



Georgia Tech Financial Analysis Lab

800 West Peachtree Street NW

Atlanta, GA 30332-0520

404-894-4395

<http://www.mgt.gatech.edu/finlab>

Dr. Charles W. Mulford, Director

INVESCO Chair and Professor of Accounting

charles.mulford@mgt.gatech.edu

Sohel Surani

Graduate Research Assistant

sohel.surani@mba.gatech.edu

Jason Blake

Graduate Research Assistant

jason.blake@mba.gatech.edu

**Cash Flow Trends and Their Fundamental Drivers: A Continuing Look
Comprehensive Industry Review (Qtr 4, 2008)
Semiconductors & Semiconductor Equipment (GICS 4530)
EXECUTIVE SUMMARY**

This research report is one of a series that looks at the cash flow performance of Corporate America. Our primary focus is on free cash margin, or free cash flow measured as a percent of revenue. The current study provides our comprehensive review for the Semiconductors & Semiconductor Equipment (GICS 4530) through Q4, 2008.

Median free cash margin for the Semiconductor and Semiconductor Equipment Industry for the 12-months ended December 2008 fell to 9.12% from 12.45% for the 12-months ended December 2007. In fact, free cash margin was on a long-term uptrend from its low of 0.22% for the 12-months ended December 2001 until its peak of 12.45% for the 12-months ended December 2007. Accounting for the steep decline in free cash margin, is the similar decline in median operating cash margin from 17.16% to 13.88% over the same period even as median capital expenditures as a percentage to revenue fell from 8.60% to 3.11% over the same period.

Data for this research were provided by Cash Flow Analytics, LLC., www.cashflowanalytics.com. Charles Mulford is a principal in Cash Flow Analytics, LLC. May, 2009

**Georgia Tech Financial Analysis Lab
College of Management
Georgia Institute of Technology
Atlanta, GA 30332-0520**

Georgia Tech Financial Analysis Lab

The Georgia Tech Financial Analysis Lab conducts research on issues of financial reporting and analysis. Unbiased information is vital to effective investment decision-making. Accordingly, we think that independent research organizations, such as our own, have an important role to play in providing information to market participants.

Because our Lab is housed within a university, all of our research reports have an educational quality, as they are designed to impart knowledge and understanding to those who read them. Our focus is on issues that we believe will be of interest to a large segment of stock market participants. Depending on the issue, we may focus our attention on individual companies, groups of companies, or on large segments of the market at large.

A recurring theme in our work is the identification of reporting practices that give investors a misleading signal, whether positive or negative, of corporate earning power. We define earning power as the ability to generate a sustainable stream of earnings that is backed by cash flow. Accordingly, our research may look into reporting practices that affect either earnings or cash flow, or both. At times, our research may look at stock prices generally, though from a fundamental and not technical point of view.

Contact Information

Charles Mulford INVESCO Chair, Professor of Accounting and the Lab's Director
Phone: (404) 894-4395
Email: charles.mulford@mgt.gatech.edu

Jason Blake Graduate Research Assistant and MBA Student
Sohel Surani Graduate Research Assistant and MBA Student

Website: <http://www.mgt.gatech.edu/finlab>

©2009 by the College of Management, Georgia Institute of Technology, Atlanta, GA 30332-0520. ALL RIGHTS RESERVED. The information contained in this research report is solely the opinion of the authors and is based on sources believed to be reliable and accurate, consisting principally of required filings submitted by the companies represented to the Securities and Exchange Commission. HOWEVER, ALL CONTENT HEREIN IS PRESENTED "AS IS," WITHOUT WARRANTIES OF ANY KIND, EXPRESS OR IMPLIED. No data or statement is or should be construed to be a recommendation for the purchase, retention, sale or short-sale of the securities of the companies mentioned.

Cash Flow Trends and Their Fundamental Drivers: A Continuing Look. Comprehensive Industry Review (Qtr 4, 2008). (c) 2009 by the College of Management, Georgia Institute of Technology, Atlanta, GA 30332-0520.

