

## CURRENT STATE OF THE SEMICONDUCTOR ECONOMY Q1 Recap / 2009 Expectations

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Last fall when the downturn became apparent to the semiconductor industry, GSA's leaders developed a hypothesis that became the basis of the organization's efforts to help members prepare and endure the current down cycle (Figure 1).

<b>GSA Hypothesis</b>	<i>The semiconductor industry will not go unscathed in this current environment. Start-ups needing additional rounds and do not yet have a product and are not cash-flow positive are the most vulnerable. However, in general, the industry is in a much stronger position to weather this downturn than it was in 2001.</i>
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**Figure 1. GSA's Semiconductor Downturn Hypothesis**

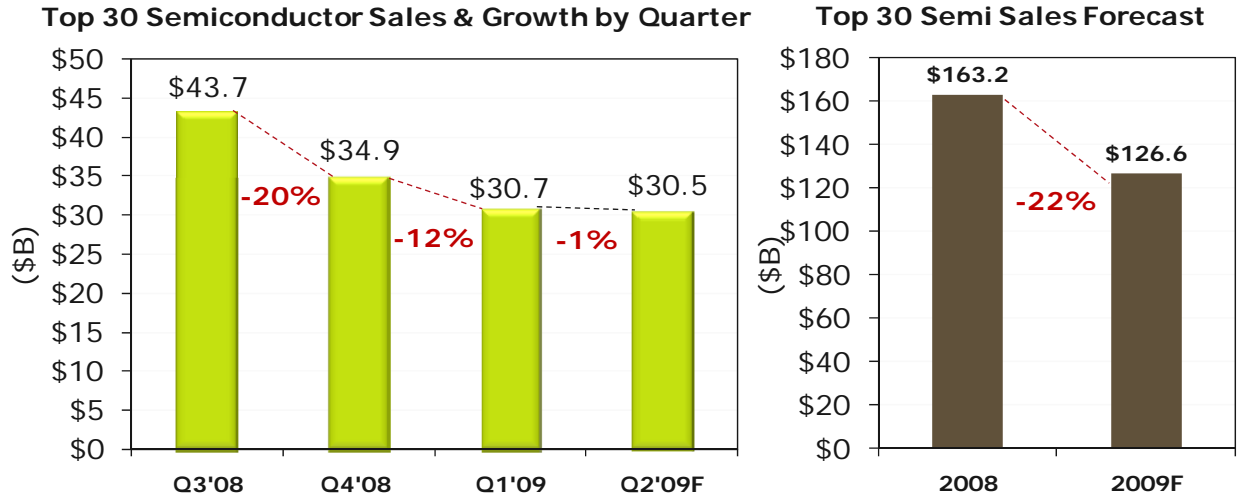
Over the past three quarters, for the most part, the following statements supporting the hypothesis have held true for many of the semiconductor companies GSA tracks.

- Balance sheets are strong, particularly among fabless companies.
- There is still growth among well-positioned companies.
- Inventories are lean.
- Capital expenditures have already been reduced, so there will not be a glut of capacity to exacerbate this downturn.
- Industry is more diverse from an end-market segment and geographical perspective.
- R&D investments will result in net generation of opportunities.

### SALES GROWTH

The top 30 semiconductor companies, which represent nearly 80% of the semiconductor sales worldwide, totaled more than \$30.7 billion in Q1'09 — a 12% drop quarter-over-quarter (QoQ) and 31% year-over-year (YoY).

Sales for the top 30 are expected to be down 1% to flat in Q2'09, decreasing \$200 million to \$30.5 billion, and drop 22% in 2009 to \$126.6 billion (Figure 2). This will be the lowest revenue the industry has seen since 2003.



Source: GSA; Company Reports

Figure 2. Sales dropped 12% QoQ in Q1'09; Sales expected to decline 1% in Q2'09

Analysts are not expecting sales to trend upward until Q3'09, but several companies are defying the downward trend and reported sales growth in Q1'09 (Figure 2). Several companies are also forecast to increase sales 10% or greater in Q2'09 (Figure 3).

Company	Q4 2008 (US\$000)	Q1 2009 (US\$000)	Growth
NVIDIA	\$481,140	\$664,231	38.1%
Samsung Electronics (Semi Div.)	\$3,096,800	\$3,749,003	21.1%
MediaTek	\$629,323	\$701,812	11.5%
Advanced Micro Devices (AMD)	\$1,162,000	\$1,177,000	1.3%

Figure 3. Four of the top 30 semiconductor companies reported positive sales growth over Q4'08.

Company	Q1 2009 (US\$000)	Q2 2009 (US\$000)	Growth
Micron Technology	\$993,000	\$1,210,000	22%
MediaTek	\$701,812	\$836,091	19%
Qualcomm	\$1,316,000	\$1,555,200	18%
Fairchild Semiconductor	\$223,300	\$260,000	16%
STMicroelectronics	\$1,660,000	\$1,844,200	11%
Broadcom	\$853,436	\$937,000	10%

Figure 4. Top 30 Semiconductor companies forecast to grow sales 10% or greater in Q2'09 over Q1'09

Analysts' sales forecasts have not been modified upward since Q4'08, which leaves most predicting that overall semiconductor sales will drop *at least* 20% in 2009 from 2008's total. Some have even guided downward to 25-28% lower sales. This will be the largest semiconductor revenue decline since 2001's negative 32% growth (Figure 5).

