Zacks Equity Research

February 23, 2010
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Towerjazz (TSEM-NASDAQ)

TSEM: Initiating Coverage- Outperform

OUTLOOK

Towerjazz is a pure-play semiconductor wafer foundry with two IC plants in Israel and one in California, that manufacture SiGe, MEMS, RF, embedded flash-based memory, analog/mixed-signal, and CMOS image-sensor devices. Q3 revenue reached an all time high and December guidance is for 26% sequential growth on the top-line against an industry average growth of 4%. TSEM appears to be hitting its stride as the firm has solidified itself in the specialty semiconductor area. Tower's designs are typically more complex than the manufacture of standard technology. This has the effect of drawing industry leading customers to the firm and makes it harder for them to leave for the competition. We initiate with an outperform rating.

Current Recommendation	**Outperform**
Prior Recommendation	N/A
Date of Last Change	01/31/2010
Current Price (02/22/10)	$1.62
Six- Month Target Price	**$3.50**

SUMMARY DATA

52-Week High	**$1.62**
52-Week Low	**$0.16**
One-Year Return (%)	**835.88**
Beta	**1.97**
Average Daily Volume (sh)	**3,500,000**
Shares Outstanding (mil)	**194**
Market Capitalization ($mil)	**$315**
Short Interest Ratio (days)	**1.04**
Institutional Ownership (%)	**3**
Insider Ownership (%)	**1**
Annual Cash Dividend	**$0.00**
Dividend Yield (%)	**0.00**
5-Yr. Historical Growth Rates	
Sales (%)	**24.5**
Earnings Per Share (%)	**N/A**
Dividend (%)	**N/A**
P/E using TTM EPS	**N/A**
P/E using 2010 Estimate	**-1.8**
P/E using 2011 Estimate	**-8.1**
Zacks Rank	**N/A**

Risk Level	**Above Avg.,**
Type of Stock	**Small-Blend**
Industry	**Elec Comp-Semic**
Zacks Rank in Industry	**N/A**

ZACKS ESTIMATES

Revenue
(in millions of $)

	Q1 (Mar)	Q2 (Jun)	Q3 (Sep)	Q4 (Dec)	Year (Dec)
2008	58 A	58 A	59 A	77 A	252 A
2009	58 A	61 A	80 A	98 E	297 E
2010	110 E	113 E	117 E	125 E	465 E
2011	128 E	132 E	135 E	140 E	535 E

Earnings per Share
(Non-GAAP)

	Q1 (Mar)	Q2 (Jun)	Q3 (Sep)	Q4 (Dec)	Year (Dec)
2008	-$0.04 A	$0.08 A	$0.04 A	$0.04 A	$0.12 A
2009	-$0.02 A	$0.03 A	$0.07 A	$0.04 E	$0.12 E
2010	$0.10 E	$0.12 E	$0.14 E	$0.15 E	$0.51 E
2011	$0.11 E	$0.13 E	$0.16 E	$0.18 E	$0.58 E

Zacks Projected EPS Growth Rate - Next 5 Years % **15**

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KEY POINTS

- Towerjazz is the leader in the specialty foundry solutions segment.
- While several firms took actions based on survival, Towerjazz effected a timely merger in September 2008, which enabled the company to achieve an $80M annual run-rate of cost reduction, an increased customer base and global presence.
- Specialty foundry enjoys higher margins and a greater portion of inelastic demand compared to foundries competing on costs.
- The Balance Sheet has become a source of strength

OVERVIEW

Tower Semiconductor Ltd. operates as a global specialty foundry company. Its wholly owned subsidiary, Jazz Semiconductor, Inc., specializes in analog-intensive mixed-signal (AIMS) foundry solutions. Tower and Jazz manufacture integrated circuits with geometries ranging from 1.0 to 0.13-micron, as well as provide design enablement tools to allow complex designs to be achieved quickly and accurately. The company and its subsidiary offer a range of process technologies, including digital, mixed-signal and RFCMOS, HV CMOS, BCD, non-volatile memory (NVM), embedded NVM, MEMS, and CMOS image sensors. Tower and Jazz maintain two fabrication facilities in Israel, as well as one fabrication facility in the United States, with additional capacity available through manufacturing partnerships in China.

