Figure 20. Nearly 90% of participants are receiving the capacity they need

¹⁰ "An analyst's 10 reasons to be cheerful", EETimes.com, February 8, 2010

¹¹ "Foundries concerned about double ordering", DigiTimes.com, February 25, 2010

¹² "Foundries to see 12-inch wafer supply exceed demand in 2012", DigiTimes.com, February 24, 2010

So net-net, it's about ramping capacity but gauging what real end demand is, and being in a situation where we could potentially have overcapacity again exiting this year."¹³

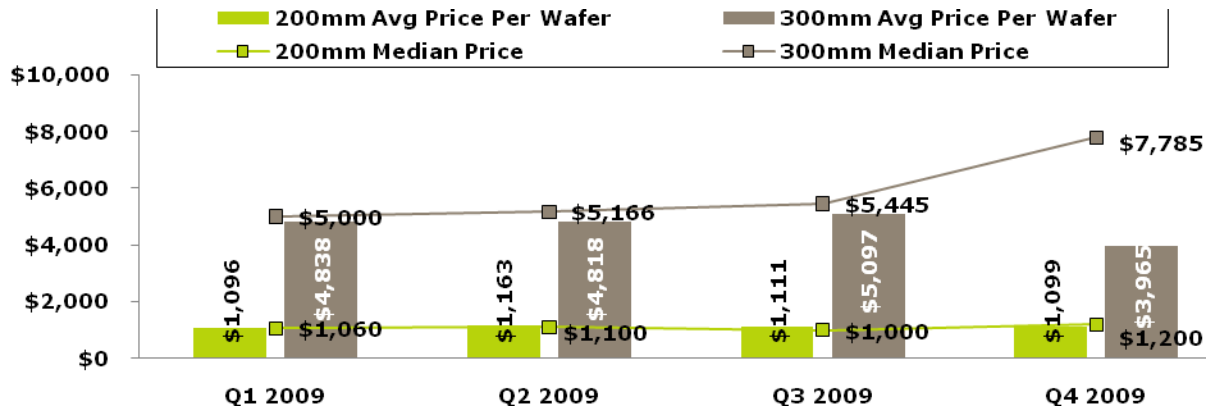


Figure 22. GSA Wafer Fabrication Pricing Report: Wafer Pricing by Quarter

IPO, FUNDING & CONSOLIDATION UPDATES

Positive trends are appearing in the IPO and M&A environment, according to Mike Dauber, senior associate of Battery Ventures.

"The IPO and M&A environment for semiconductor companies has been extremely challenging, but we're starting to see some positive trends, Dauber said.

New Filings

SEMICONDUCTOR: MagnaChip Semiconductor Corp. filed on March 15th with the SEC to raise up to \$250 million in an IPO. The South Korean semiconductor company makes semiconductors for consumer products such as mobile phones and televisions, and exited Chapter 11 bankruptcy protection in November. Korean operations weren't part of the Chapter 11 filing.

MagnaChip anticipates its stock trading on the New York Stock Exchange under the symbol MX, and the company told the SEC in a preliminary prospectus that Goldman Sachs, Deutsche Bank Securities, Barclays Capital, Citi, and UBS Investment Bank were underwriting the IPO.

SUPPLIER: NEXX Systems, which manufactures semiconductor process equipment that automates device packaging, filed for an IPO in February. The company plans to raise up to \$42 million in the IPO. The Billerica, MA-based company, which was founded in 2001 and booked \$18 million in sales over the last 12 months, plans to list under the symbol NEXX. Canaccord Adams and CIBC are the lead underwriters on the deal.

Who's Next?

MaxLinear and Telegent Systems are awaiting IPO after filing in November 2009 (Figure 23).