MediaTek is the only company in the top 30 semiconductor companies that analysts forecast will have higher sales in 2009 compared to 2008, gaining 22% in sales YoY. MediaTek's cross between China and handsets will be the major factor in its YoY sales growth, according to Fubon Research.

Fubon also noted that technology companies, in general, will see a flat or better June quarter on a sequential basis. They noted Altera and Xilinx both saw strong demand from China's 3G network construction; Broadcom and SanDisk are both expected to report sequential revenue growth; Qualcomm is expected flat to mild growth in Q2'09; and AMD and Seagate anticipated a declining June quarter, which hints at a weaker PC outlook, according to the firm.

### NET PROFIT

More than half of the top semi companies improved net profit margins in Q1'09 when compared to Q4'08—although 10 were net losses, they were significantly better than the previous quarter. Eleven companies had positive net profit margins for the quarter (Figure 6).

**2009 Forecasts by Research Firm**

Company	Forecasted Growth	As of Date
Databeans	-18%	February 2009
	-17%	April 2009
Future Horizons	-28%	January 2009
Gartner Dataquest	-16%	December 2008
	-20%	January 2009
	-24%	February 2009
	-22.4% ↑	May 2009
IC Insights	-10% to -16%	December 2009
	-17%	March 2009
IDC	-22%	February 2009
InsideChips	-20%	January 2009
InStat	-20%	February 2009
iSuppli	-9%	December 2008
	-23%	Q1 2009
JP Morgan	-20%	January 2009
Merrill Lynch	-22%	January 2009
Semico	-6%	January 2009
	-15%	March 2009

Source: Company announcements

Figure 5. Research analyst 2009 sales forecasts

**Companies Achieving QoQ Positive Net Profit Margins**

Company	Q1'09 Sales (\$000)	Q1'09 Net Profit (\$000)	Net Profit Margin (%)
<b>Freescale Semiconductor*</b>	\$840,000	\$1,756,000	<b>209.0%</b>
<b>MediaTek</b>	\$701,812	\$205,588	<b>29.3%</b>
<b>Linear Technology</b>	\$200,933	\$54,465	<b>27.1%</b>
<b>Xilinx</b>	\$395,014	\$70,512	<b>17.9%</b>
<b>Altera</b>	\$264,602	\$43,961	<b>16.6%</b>
<b>Microchip Technology</b>	\$173,253	\$22,829	<b>13.2%</b>
<b>Analog Devices (ADI)</b>	\$474,748	\$51,754	<b>10.9%</b>
<b>Intel</b>	\$7,145,000	\$647,000	<b>9.1%</b>
<b>National Semiconductor</b>	\$292,400	\$21,100	<b>7.2%</b>
<b>Atmel</b>	\$271,493	\$3,626	<b>1.3%</b>
<b>Texas Instruments</b>	\$2,086,000	\$17,000	<b>0.8%</b>

\*= Included in net earnings was a one-time net gain of ~\$2.3B as a result of the long-term debt eliminated as part of the debt exchange completed by the company. Upon completion of this transaction, the face amount of the company's outstanding long-term debt obligations decreased by approximately \$2B and the related expected annual cash interest expense decreased by ~\$140M.

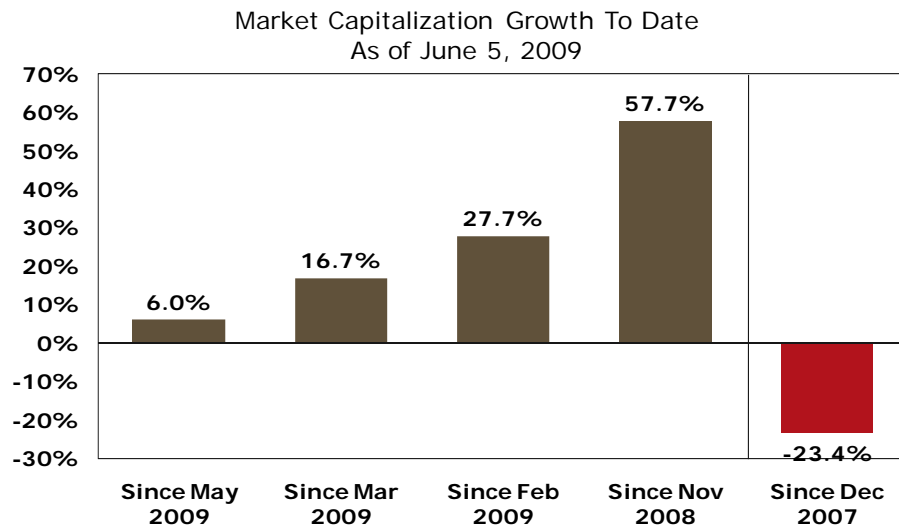
Source: GSA; company reports

Figure 6. Fifty-nine percent of the top semiconductor companies improved net profit QoQ.

### MARKET CAPITALIZATION & STOCK PERFORMANCE

As of June 5, 2009, market capitalization for the companies in GSA's portfolio grew 6% from May 20, 2009, 17% from March 31, 2009, 28% since early February 2009 and 58% since November 20, 2008 (the bleakest day the stock market has seen during the downturn thus far). Stocks are on the rise for the most part; however, market cap is still down 23% from December 2007 when the recession began (Figure 7).

Since the end of last quarter the Philadelphia Semiconductor Index, or SOXX, is up approximately 15%. In the same period, the broader Morgan Stanley Technology Index has gained 19%, suggesting that chip stocks are lagging other tech stocks.<sup>1</sup>



\* Stock prices pulled 6/5/09

Figure 7. Market Cap Growth

Markets have recently rallied, but stocks are still being pounded by persistent job losses and other negative news.