Semiconductors & Semiconductor Equipment (GICS 4530)

Observations

Median free cash margin for the Semiconductor and Semiconductor Equipment Industry for the 12-months ended December 2008 fell to 9.12% from 12.45% for the 12-months ended December 2007. In fact, free cash margin was on a long-term uptrend from its low of 0.22% for the 12-months ended December 2001 until its peak of 12.45% for the 12-months ended December 2007. Accounting for the steep decline in free cash margin, is the similar decline in median operating cash margin from 17.16% to 13.88% over the same period even as median capital expenditures as a percentage to revenue fell from 8.60% to 3.11% over the same period. It is worth noting that median capital expenditures as a percentage of revenue, has been on a long-term downtrend since peaking at 10.22% for the 12-months June 2001 to its current low.

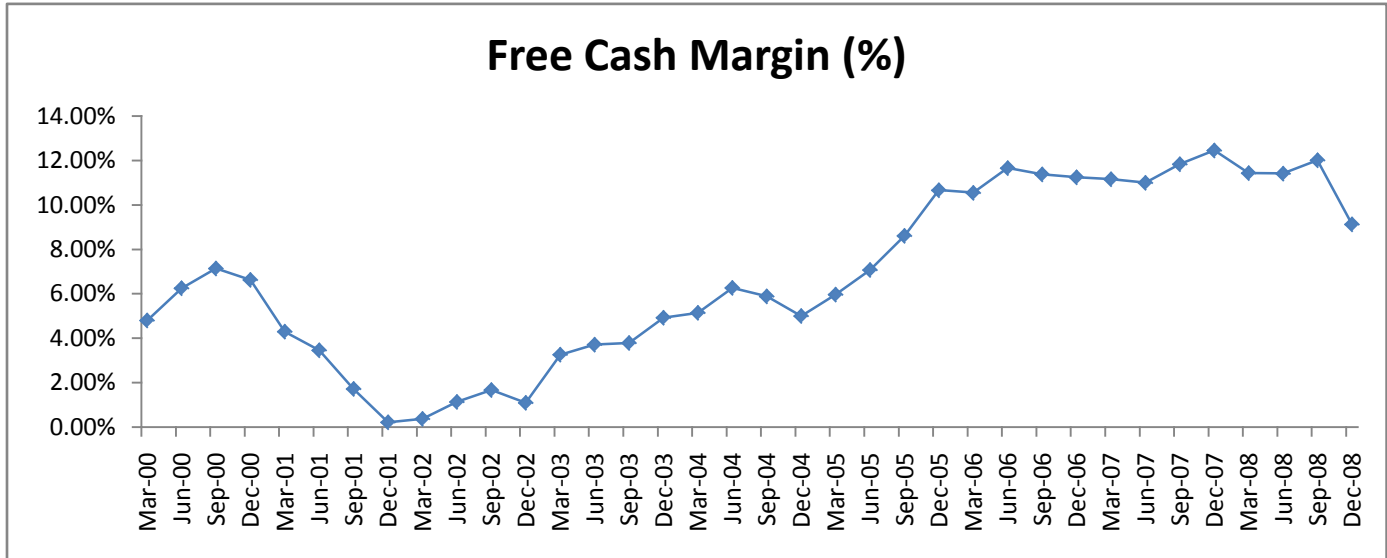
Contributing to the fall in median operating cash margin, is the fall in operating cushion that dropped from 19.35% for the 12-months ended December 2007 to 15.14% for the 12-months ended December 2008. Median SG&A rose from 12.98% for the 12-months ended December 2007 to 14.18% for the 12-months ended December 2008 even as median gross margin remained relatively stable over the same period.

Compensating, to some extent, for the decline in median operating cushion on operating cash margin has been the decline in median cash cycle from 74.41 days for the 12-months ended December 2007 to 70.05 days for the 12-months ended December 2008. Median receivables days fell significantly from 55.39 days for the 12-months ended December 2007 to 42.31 for the rolling 12-months ended December 2008. Median Inventory days, on the other hand, rose from 44.08 days to 48.33 days whereas, median payables days fell from 25.06 days to 20.59 days over the same period.

It is nevertheless worth noting the steep dive in median net margin from 8.60% for the 12-months ended December 2007 to 3.11% for the 12-months ended December 2008 with most of the fall coming from 7.65% for the 12-months ended September 2008 to the current level of 3.11%.