As of December 31, 2009, Tower has 85 patents and Jazz has 174 Patents

Foundry History
Historically semiconductor firms (also called integrated device manufacturers or IDMs) manufactured chips in their own fabs (chip fabrication plant). By the 1990's as chips grew smaller and more complex it was a natural that fables outsourced manufacturing began to emerge. Semiconductor devices are broadly divided into three categories—analog, digital and radio frequency (RF). Analog semiconductors condition and regulate real world information such as light, temperature, speed, pressure, power and electrical currents. Digital logic semiconductors process information in only two states. Mixed-signal semiconductors combine both analog and digital technology into a single device. Typically, an analog sensor samples real world information, and then converts the input into an electronic analog signal, which is converted into a digital format for further digital processing. The analog and mixed-signal markets tend to be more varied and specialized, with customized products that have longer life cycles than the digital industry segment. There is an ongoing drive to decrease the number of discrete devices, lessen power requirements and shrink the size of the existing devices, which correspondingly increase performance and reliability. Consequently, a greater amount of functionality is being consolidated into increasingly smaller devices.

Foundry Revenue (McLean Report, iSupply IC Insights, Company reports)

(in $M)	2005		2006		2007		2008		2009	
A	TSMC	8217	TSMC	9748	TSMC	9813	TSMC	10253	TSMC	9026
B	UMC	3259	UMC	3670	UMC	3755	UMC	2939	UMC	2755
C	SMIC	1171	Chartered	1528	SMIC	1560	Chartered	1778	Globall/Chrtd	2641
D	Chartered	1132	SMIC	1465	Chartered	1445	SMIC	1148	SMIC	1448
1	Vanguard	353	Dongbu	456	Vanguard	485	Vanguard	515	Dongbu	395
2	Dongbu	347	Vanguard	398	X-Fab	410	Dongbu	433	Vanguard	382
3	HHNEC	313	SSMC	325	Dongbu	405	X-Fab	370	**TowerJazz**	**299**
4	SSMC	280	HHNEC	315	SSMC	350	HHNEC	290	X-Fab	223
5	He Jian	250	X-Fab	290	HHNEC	345	**TowerJazz**	**252**	HHNEC	220
6	X-Fab	202	He Jian	290	He Jian	330	He Jian	222	Grace	203
7	Jazz	199	Jazz	213	**Tower**	**231**	Grace	219	He Jian	195
8	Mosel-Vitelic	140	Grace	191	Grace	214	Silterra	192	Silterra	160
9	Silterra	130	**Tower**	**187**	Jazz	207	SSMC	176	SSMC	144
10	ASMC	114	ASMC	170	Silterra	185	CSMC		CSMC	NA
11	Grace	100	Silterra	155	ASMC	170	ASMC	137	ASMC	NA
12	**Tower**	**94**	Mosel-Vitelic	155	Mosel-Vitelic	157	Episil		Episil	NA
13	Polar Semi.	90	CSMC Tech.	114	CSMC Tech.	155	1st Silicon	0	1st Silicon	0
14	CSMC Tech.	78	Polar Semi.	95	Polar Semi.	105	Mosel-Vitelic	0	Mosel-Vitelic	0
15	1st Silicon	71	1st Silicon	0	1st Silicon	0	-	-	-	-
16+	Others	105	Others	139	Others	163	Others	NA	Others	NA

The availability of IC designs require process technologies other than standard digital CMOS have created a market for independent foundries that focus on providing specialized process technologies. Thus, wafer manufacturers may also need to make a significant investment in specialty process technologies to manufacture these semiconductors. Specialty process technologies enable greater analog content and can reduce the die size of an analog or mixed-signal semiconductor, thereby increasing the number of dies that can be manufactured on a wafer and reducing final die cost. In addition, specialty process technologies can enable increased performance, superior noise reduction and improved power efficiency of analog and mixed-signal semiconductors compared to traditional standard CMOS processes. These specialty process technologies include advanced analog CMOS, radio frequency CMOS (RF CMOS),CMOS Image Sensors (CIS), high voltage CMOS, bipolar CMOS (BiCMOS), silicon germanium BiCMOS (SiGe BiCMOS), and bipolar double-diffused metal oxide semiconductor (BCD).