¹³ "100% Utilization Rates In Taiwan Foundries Likely To Increase Wafer Pricing For 2010: Analyst Weighs In", Feb 22, 2010

Date Filed	Company	Location	Estimated Deal Size (\$M)	Underwriters
11/6/2009	MaxLinear Inc.	California, USA	\$65.0	Morgan Stanley, Deutsche Bank , UBS Investment Bank, Thomas Weisel, Needham & Co.
11/23/2009	Telegent Systems	California, USA	\$250.0	Goldman Sachs, J.P. Morgan , Jefferies, Oppenheimer & Co., Piper Jaffray

Figure 23. Two Companies Have Filed and are Awaiting IPO

The industry's watching a list of chip companies over the next several months for potential IPO filing announcements within the next year to 18 months. The list includes:

- Ambarella
- Aptina
- Beceem Communications
- eSilicon
- Inphi
- Peregrine Semiconductor
- SiGe Semiconductor
- ViXS Systems

FUNDING

2009 Funding Recap¹⁴

For the twelve months ending December 31, 2009, 140 semiconductor companies raised \$1.1 billion, a dollar amount decrease of 43.2% YoY from \$1.94B (34 deals raised greater than \$20.0 million in 2008, while only 11 deals raised greater than \$20.0 million in 2009). The total number of semiconductor deals closed in 2009 only decreased by seven YoY.

Ninety-one fabless/IDM companies raised \$794.3 million, a 46.5% YoY dollar-amount decrease from \$1.5 billion. The total number of fabless/IDM deals closed in 2009 decreased by only two YoY. Forty-eight semiconductor suppliers raised \$305.4 million, a dollar amount decrease of 33.1% YoY from \$456.6 million. The total number of semiconductor supplier deals closed in 2009 decreased by six YoY. Ten semiconductor deals disclosed receiving early-stage funding, accounting for 7.1% of deals closed in 2009. Jean-Philippe Gendre, investment director at Emertec Venture, offers insight on why it is challenging for VC firms to invest in early-stage companies. He said, "Lifecycle funding might require raising \$50 million, and exits above \$200 million have become very unusual. This means that expected returns for venture capitalists is limited." Although there was partial early-stage funding by venture capital firms in 2009, start-ups, however, began to see increased investor support from industry players. Of the 10 semiconductor deals that received early-stage funding in 2009, two companies (Lightscape Materials and SiliconXpress) were strategically financed by the government or other industry companies.

Regarding semiconductor funding in the first 10 months of 2009, Gartner analysts Jim Tully and Marielena Oppenheimer stated, "Approximately 25% of investments include funding from larger semiconductor vendors or original equipment manufacturers (OEMs). We can assume these investment transactions target strategic technologies of interest to the larger company." In 2009, more than 20 companies were funded by the likes of government grants/initiatives, semiconductor

⁷ Excerpt from *Global semiconductor funding, IPO and M&A Update*, GSA, December 2009

vendors and OEMs. Analysts believe that these new investor options will allow semiconductor start-ups to prosper in 2010.

R2 Semiconductor raised the greatest amount of early-stage funding in 2009, totaling \$13.0 million. In February 2009, the company received \$2.0 million from Sigma Partners and Morgenthaler Ventures in a first round. In May 2009, the company added \$11.0 million to its first round with Sigma Partners, Morgenthaler Ventures and Sequoia Capital investing.