- In the U.S., home prices are still sliding and unemployment remains at a 25-year high.
- Homebuilder stocks declined after an analyst note quashed hopes that the housing market was seeing the start of a recovery.
- The Labor Department said initial claims for jobless benefits fell moderately to 631,000, slightly worse than analysts' expectations of 630,000.

Stephen Carl, a principal and head of equity trading at The Williams Capital Group, said the market is sliding partly because it isn't getting a steady diet of good news to draw in more buyers.

"Without the constant stream of them it's kind of hard to build on," he said, referring to the upbeat economic reports that fueled the rally in March and April, including one from The Conference Board, a private economic research group and its economic index.

<sup>1</sup> Optimism Grows For Chip Sector Even As Tech Sags, [www.cnn.com](http://www.cnn.com), 5/20/09

In the latest report from The Conference Board<sup>2</sup>, forecast of economic activity rose more than expected in April, the first gain in seven months and new evidence that the recession could end later this year. The firm said the index of leading economic indicators, designed to forecast economic activity in the next three to six months, rose 1% in April—the biggest gain since November 2005, said Ian Shepherdson, chief U.S. economist at High Frequency Economics. The level is now even from November 2008, according to the release.

The index is derived from 10 components including stock prices, the money supply, jobless claims and new orders by manufacturers. In April's index, seven indicators rose, including stock prices. Conference Board economist Ken Goldstein said that means declines in activity could switch to growth in the overall economy in the second half of the year.

## **BALANCE SHEETS: CASH, CURRENT RATIO, DEBT**

### **Cash and Debt**

The stronger a company can keep their balance sheet, it is likely they will be well-positioned to emerge from a downturn in better condition than others. This means, more cash and little or no debt.

The Boston Consulting Group published a report in April providing scenarios and an action plan on how to generate rapid cash in a downturn.<sup>3</sup> The report explains that as sales plummet, inventories rise, and customers pay at a slower rate – meaning cash is dwindling for many companies. Companies face a tough balancing act as they must cut costs, but at the same time retain future viability.

Many of the public semiconductor companies GSA tracks have large cash amounts and are well positioned to gain market share by benefiting from fire-sale prices of the smaller companies running out of funding with no other choice than an acquisition exit strategy. Combined with the zero or little debt they have, these companies will more than likely prevail.

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<sup>2</sup> Private research group's monthly economic forecast fell slightly more than expected in March, Tali Arbel, [www.wnep.com](http://www.wnep.com), 5/21/09

<sup>3</sup> *Winning in a Downturn: Rapid Cash Generation*, The Boston Consulting Group, April 2009

Companies with <b>Zero Debt</b> , <b>Strong Current Ratios</b> , <b>Strong Market Cap-to-Cash Ratios</b>				
Company	Current Ratio	Debt (US\$)	Cash (Q1'09) (\$'000)	Market Cap to Cash Ratio
Techwell, Inc.	<b>18.20</b>	\$0	\$38,440	3.51
Mellanox Technologies	<b>16.48</b>	\$0	\$73,330	3.73
Actions Semiconductor	<b>15.25</b>	\$0	\$43,696	17.03
Hittite Microwave	<b>14.55</b>	\$0	\$184,554	5.02
Advanced Analogic Technology (AnalogicTech)	<b>11.57</b>	\$0	\$45,714	3.39
Microchip Technology	<b>11.19</b>	\$0	\$1,397,611	2.81
Linear Technology	<b>7.29</b>	\$0	\$900,155	5.55
Maxim Integrated Products	<b>5.81</b>	\$0	\$718,000	5.80
Qualcomm	<b>4.98</b>	\$0	\$3,826,000	16.51
MediaTek	<b>4.87</b>	\$0	\$2,123,578	N/A
Broadcom	<b>4.28</b>	\$0	1,190,645	7.63
Altera	<b>4.03</b>	\$0	\$1,216,743	4.19
NVIDIA	<b>2.88</b>	\$0	\$1,255,390	4.00

Sources: GSA; Yahoo Finance / \* Stock prices pulled 3/31/09

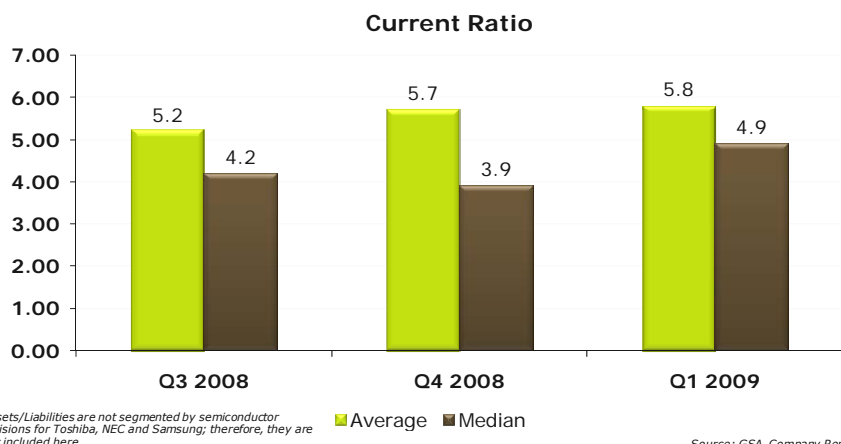
**Figure 8. Companies with no debt, strong balance sheets**

Semiconductor companies generally have a strong market cap-to-cash ratio, meaning these companies have stock worth more than the cash they have on hand.