Specialized Markets, higher margin

The company uses CMOS (complementary metal oxide semiconductor) IC technology within the semiconductor devices. Strategically, management has targeted the manufacture of embedded flash-based memory, analog/mixed-signal and CMOS image-sensor device markets. Management asserts that these targeted specialized markets produce relatively higher gross margins and have higher growth

characteristics than the general industry. Embedded flash memory is non-volatile erasable memory used within MP3 players, wireless handsets, digital cameras, DVD players, set-top boxes and PCs. The analog/mixed signal ICs are used in a wide variety of end applications that include wireless handsets, PCs, DVD players, automotive electronics and medical imaging equipment. CMOS image sensors are used within wireless handsets, digital cameras, video cameras and video game consoles. Applications within the consumer market account for 50% of revenue, while communications was 15%, PC was 7%, multi-markets 18% and the combined industrial, medical and automotive the remaining 10%.

Some industries that will benefit from optical sensors include certain processing industries that can use sensors for controlling chemical formulations and temperatures. In the medical industry, the sensors will facilitate the development of novel imaging systems. The sensors will help the construction industry monitor the structural health of different buildings, bridges, and tunnels and facilitate the environmental industry in monitoring pollutants and contamination.
The multiplexing capability of optical sensors makes them an excellent candidate for structural health monitoring in aerospace applications where weight is a major consideration, notes the analyst. Degradable polymer sensors are used to deliver antiviral drugs, pain and chemotherapy medications, and contraceptives. Universities and companies can use simulation equipment for their research and teaching needs. A range of basic and applied research programs are being conducted in aeropropulsion, space sciences, photonics, and materials technology

Merger.
Jazz semiconductor was formed as the result of a spin off in 2002 from Conexant (Conexant dates back to Rockwell Semiconductor). Jazz is the owner of the Newport Beach CA 200mm facility and several industry leading technologies such as SiGE, BiCMOS, and MEMS. We feel the merger is significant to Tower for the following reasons.

- The merger was done at a time when the rest of the industry was in survival mode.
- The customer base was doubled.
- Towerjazz is the lead in specialty higher margin foundry.



Diverse Customer Base (Source,Towerjazz)

The firm produces its products with its specialty process technology the designs are typically more complex than the manufacture of standard technology. This has the effect of drawing industry leading customers to the firm and makes it harder for them to leave for the competition.

SiGe

TSEM's BiCMOS process technologies have more features than RF CMOS process technologies and power various RF semiconductors such as wireless transceivers and television tuners. Towerjazz takes it a step further and incorporate high-speed bipolar transistors into an RF CMOS process. The equipment requirements for BiCMOS manufacturing are specialized and require enhanced tool capabilities to achieve high yield manufacturing. Towerjazz remains the only foundry in the world with multi-fab SiGE capacity.

Power Management

TSEM's high voltage CMOS and BCD process technologies have more features than advanced analog CMOS processes and are well suited for power and driver semiconductors such as voltage regulators, battery chargers, power management products and audio amplifiers.

With worldwide energy standards becoming more stringent, we are optimistic about Towerjazz technology. In particular, several new government standards are being enacted that will force new products to adopt newer technologies, displacing the inefficient legacy linear transformers. The standards imposed by the California Energy Commission (CEC) became mandatory for all external power supplies by July 2008. This is a critical event given that California is the seventh largest economy in the world and usually the pioneer in leading edge legislation that many other states usually adopt later. Washington State and Arizona have both since adopted the same California standard. China recently announced a new voluntary program similar to the Energy Star program and also adopted the California standards. The European Commission has set European standards for energy efficient external AC/DC power supplies that are even more stringent than the CEC standards, although it is initially on a voluntary basis. Australia not only adopted the CEC standards, but made compliance mandatory by April 2006. The current worldwide energy situation has created greater sensitivity to the burgeoning problem. TSEM integrated power products conform to these new standards. As customers begin to design-in integrated power ICs that are in conformance with these new energy efficiency standards, the firm should be able to capitalize on the conversion.

Balance Sheet Strength

The third quarter marked Tower's Twelfth consecutive quarter of positive operating cash flow and sixteenth consecutive quarter of positive EBITDA. At the end of the third quarter cash and equivalents stood at $51.7 million and bank debt has been reduced from $450 to $250 million. The firm should achieve GAAP profitability by the second half of 2010. We would not rule out future M&A activity although we feel it will be a smaller deal involving a private firm or business.