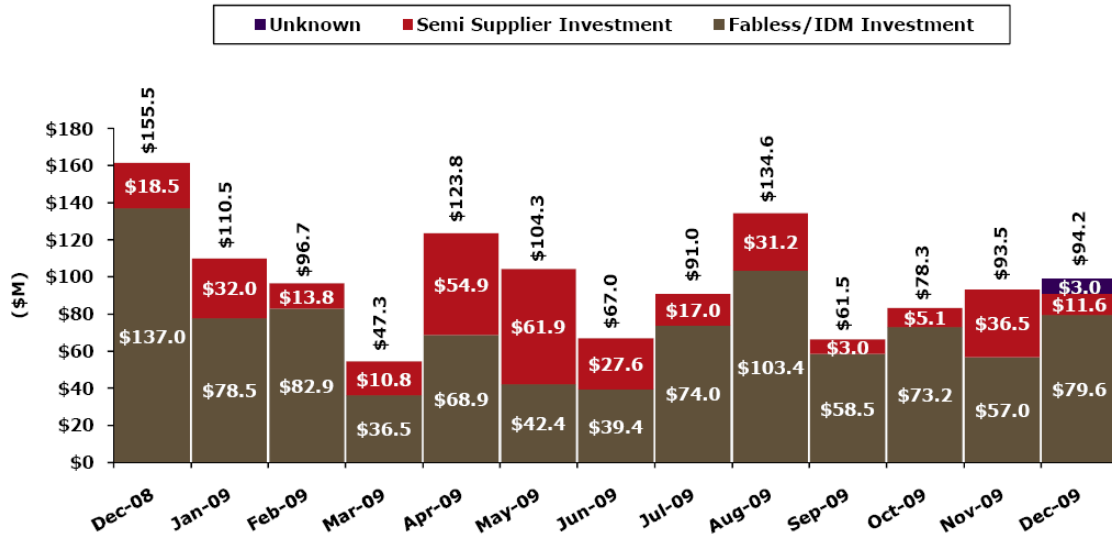


Figure 24. 2009 Funding by Month

For a complete spreadsheet with all funding deals in 2009 and the full report, members can download files at www.gsaglobal.org/publications/fundings

According to Intel Capital, "there's a lot of VC money sitting on the sidelines and not getting invested," said Keith Larson, VP.¹⁵ Larson said VCs are stockpiling some of their funds because of the down economy and lack of semiconductor M&A and IPO activity. "A lack of exits shouldn't impact you, because VCs should be long-term investors with a three-to-seven year horizon, but it's a behavioral thing that people tend to cramp up and not invest," he said.

Digital start-ups "will continue to struggle" to find funding because they are seen as capital intensive. The chip sectors where Larson sees promise include those where companies innovate to drive costs out of the process such as in test, packaging and patterning and polishing.

Funding-to-IPO: How much does it take?

GSA has been closely watching and tracking chip companies IPO for more than a decade. It's interesting to look at the average funding amounts and rounds each company reported in their S-1 filings.

The company that stood out among the rest was **Hittite Microwave (NASDAQ: HITT)**, which went public in July 2005 with one \$15 million round of funding and a \$76.5 million offering amount. This RF

¹⁵ Intel exec bullish on semi startups, *EETimes*, March 1, 2010

microwave IC company remains one of the most healthy semiconductor companies GSA tracks with their repeatedly solid balance sheets and growth.