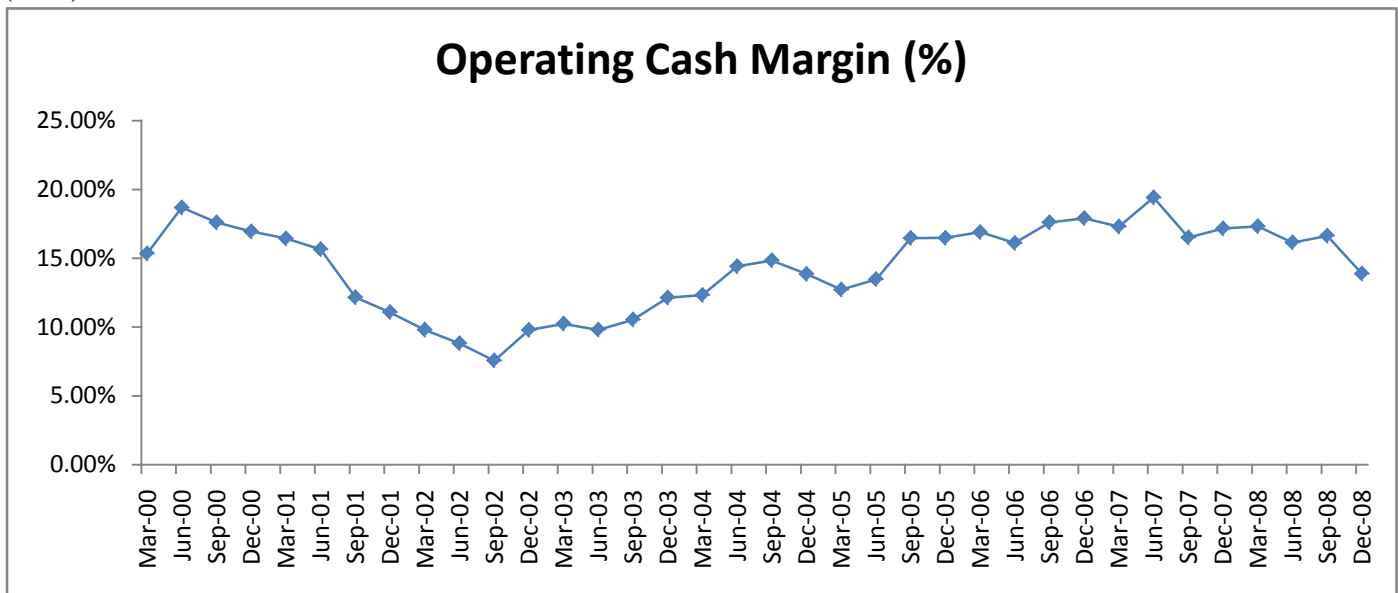
Cash Flow Margins

Exhibit 1: Median Free Cash Margin, 2000 – 2008, Semiconductors & Semiconductor Equipment (4530)



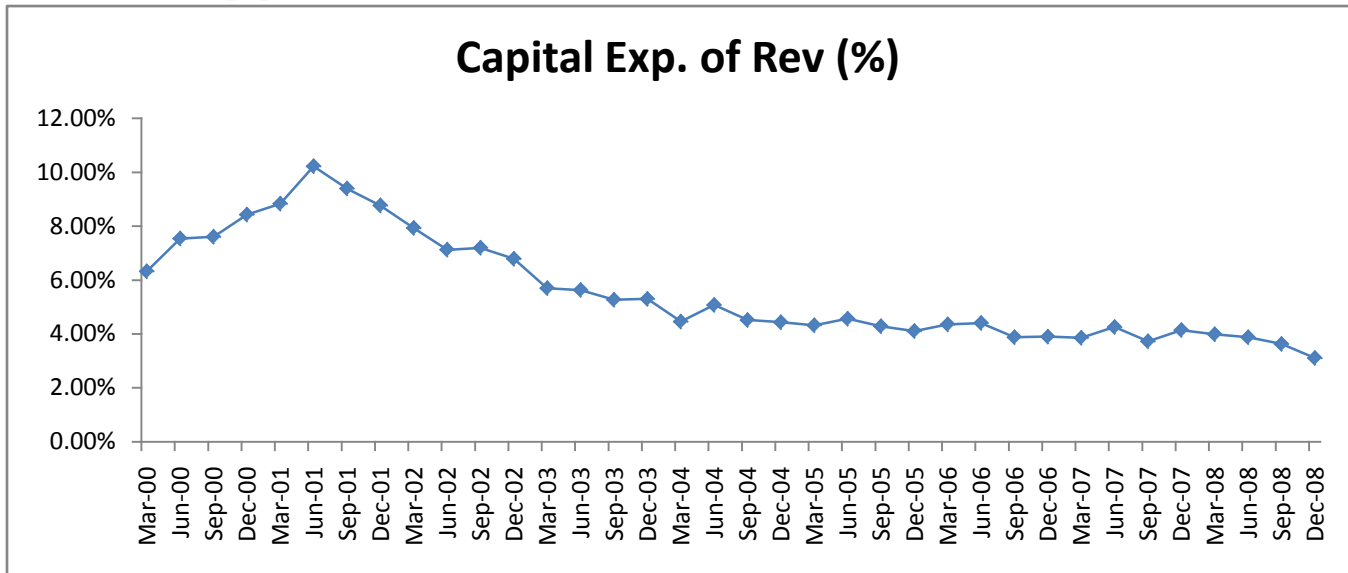
Refer to Table 1 for data supporting the graph.