INDUSTRY OUTLOOK -POSITIVE

We believe that the semiconductor industry is a positive story in the second half of 2010, as inventory issues have been resolved and seasonal consumer demand drives seasonally strong sales. The Semiconductor Industry Association (SIA) released its annual report that worldwide semiconductor sales in 2009 were $226.3 billion, a decline of 9 percent from 2008 when sales were $248.6 billion. Total sales

for 2009 surpassed the SIA forecast of $219.7 billion. December sales were $22.4 billion, an increase of 29 percent from December 2008, when sales were $17.4 billion. December sales declined by 1.2 percent from November when sales were $22.7 billion. All monthly sales numbers represent a three-month moving average.

In 2010, The SIA believes unit sales of personal computers and cell phones, which account for approximately 60 percent of total semiconductor consumption, will grow in the low-to-mid teens, providing a solid platform for chip sales. Consumer electronics are expected to grow in the mid-single digits.

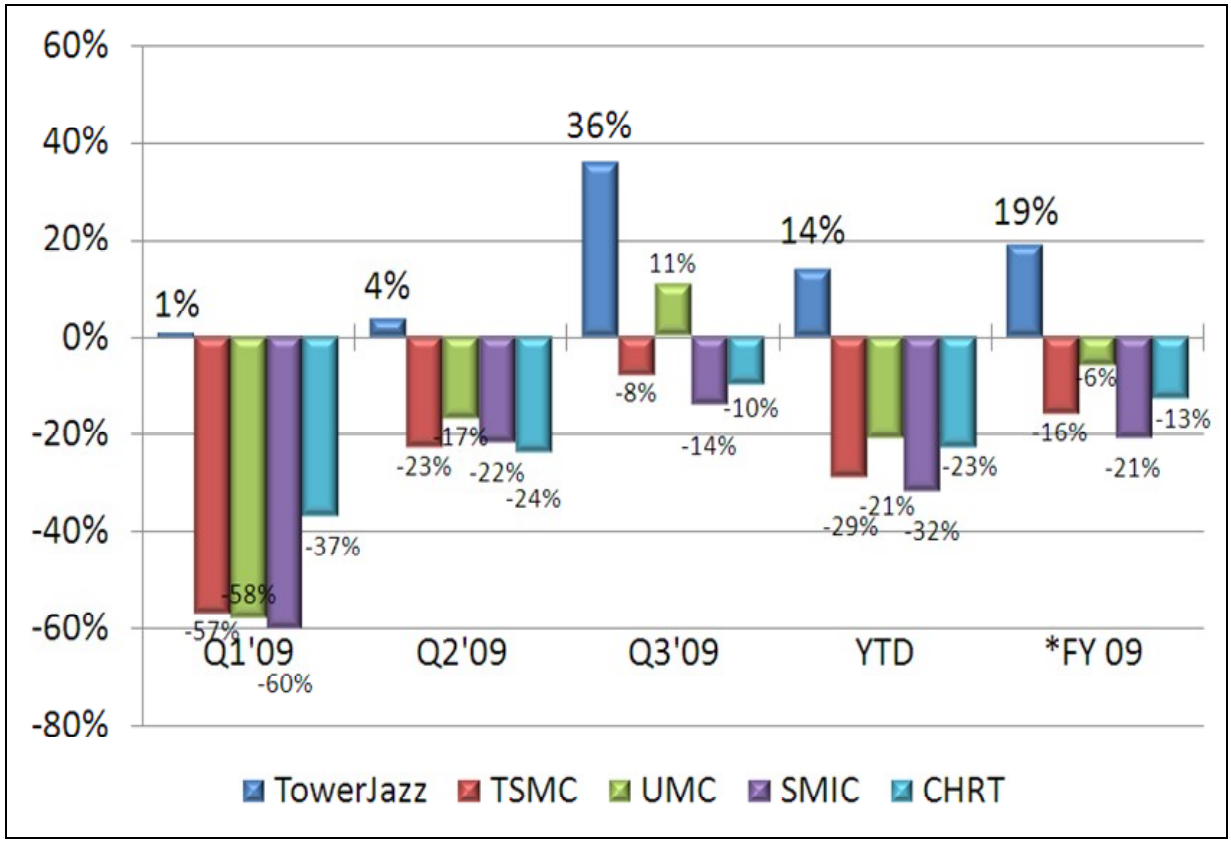
China and India, two key emerging markets, are also driving demand. In addition to purchasing consumer items such as handsets and computers, both regions are continuing to invest in wired and wireless infrastructure. These investments in infrastructure create demand for a broad range of semiconductor products.