In Cirrus Logic's Q1'09 earnings press release, CEO Jason Rhode credits their strong financial position for allowing them to maintain focus on their vision. He said the company generated cash and managed expenses in this environment. Revenue from new products continues to grow on a year-over-year basis, which is a good indication of Cirrus Logic's growing market share, according to Rhode.

### Current Ratio

The average current ratio rose a tenth of a point from Q4'08 to 5.8 in Q1'09, and the median current ratio increased by one point (Figure 9). The semiconductor companies GSA tracks were well above the industry's average current ratio, which is 4.0, according to Reuters.com. This was slightly higher than the previous quarter, as companies continue to strengthen their balance sheets. A current ratio below 2.0 could mean a company is unable to pay off obligations



**Figure 9. Current Ratio Average & Median by Quarter**

at that point in time, and none of the companies GSA tracks reported a current ratio of less than 1.0 (Figure 10). Only three of the top semiconductor companies had less than a 2.0 ratio (AMD, Infineon and Micron Technology), compared to four in Q4'08 (AMD, Infineon, Micron and ON Semiconductor).

ON Semiconductor improved their current ratio to 2.1 in Q1'09 by taking aggressive actions to reduce overall spending levels, reducing SG&A and R&D expenses by 17%. ON also on closed one wafer fabrication facility in Q1'09 and are on schedule to close two additional facilities by the end of Q3'09 and a fourth facility by the end of the Q1'10.

COMPANIES WITH CURRENT RATIO BELOW 2.0			
Company	Current Assets (\$000)	Current Liabilities (\$000)	Current Ratio (CYQ1'09)
Advanced Micro Devices, Inc. (AMD)	\$3,971,000	\$2,079,000	<b>1.91</b>
Micron Technology	\$2,523,000	\$1,637,000	<b>1.54</b>
Cypress Semiconductor	\$396,061	\$258,002	<b>1.54</b>
Infineon	\$2,486,531	\$1,637,439	<b>1.52</b>
Maxwell Technologies Inc.	\$54,346	\$35,888	<b>1.51</b>
AudioCodes Ltd.	163,068	109,575	<b>1.49</b>
TranSwitch Corporation	\$29,970	\$24,650	<b>1.22</b>
RF Monolithics, Inc.	\$12,476	\$10,711	<b>1.16</b>
Mindspeed Technologies, Inc.	\$38,473	\$33,162	<b>1.16</b>
AXT, Inc.	\$11,507	\$11,692	<b>0.98</b>

Assets/Liabilities are not segmented by semiconductor divisions for Toshiba, NEC and Samsung; therefore, they are not included here.

Source: GSA, Company Reports

**Figure 10. Current Ratio Below 2.0**

## INVENTORIES

Many articles about semiconductor inventory levels have data supporting inventory stabilization for the sector.

Jim McGregor, a semiconductor analyst with In-Stat, recently said in an *Electronic Business* interview<sup>4</sup>, "With inventory levels throughout the industry and throughout the economy at record low levels, we are going to see these spurts where people start production but they still want to keep inventory low. It's kind of a seesaw until we get to a more normalized situation where the fear subsides, inventory levels start to come up to more reasonable levels, consumers and businesses start spending, and we finally understand what that real level of demand is."

McGregor added, "I am expecting [inventory] stability toward the second half. ...In many cases, it might be better if inventory was higher so manufacturing could be better planned, but we will see some uptick in buying going into the second half of this year, which is normal for our industry."

According to brokerage house CLSA, fabless inventories are normalizing, reverting to inventory periods of 60 days in Q1'09 from 77 days in Q4'08. The promise to stay in the range of 58-63 days through Q3'09 bodes well for upstream and back-end stocks, said CLSA analysts<sup>5</sup>.

<sup>4</sup> In-Stat's Jim McGregor: Think outside the box for a sustainable recovery, *Electronic Business*, 5/15/2009

<sup>5</sup> Semiconductor inventory back to healthy levels, DNA India, May 18, 2009

## UTILIZATION RATES & FOUNDRY NEWS

Wachovia analyst David Wong wrote that capacity utilization fell to 57.2% in Q1'09, down from 68.4% in Q4'08 and nearly 90% in the first half of 2008<sup>6</sup>. Taiwanese foundries (TSMC and UMC) are expecting large month-to-month increases in production, and several large IDMs (Intel and TI) have indicated plans to ramp production in Q2'09.

Wong also expects Q1'09 will be the bottom in capacity utilization and that utilization will rebound sharply in Q2'09. Both TSMC and UMC have given guidance indicating that their capacity utilization will rise from 33% to 36% in Q1'09 to about 75% in Q2'09. Rising utilization should help stabilize chip prices and drive up margins for companies wafer manufacturers.

## CAPEX

Capital expenditures are expected to decline into double digits for the second consecutive year, dropping 39% to \$26.6 billion over 2008's 28% decrease, according to IC Insights<sup>7</sup>. This year will see the least amount of capital spending in over a decade. IC Insights doesn't believe the industry will be back to 2000's record \$61.3 billion level any time within the next 5 years.