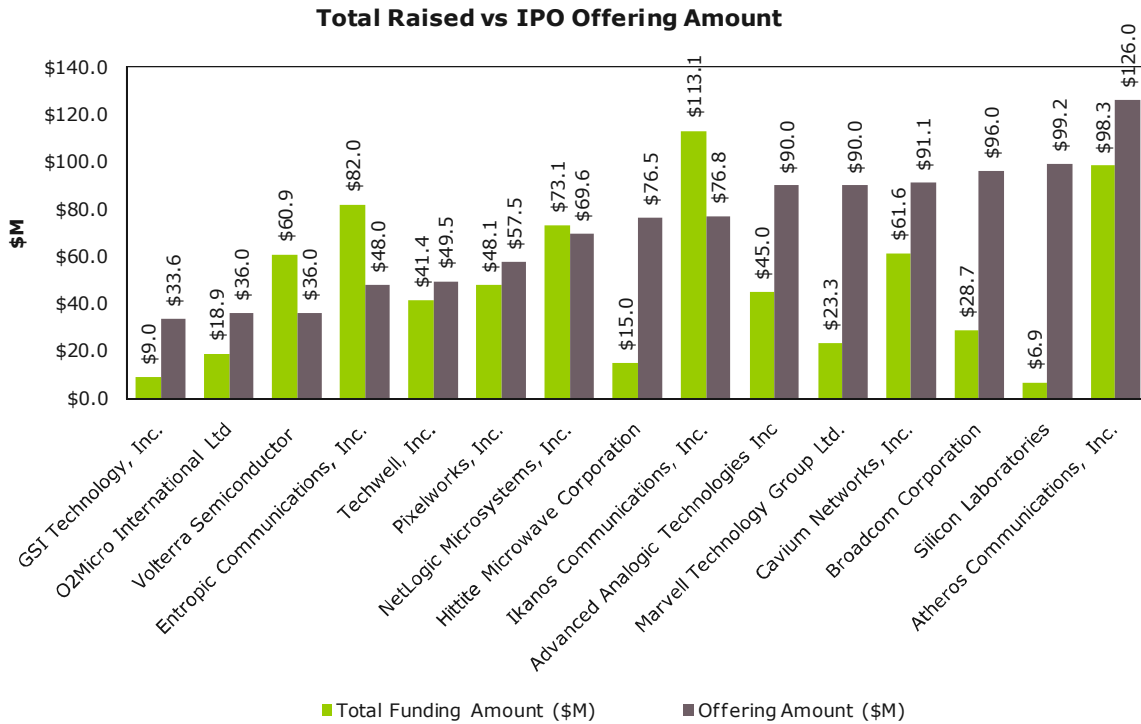


Figure 25. Total Raised vs IPO Offering Amount

With design and manufacturing costs exponentially increasing over the years, it's much more difficult for investors to see a large return on their investments these days. Because semiconductor start-ups are more capital-intensive now, they need to target high-volume markets to be viable, and unfortunately, not all VCs have the financial ability to back such companies over time. Many VCs are looking at exit strategies involving acquisitions rather than planning for an IPO and competing with already-established large marketshare holders. So the number of IPOs may see a slowdown even as the market picks up. The total lack of funding and high costs doesn't mean start-ups will be left out in the cold, but they'll need to work harder to create a breakthrough technology unique to the industry to be noticed by VCs.

CONSOLIDATION

For the 12 months ending December 2009, 84 semiconductor M&A deals were announced, a 35.9% decrease YoY. Fabless/IDM deals accounted for 57.1% of total semiconductor M&A deals announced in 2009, compared to 55.7% in 2008. The largest semiconductor M&A announced in 2009 was Advanced Technology Investment Company's (ATIC) acquisition of Chartered Semiconductor Manufacturing Inc. for \$3.9 billion in cash/stock, which became effective on 12/17/2009. ATIC intends to fold Chartered into GlobalFoundries, creating a powerful competitive force within the foundry market.

The M&A market is anticipated to see an increase in the value of deals in 2010. According to a survey conducted by the 451 Group, with expectations that an increasing number of technology deals will drive up prices as companies, venture capital firms and private equity firms begin to make greater

investments with the settling of the financial crisis, technology executives believe it will become more costly to acquire rival companies in 2010 than in 2009.