We also believe there is a fundamental shift in the semiconductor industry from Corporate IT to Consumer Demand. The tipping point was in 2004, when more than 50% of the $213 billion in semiconductors sold in 2004 went into products purchased by consumers, rather than corporate IT departments. This proportion will continue to grow in the years ahead, as consumers all over the world are captivated by the richness and portability of digital media. Advances in computing, digital media processing and wireless technology are enabling the industry to create lifestyle-changing devices and gadgets that could only be imagined a few years ago. The changing nature of customers will affect every aspect of the business, from product design to marketing to demand forecasting.

INDUSTRY POSITION

The firm competes in the Semiconductor foundry business. The four largest foundries (Taiwan Semiconductor, UMC, Global Foundries, and Semiconductor Manufacturing International Corp.) focus on “12” deep-submicron CMOS processing while the rest of the foundries tend to be more specialized.

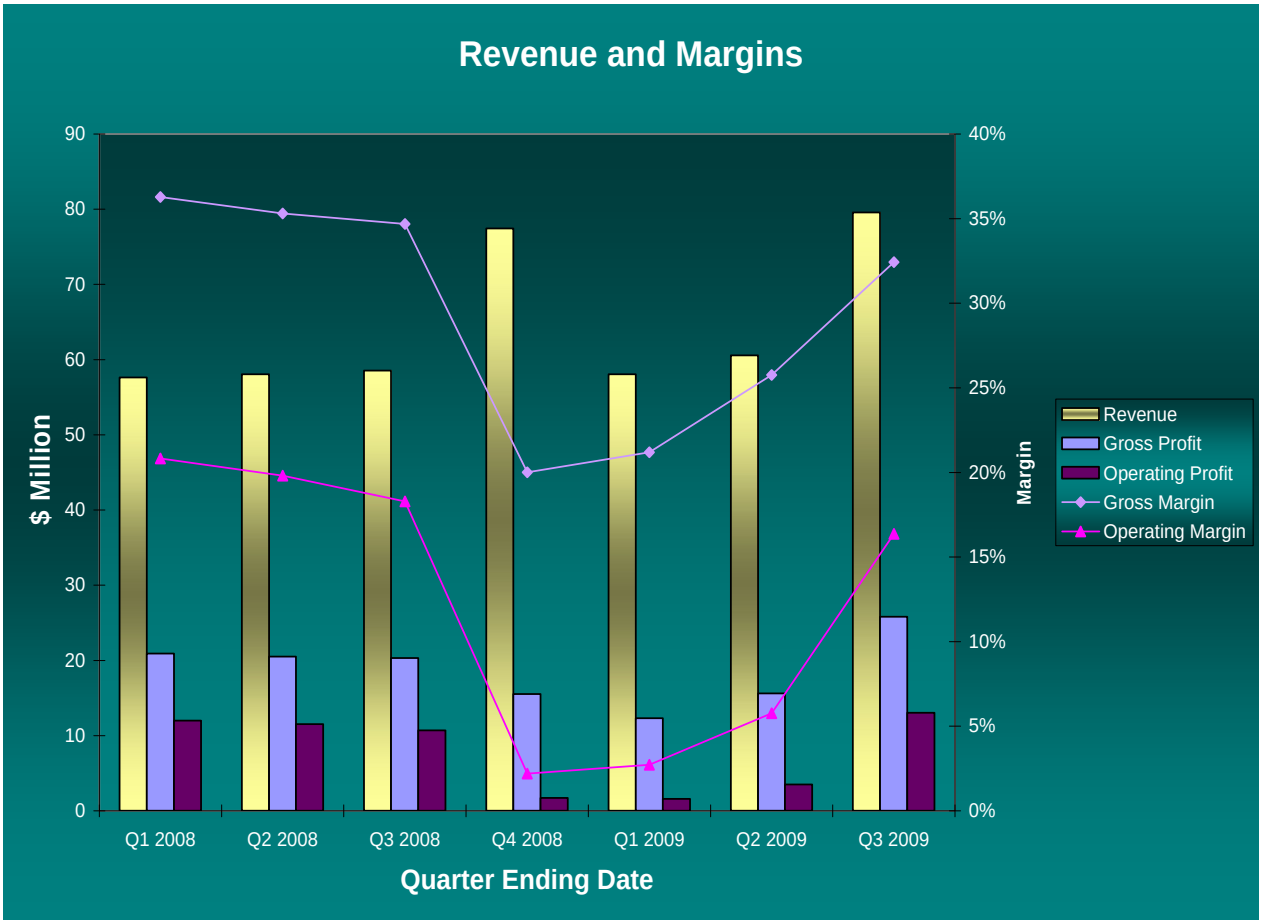
Foundry Growth (source Towerjazz, company reports)