The research firm notes that during periods of consecutive double-digit capex declines, spending bounces back more than 50% the second year after the sequential declines. However, this is not expected to be the case in 2011 as conservative spending practices among the IC industry will result in only a 35% increase over the 2009 spending level to \$41.3 billion. Intel is planning to spend \$5 billion in 2009, the most of all semiconductor companies and suppliers, which is a 4% decrease over 2008's expenditures. Samsung plans to decrease capex 33% to \$4.5 billion in 2009. TSMC's full capex budget this year is \$1.4B, down 4% over 2008. Included in their spending is the expansion of 300mm wafer fab, Fab 12, which will account for 42% of its aggregate capacity by the end of Q4'09 (250,000 300mm wafers).<sup>8</sup>

Company	2006 (\$B)	2007 (\$B)	2008 (\$B)	% Growth	2009E (\$M)	% Growth
AMD/Foundry	\$1.9	\$1.7	\$0.6	-65%	\$400	-63%
Intel	\$5.8	\$5.0	\$5.2	4%	\$5,000	-4%
Micron <sup>2</sup>	\$1.4	\$3.6	\$2.9	-19%	\$600	-74%
Samsung	\$6.6	\$7.8	\$6.9	-12%	\$4,525	-33%
TSMC	\$2.5	\$2.6	\$1.9	-27%	\$1,365	-27%
Texas Instruments	\$1.3	\$0.7	\$0.8	14%	\$300	-61%
UMC	\$1.0	\$0.9	\$0.4-\$0.5	-50%	\$300	-17%
SMI C	\$0.9	\$0.7	\$0.8	14%	\$200	-70%
Chartered	\$0.56	\$0.76	\$0.58	-24%	\$375	-35%
Hynix	--	\$5.1	\$1.9	-63%	\$900	-70%
Elpida	--	\$1.4	\$0.95	-32%	\$600	-33%
Toshiba	\$3.0	\$3.6	\$2.9	-19%	\$1,300	-55%

<sup>1</sup> Last date affirmed

<sup>2</sup> Includes Micron/Intel JV spending; excludes Micron/Nanya JV spending

<sup>3</sup> Qimonda declared bankruptcy in Jan-09; Wachovia thinks there is a fair chance Qimonda will shut down production.

Source: IC Insights, Apr 2009

Figure 11. Capital Expenditure Growth (2006-2009)

<sup>6</sup> Semiconductor Capacity Review Q1 09, Wachovia, 5/21/09

<sup>7</sup> The McClean Report, April 2009 Update

<sup>8</sup> DIGITIMES, Sung, Claire; Shen, Jessie; 6/9/2009

## LAYOFFS

Layoff announcements have remained common occurrences, including HP's recent statement indicating they will cut 6,400 additional jobs. GSA has tracked approximately 64,000 job cuts throughout the semiconductor industry through May (Figure 12).

TSMC laid off 700 workers over the past few months as a result of cost-cutting measures caused by the current downturn. Now the company announced on May 21<sup>st</sup> their plans to *re-hire* these workers in anticipation of a spike in Q2'09 sales over Q1'09. TSMC chairman, Morris Chang, told *Financial Times* that the economic crisis continues, but the worst of it is over.

Type	Company	Number	Percentage of Company	Type	Company	Number	Percentage of Company
OSAT	Advantest	1,200	26%	Fabless	Marvell	850	15%
Equip	Agilent	800		IDM	Medtronic	350	
Fabless	Ambric	60	~100%	IDM	Micrel	50	6%
IDM	AMD	3000	20%	IDM	Micron	2,000	
OSAT	Amkor	1,500		IDM	Microsemi		~15%
Fabless	AnalogicTech	19	12%	IP	MIPS	512	15%
Equip	Applied Materials	1,800		IDM	National Semiconductor	1,725	26%
IDM	Atmel	266		Fabless	NVIDIA	360	7%
Fabless	Avago	475 + up to 200 more		IDM	ON Semiconductor	350	
Fabless	Broadcom	200	3%	Fabless	QuickLogic	27	17%
EDA	Cadence	625	12%	IP	Rambus	90	21%
Foundry	Chartered	600	8%	IDM	Renesas	2,500	
OEM	Cisco	3,000	4%	Fabless	Saifun	80	42%
Fabless	Conexant	140	11%	Fabless	SanDisk	90	12%
IDM	Cypress Semiconductor	50		Fabless	SMSC	44-89	5-10%
IDM	Diodes	500	24%	IDM	Spansion	3,000	35%
IDM	Fairchild	1,170	12%	OSAT	STATS ChipPac	1600	12%
IDM	Freescall	2,400	10%	IDM	STMicroelectronics	1500+	
IDM	Hynix			IP	Sun Microsystems	6,000	
IDM	IBM	2,850	1%	IDM	TI	3,400	12%
IDM	Infineon	3,000	10%	Foundry	Tower / Jazz	400	
IDM	Intel	5,500	N/A	Fabless	Trident Microsystems	100	15%
IDM	Intersil	128	9%	Foundry	TSMC	700	4%
Supplier	Kulicke & Soffa Industries (K&S)	250		Equip	Verigy	Unknown	
Fabless	Lattice Semi	125	14%	Fabless	Xilinx	250	7%
Fabless	Legend Silicon	150	50%	Fabless	Xilinx	200	6%
EDA	Magma	127	17%	IDM	Zarlink	50	6-8%
<b>TOTAL</b>						<b>64,000</b>	