Exhibit 2: Median Operating Cash Margin, 2000 – 2008, Semiconductors & Semiconductor Equipment (4530)



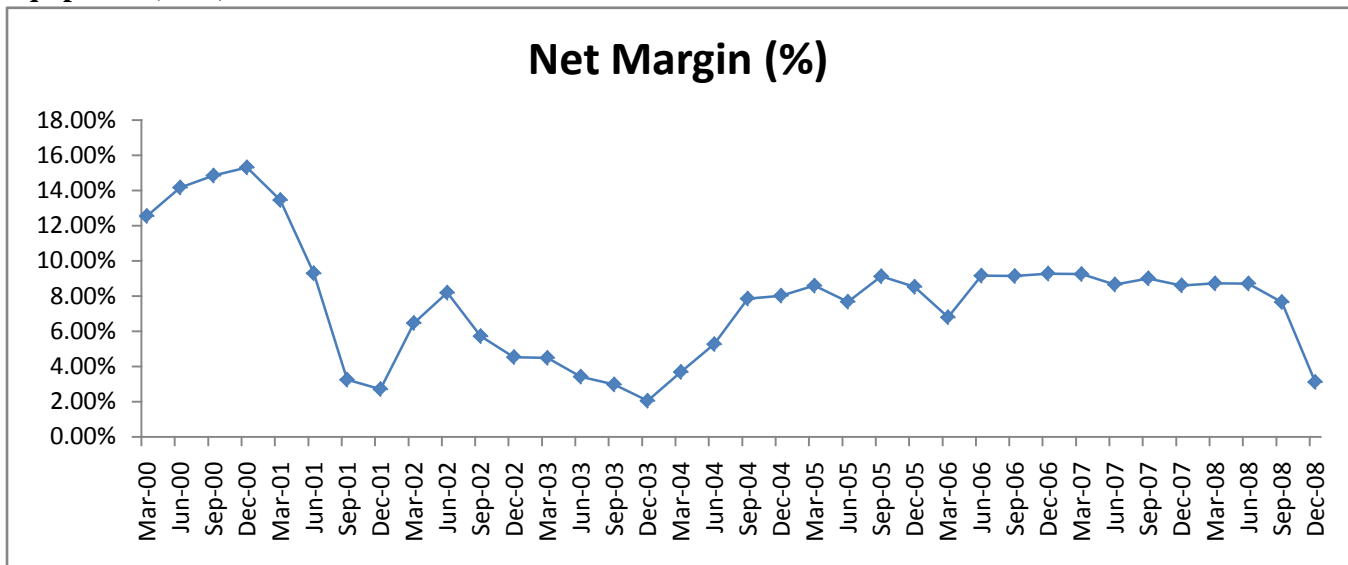
Refer to Table 1 for data supporting the graph.

Exhibit 3: Capital Expenditures as a percentage of Revenue, 2000 – 2008, Semiconductors & Semiconductor Equipment (4530)



Refer to Table 1 for data supporting the graph.