The overall foundry business declined by 10% last year, matching the overall semiconductor industry's 2009 downsizing, but will storm back with 24% growth this year, according to IC Insights. The market researcher predicted the foundry market will grow to $26.8B in 2010, with an average annual growth rate forecast of 13% between 2009 and 2014, reaching $40.6B in 2014.

RECENT NEWS

On February 16, 2010 TowerJazz announced it has accelerated plans for additional capacity expansion to meet customer demand. At Fab2 (located in Israel), capacity will increase by approximately 30,000 wafers per year in order to meet the expanding needs of customers for its wide range of specialty process technologies. At the Newport Beach, CA manufacturing facility, capacity will be increased by 36,000 wafers per year. The total payments to purchase the equipment by TowerJazz are expected to be approximately $15 million, resulting in an increase of approximately 66,000 wafers per year. Based on customer forecasts, management projects this cost-effective investment has a rate of return of two quarters.



VALUATION

TSEM is currently trading at 2.8x FY 2010 EPS estimates, while the cash per share stands at approximately $0.31 per share. The firm has a heavy debt load but could find quick relief with grants from the government and tax incentives.

We feel Towerjazz should outpace its foundry competitors as well as the overall semiconductor industry in 2010. Specialty foundry, enjoys higher margins and is less susceptible to industry downturns. In addition the firm is out in front on several industry leading technologies such as HPA, Power, and optical. The Tower and Jazz merger was completed at a time when the rest of the industry was struggling to survive. The balance sheet is a source of strength which likely sets up the firm for further growth activity in the future.

The recent capacity expansion is a clear sign that solid demand from customers has returned. We value the firm based on a price to earnings multiple of 6.8x FY 2010 EPS estimates or an enterprise value/sales ratio of 1.3x. This is slightly more conservative than the industry median because of Tower's high debt load. That said, the firm could quickly shed this debt with grants from the government. This analysis leads to a price target of $3.50.

Industry Comparables

	Pr Chg YTD	P/E CurrFY	EPS Gr 5Yr Est	Price/ Book	Price/ Sales	Price/ CF
TOWER SEMICOND	67.0			3.5	1.1	8.0
Industry Mean	12.0	38.7	16.4	2.5	4.8	36.7
Industry Median	4.2	24.2	18.5	1.5	1.8	19.9
S&P 500	-0.6	14.6		3.7	2.3	12.5
STANDARD MICROS	-2.6	202.5	15.0	1.2	1.6	5.2
CABOT MICROELEC	12.0	18.7	15.5	1.8	2.7	23.4
ACL SEMI INC	4.2			4.1	0.1	345.5

RISKS

- The company is headquartered in Israel and faces political risk.
- Future growth depends on the adoption rate of business wins and a delay could result in revenues and earnings dropping below expectations.