Source: Company Reports / News stories / as of 5/20/09

**Figure 12. Approximately 64,000 Semiconductor Layoff Announcements Since Mid-2008**

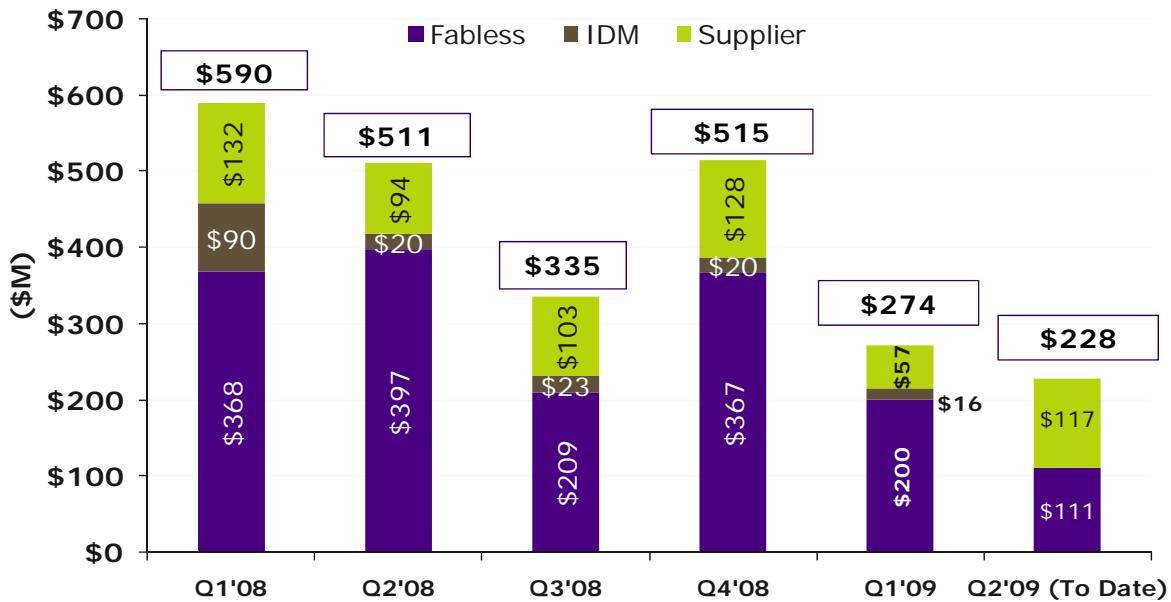
## FUNDING

Venture capital is undoubtedly a vital part of innovation and a startup's livelihood, as well as a means to revitalize the industry in times like these. However, startup companies are not only having a difficult time finding funding, but they are finding it difficult to get any kind of financing due to the credit crunch.

Venture capital plummeted to a 12-year low in Q1'09 overall, and semiconductor funding dropped to its lowest level in a decade<sup>9</sup>. Only \$3 billion was invested in 549 deals by venture capitalists in Q1'09,

<sup>9</sup> Harris: Venture capital industry down but innovation continues, *San Jose Mercury News*, 4/28/2009

the lowest quarterly dollar amount since 1997. This was a 47% decline in dollars and a 37% drop in the number of deals from Q4'08<sup>10</sup>. Included in these figures was the 31 semiconductor companies (i.e., fabless companies and IDMs) and suppliers that raised \$274 million, a 47% decrease from Q4'08 and a 54% decrease from Q1'08 (Figure 13).<sup>11</sup>



Source: GSA

Figure 13. VC funding in Q1'09 was the scarcest it's been in nearly a decade.

Bruno Johnson, director of Cascoda Semiconductor Design, a semiconductor IP and design services provider startup, recently said he believes the venture capital industry has become more risk-averse, choosing to make fewer larger deals, in later stage technologies.

Adeo Ressi, founding member of TheFunded, a Web hub for entrepreneurs, was recently quoted in an article published in the *San Jose Mercury News* as saying Q1'09 venture capital numbers were bad, but they weren't unexpected.

"The sky isn't falling. The largest cause of the slowdown wasn't that there were suddenly no new companies or investors had run out of money," Ressi said. However, Ressi does believe entrepreneurship in Silicon Valley is still strong even if startups are struggling to survive. He said there are no signs of the entrepreneurial spirit waning, and if anything, he thinks it may even be accelerating.

Q2'09 is not expected to be any better than Q1'09 in terms of venture capital being doled out to startups. VCs are currently meeting with many, many startups, but are being cautious about the companies they invest in.