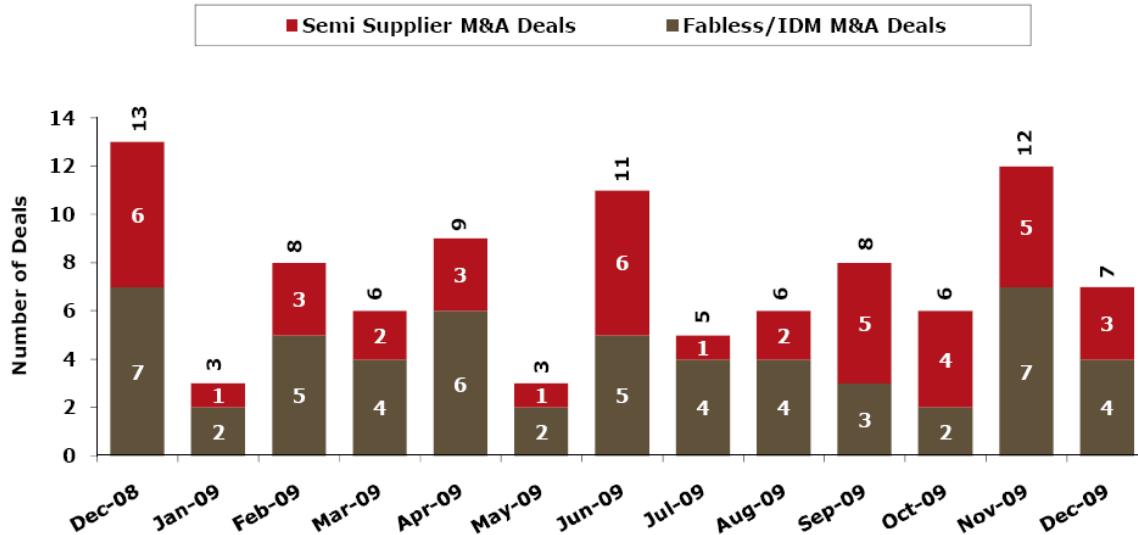
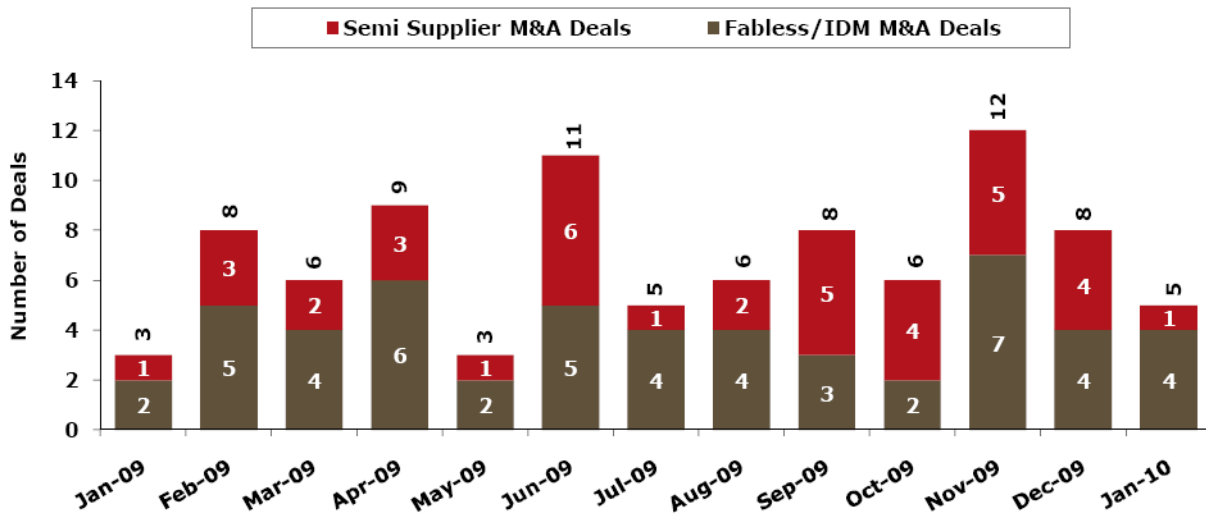


Figure 26. Semiconductor M&A Activity - January

Includes fabless companies, IDMs and semi suppliers. Fabless companies and IDMs are in bold. The M&As above were recorded when the companies involved announced a plan to merge/acquire or entered into a definitive agreement; therefore, some M&As may still be pending.

Overall M&A activity experienced a slowdown as well. According to Dealogic, the number of global deals announced in January 2010 was valued at \$184.0 billion, a dollar amount decrease of 0.3% MoM and 19.0% YoY. David Sampson, a partner in global M&A at KPMG, dismisses the low global M&A activity in January reflecting future months. Commenting on future M&A activity he says, "...we are seeing a clear trend of improving business confidence which we expect to feed through to increased deal activity in the coming months."

According to an annual BDO survey, 81.0% of technology CFOs in the U.S. expect M&A activity in the technology sector to increase this year. Douglas Sirota, a partner in the technology practice at BDO, says, "For the most part, the technology industry will continue to focus on streamlined operations, cost-cutting and innovation wherever possible. Companies that are strong and looking to grow, however, can afford to be opportunistic in this market. As the economy continues to stabilize, we can expect to see some creative deal-making throughout 2010."



Source: GSA

Figure 27. M&A Activity by Month

CONCLUSION

Compared to 2009, this year *will* appear bright for semiconductors, but the industry should be careful not to get caught up in the dazzle. Sales may grow more than 20% in 2010, according to analysts, but will only barely hit the 2007 sales level until another sequential double-digit growth in 2011. Capex levels seem high, but capital investments are still less than half of what they were in 2007 and 2008. According to mobile phone makers, there have been some component shortages from their suppliers. However, production constraints are the result of supply bottlenecks and not a huge increase in demand¹⁶. Management teams will need to consider these points as they also remain alert of macroeconomic conditions throughout the year. A definite improvement is here, but in actuality, this year should be viewed as 'normal' and not 'extraordinary'.

¹⁶ "Semiconductor Recovery in 2010 More Modest Than it Appears", iSuppli Press Release, March 5, 2010