INSIDER TRADING AND OWNERSHIP

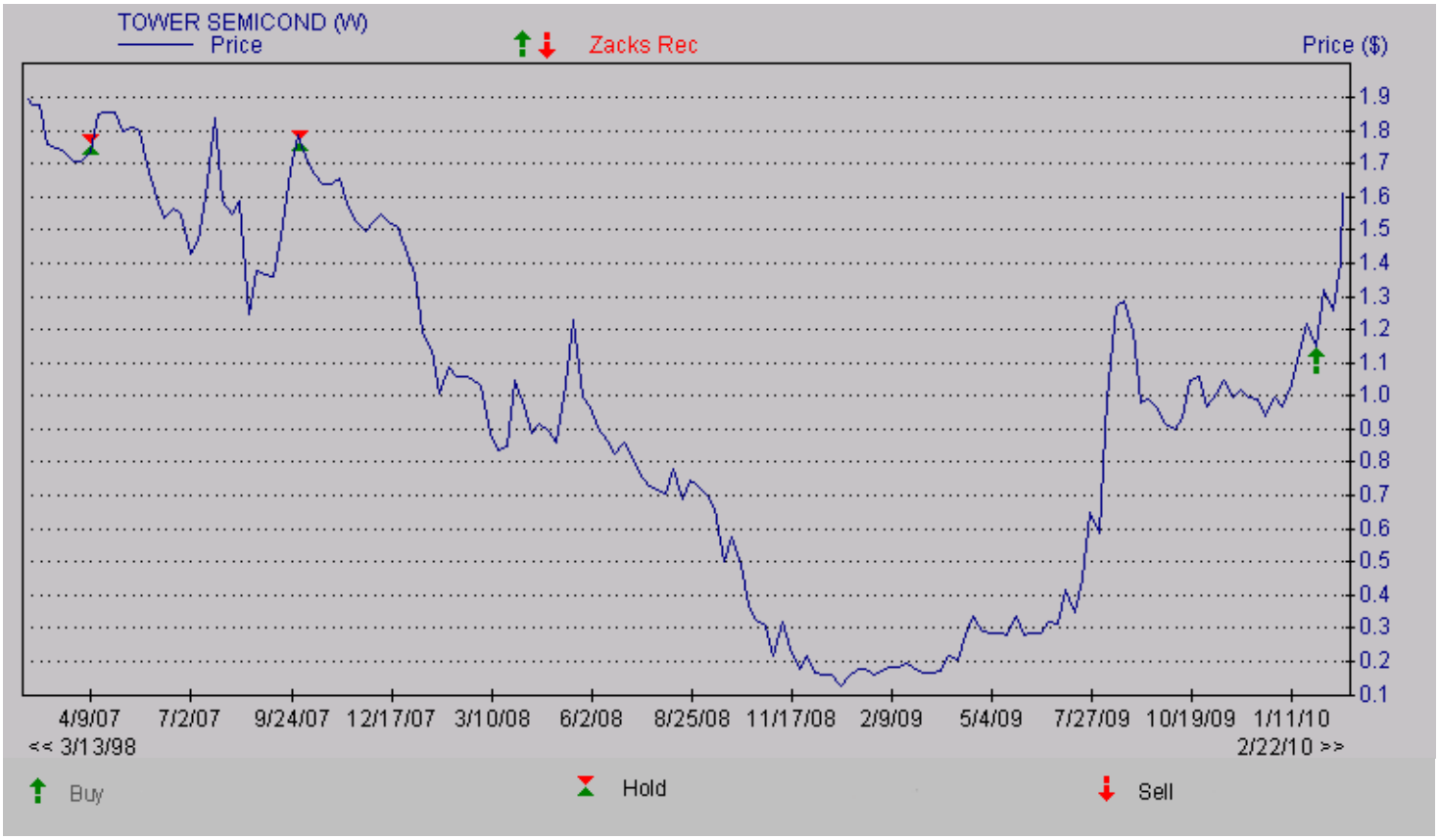
Institutional and mutual fund holders own around 2.5% of the company's outstanding shares. The top five institutional holders are Renaissance Technologies (with 2.4% of the total shares outstanding), Putnam Investment Management (2.4%), Ontario Teachers Pension Plan Board (0.3%), Deutsche Bank (0.3%) and Hsbc Holdings Plc (0.02%). Two of the top five holders added shares in the last quarter, while two stayed the same.