<sup>10</sup> www.PWCMoneyTree.com

<sup>11</sup> GSA

Company	Type	Funding Amount (US\$M)	Round	Investors
SVTC Technologies	Supplier	\$34.00	Undisclosed	Oak Hill Capital Partners, Tallwood Venture Capital
N-Trig Ltd.	Fabless	\$24.00	Undisclosed	Aurum Ventures, Challenger Ltd., Canaan Partners, Evergreen Venture Partners, Microsoft Corp.
Unity Semiconductor	Fabless	\$22.00	3	August Capital, Lightspeed Venture Partners, Morgenthaler Ventures
ZettaCore, Inc.	Supplier	\$21.00	3	Globis Capital Partners, Itochu Technology Ventures, Yasuda Enterprise Development, Epic Ventures and Panasonic Ventures, Draper Fisher Jurvetson, Kleiner Perkins Caufield & Byers, Radius Ventures, Oxford Biosciences, Access Ventures, Garrett Capital, Stanford University
Intermolecular	Supplier	\$20.00	4	CMEA Ventures, Redpoint Ventures, Symyx Technologies, US Venture Partners
Beceem Communications Inc.	Fabless	\$20.00	Undisclosed	Motorola, Global Catalyst Partners, Khosla Ventures, KTB Ventures, Walden International, Intel Capital, NEC, Mitsui, Samsung
Titan IC Systems Ltd.	Fabless	\$19.50	Seed	InterTradeIreland
OneChip Photonics Inc.	Fabless	\$19.50	Undisclosed	BDC Venture Capital, DCM, GrowthWorks Canadian Fund, Morgenthaler Ventures
Teradici Corporation	Fabless	\$17.00	3	Telus Ventures, Alloy Ventures, Working Opportunity Fund, Skypoint Capital, BDC Venture Capital and Alta Berkeley Venture Partners
Enpirion	Fabless	\$16.00	5	Questmark Partners, Canaan Partners Scale Venture Partners, RRE Ventures
Stretch, Inc.	Fabless	\$15.00	2-add on	Worldview Technology Partners, Oak Investment Partners, Menlo Ventures
Audience, Inc.	Fabless	\$15.00	4	New Enterprise Associates (NEA), Tallwood Venture Capital, Vulcan Capital, VentureTech Alliance
PicoChip	Fabless	\$15.00	5	Highland Capital Partners, Scottish Equity Partners, Atlas Ventures
Imbera Electronics Oy	Supplier	\$15.00	2	NorthZone Ventures, Index Ventures, Conor Venture Partners
Quantenna Communications	Fabless	\$13.85	3	Southern Cross Venture Partners, Grazia Equity GmbH, Sequoia Capital, Sigma Partners and Venrock Associates

Figure 14. Top 15 Funding Deals (to date)

## CONSOLIDATION

### M&A Activity

In Q1'09, the number of semiconductor M&As (i.e., M&As of entire companies, not sectors/product lines) dropped 36% QoQ to 16 deals. The value of semiconductor M&As in Q1'09 decreased 76% QoQ to \$292 million. Of the nine M&A transactions in April 2009, four fabless/IDM M&A deals totaled \$136.7 million. The values of the other three fabless/IDM M&A deals and the two supplier M&A deals were not disclosed.

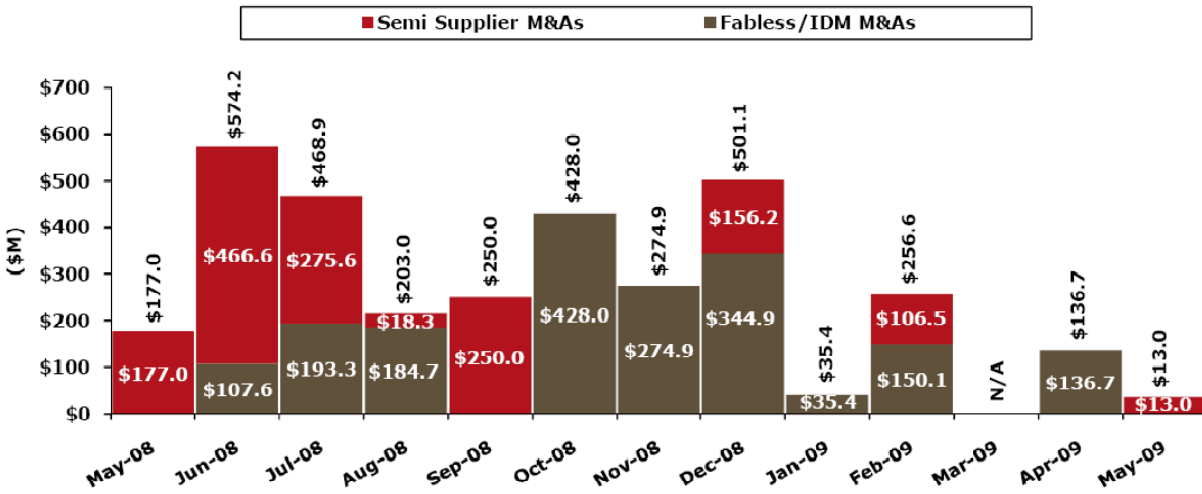


Figure 15. M&A Activity by Month

Buyers are taking advantage of the great values they are finding when seeking investment opportunities, and companies are accepting offers. According to analysts, CSR found a good deal when it purchased SiRF for \$136 million in February, or \$2.06 a share, thanks to a weak stock market. SiRF lost \$398 million in 2008, compared to a \$10 million loss in 2007, and 2008 sales fell from \$329 million to \$232 million. CSR ended up with the \$116 million in cash on SiRF's balance sheet, meaning the company is acquiring SiRF for only \$20 million in stock!<sup>12</sup>

IDT is also taking advantage of current economic conditions by strategic expansions into new market areas, such as IDT's purchase in October of video-processing chipmaker Silcon Optix for undisclosed terms, and boosting market share with consolidation moves, according to a May 1 article at SeekingAlpha.com. Earlier in May, IDT bid \$100 million for Tundra Semiconductor Inc., outbidding Gennum Corp., which had earlier offered \$92 million for the Canadian chipmaker. Later the same day, IDT unveiled the divestiture of its network search engine unit, which it agreed to sell to NetLogic Microsystems Inc. for \$90 million.

As a result of Trident Microsystems' latest completed acquisition of Micronas Semiconductor's consumer business division assets, Trident expects \$15 million to \$18 million in revenue and a non-GAAP operating loss of \$15 million to \$17 million. Earlier the company forecast revenue of \$6 million to \$7 million with a non-GAAP operating loss of \$14 million to \$15 million. The company expects to end the quarter with a cash balance of approximately \$177 million to \$182 million.

GSA has partnered with Citi Group to publish an M&A strategies report, which is scheduled to be delivered to members this summer.

### Out of Business

Since October 2008, GSA has tracked nearly 100 semiconductor companies that have either been acquired, or they have simply shut their doors<sup>13</sup>. Much of this has been caused by the lack of funding required to keep the business in operation.

<sup>12</sup> VentureBeat.com

<sup>13</sup> As of 5/21/09

## INDUSTRY SENTIMENT

For several months, the semiconductor industry has seen the effects of this downturn, but, according to a recent article from Dow Jones, chip makers are more confident that the market is stabilized. There have been several signs that sentiment is picking up from leading companies. Several examples include:

- Analog Devices (ADI) – Better-than-expected Q1 earnings announced May 19<sup>th</sup>.
- Texas Instruments' CEO, Rich Templeton said inventories have stabilized and it's time to watch what the economy does. "The bigger question now," said Templeton, "is consumer spending, capital spending and the health of the macro economy."
- Production levels have returned to levels consistent with demand for tech products, the chip sector is awaiting a return of economic growth spurred by consumer and business spending to push demand for chips higher.<sup>14</sup>
- Stocks have rallied for chip companies
- ST executives said demand from customers in China and across Asia has picked up since the end of the first quarter, boosting sales in the wireless, computer, industrial and multi-application markets.
- Texas Instruments raised Q2'09 sales outlook to \$2.4 billion, or 15% higher than Q1'09 sales. As a result, most U.S. stocks rose for the first time in three sessions<sup>15</sup>.

During the GSA's latest CEO roundtable in Beijing, 50 participants were asked if they believe business in Q2 will be better, worse or unchanged over Q1'09. Seventy-four percent said the industry will be in a better position in Q2, compared to 26% believing it will remain flat QoQ. No one believes the industry will move in a downward direction from Q1.

Even if sentiment seems to be on the mend, companies overall still reported significant year-over-year sales declines and earnings in Q1'09. Analog Devices, for example, reported surprisingly better-than-expected sales for Q1'09, and as a result experienced a 17% gain in its stock price — even though the company saw a 27% YoY decline in revenue.<sup>16</sup>

Good sentiment seems to be mixed, however. Hewlett-Packard's CEO isn't touting a quick recovery. He recently said he's "not ready to call the market better." He said IT spending continues to be restricted by companies' caution about the future, and any uptick in business IT spending may not be seen until much later this year. HP also announced an additional 6,400 job cuts. According to Robert W. Baird analyst Tristan Gerra, end demand continues to be weak and said it is a question as to whether end demand will pick up in the second half.

GSA and J.P. Morgan have a sentiment index specifically for industry CEO that is sent monthly to the CEOs who participate in each survey. We highly encourage all industry CEOs to participate every month, as this Index is a great resource for companies to understand what their peers are seeing in terms of contraction and expansion and possibly when the market might turn around. We monitor this Index, but you must participate to get detailed results. In 2009 CEOs have tracked the industry quite well and has increased their sentiment each month since we began the survey in January. Visit [www.gsaglobal.org/scsi/form.asp](http://www.gsaglobal.org/scsi/form.asp) to be added to the distribution list.

<sup>14</sup> Dow Jones Newswire, 5/19/09, [www.cnn.com](http://www.cnn.com)

<sup>15</sup> Bloomberg.com, Stanton, Elizabeth, "Most U.S. Stocks Advance as Texas Instruments Leads Tech Rally", 6/9/09

<sup>16</sup> Optimism Grows For Chip Sector Even As Tech Sags, [www.cnn.com](http://www.cnn.com), 5/20/09

## CONCLUSION

Unfortunately, as companies have needed to cut costs across the board, R&D dollars have been sacrificed with many other line items. R&D-to-sales for the semiconductor industry is at 24%, down from 27.5% in Q4'08.

The first sentence in GSA's hypothesis reads that this industry will not go unscathed in today's downturn, and some companies will suffer more than others. The choices each company makes in terms of operations, including budget and staff cuts, realigning strategies, etc., will be a factor in the health of the company when the market bounces back. However, cutting too much R&D funding could be detrimental to a company's long-term health competitiveness. Be wise about cutting the fat, and remember to preserve the muscle. Remain innovative.

In addition to remaining healthy in the long run, Jim McGregor summed it up well in an *Electronic Business* interview<sup>17</sup>. He advised companies to think outside the box and think about what your company's business model will look like in the future. In many cases that may mean that you need to be part of the communication infrastructure; you may need to be a critical part of the software community; and it may mean moving away from solely being a silicon provider. This may be a result of partnerships or mergers or acquisitions, or it may come through homegrown technologies. But companies really should think outside of the box to ensure they are aligned with the entire ecosystem and not just its next big customer (ODM, OEM). Companies need to be aligned with the carrier, the infrastructure, the end applications, and the content. Think farther down the value chain to make sure what you are doing makes sense and that you are becoming part of that value chain.

We encourage everyone to visit GSA's [Current Economic Monitor](#), a webpage dedicated to keeping our members apprised of market conditions. The page includes downloadable articles, presentations and data. We also encourage you to read the Boston Consulting Group's report earlier noted entitled "Winning in a Downturn: Rapid Cash Generation", which you can download for free on their website ([www.bcg.com](http://www.bcg.com))

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<sup>17</sup> In-Stat's Jim McGregor: Think outside the box for a sustainable recovery, *Electronic Business*, 5/15/2009