PROJECTED INCOME STATEMENT

INCOME STATEMENT ($ Millions)	Sep-08 Q308	Dec-08 Q408	Mar-09 Q109	Jun-09 Q209	Sep-09 Q309	Dec-09 Q409E	FY 2006	FY 2007	FY 2008	FY 2009 E	FY 2010 E	FY 2011 E
REVENUE												
Net Revenue	**58.5**	**77.5**	**58.1**	**60.6**	**79.6**	**98.0**	**187.4**	**230.9**	**251.7**	**296.2**	**465.0**	**525.0**
Sequential Growth		*32%*	*-25%*	*4%*	*31%*	*23%*						
OPERATING EXPENSES												
Cost of Revenues	38.15	61.89	45.75	44.88	53.71	59.25	128.3	147.4	174.2	203.6	320.0	360.0
% of Revenue	*65.2%*	*79.9%*	*78.8%*	*74.1%*	*67.5%*	*60.5%*						
Gross Profit -	**20.4**	**15.6**	**12.3**	**15.7**	**25.9**	**38.7**	**59.1**	**83.5**	**77.5**	**92.6**	**145.0**	**165.0**
Proforma Gross Margin	*34.8%*	*20.1%*	*21.2%*	*25.9%*	*32.5%*	*39.5%*	*31.5%*	*36.2%*	*30.8%*	*31.3%*	*31.2%*	*31.4%*
R&D + Engg	2.84	4.63	3.79	5.93	5.76	6.69	10.6	10.4	13.2	22.2	29.0	30.0
% of Revenue	*6.7%*	*6.0%*	*6.5%*	*9.8%*	*7.2%*	*6.8%*	*5.7%*	*4.5%*	*5.3%*	*7.5%*	*6.2%*	*5.7%*
SG&A	6.79	9.19	6.93	6.25	7.06	9.25	21.9	24.2	28.1	29.5	30	32
% of Revenue	*11.6%*	*11.9%*	*11.9%*	*10.3%*	*8.9%*	*9.4%*	*11.7%*	*10.5%*	*11.2%*	*10.0%*	*6.5%*	*6.0%*
GW Amort, Restructuring, other	-	-	-	-				-	-	-		
% of Revenue												
Total Operating Expenses	9.63	13.81	10.73	12.18	12.82	15.94	32.5	34.6	41.4	51.7	59	62
% of Revenue	*16.5%*	*17.8%*	*18.5%*	*20.1%*	*16.1%*	*16.3%*	*17.3%*	*15.0%*	*16.4%*	*17.4%*	*13%*	*12%*
Operating Income -	**10.75**	**1.75**	**1.58**	**3.50**	**13.04**	**22.8**	**26.6**	**48.9**	**36.1**	**40.9**	**86**	**104**
Operating Margin	*18.4%*	*2.3%*	*2.7%*	*5.8%*	*16.4%*	*23.3%*	*14%*	*21%*	*14%*	*14%*	*18%*	*20%*
NON-OPERATING ITEMS												
Non operating Income/Expense	-0.5	-5.9	-5.8	0.2	-6.0	-12	-34.4	-28.8	-19.4	-23.4	-5	-10
% of Revenue	*-0.93%*	*-7.68%*	*-9.97%*	*0.39%*	*-7.54%*	*-12.04%*	*-18.35%*	*-12.48%*	*-7.72%*	*-7.89%*	*-1.08%*	*-1.90%*
Tax Provision	0.0	0.6	-1.3	-1.6	-4.2	2.5	0.00	0.00	0.58	-4.6	0	0
Effective Tax Rate												
Net Income -	**10.20**	**-4.77**	**-2.93**	**5.37**	**11.24**	**8.50**	**-7.77**	**20.08**	**16.08**	**22.18**	**81.0**	**93.5**
Net Income Margin	*17.4%*	*-6.2%*	*-5.0%*	*8.9%*	*14.1%*	*8.7%*	*-4.1%*	*8.7%*	*6.4%*	*7.5%*	*17%*	*18%*
EARNINGS PER SHARE												
EPS - Basic	$0.08	$0.03	-$0.02	$0.03	$0.07	$0.04	-$0.09	$0.17	$0.12	$0.12	$0.51	$0.58
EPS - Diluted	$0.08	$0.03	-$0.02	$0.03	$0.07	$0.04	-$0.09	$0.17	$0.12	$0.12	$0.51	$0.58
EPS - (GAAP)	-$0.17	-$0.15	-$0.17	-$0.19	-$0.19	-$0.10	-$2.03	-$1.13	-$0.79	-$0.65	-$0.20	$0.21

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HISTORICAL ZACKS RECOMMENDATIONS



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