Exhibit 4: Median Net Margin from Continuing Operations, 2000 – 2008, Semiconductors & Semiconductor Equipment (4530)



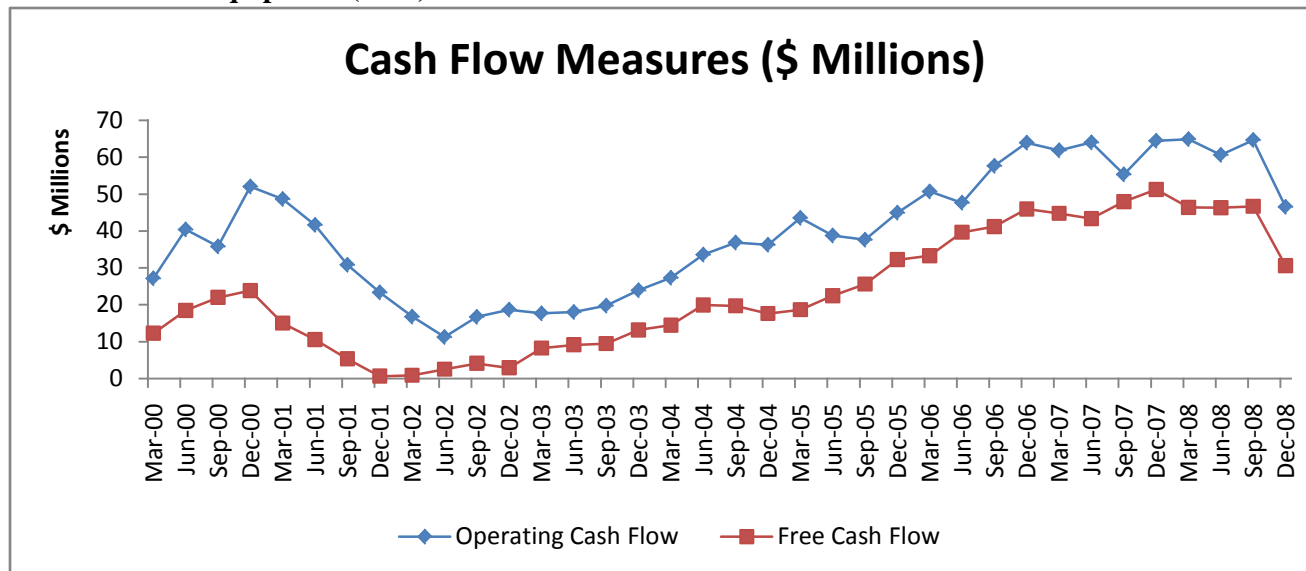
Refer to Table 1 for data supporting the graph.

Table 1: Median Margins, 2000 – 2008, Semiconductors & Semiconductor Equipment (4530)

Date	Operating Cash Margin (%)	Free Cash Margin (%)	Net Margin (%)	Capital Exp. to Rev (%)
Mar-00	15.34%	4.80%	12.54%	6.32%
Jun-00	18.68%	6.25%	14.16%	7.54%
Sep-00	17.59%	7.14%	14.84%	7.60%
Dec-00	16.94%	6.63%	15.30%	8.43%
Mar-01	16.43%	4.30%	13.45%	8.83%
Jun-01	15.65%	3.46%	9.29%	10.22%
Sep-01	12.15%	1.72%	3.24%	9.39%
Dec-01	11.08%	0.22%	2.71%	8.76%
Mar-02	9.80%	0.37%	6.46%	7.93%
Jun-02	8.81%	1.13%	8.18%	7.12%
Sep-02	7.56%	1.67%	5.72%	7.20%
Dec-02	9.78%	1.09%	4.53%	6.79%
Mar-03	10.24%	3.26%	4.48%	5.70%
Jun-03	9.80%	3.71%	3.42%	5.63%
Sep-03	10.53%	3.79%	2.97%	5.27%
Dec-03	12.13%	4.92%	2.04%	5.30%
Mar-04	12.32%	5.14%	3.68%	4.46%
Jun-04	14.41%	6.27%	5.26%	5.07%
Sep-04	14.84%	5.88%	7.85%	4.51%
Dec-04	13.85%	5.00%	8.01%	4.43%
Mar-05	12.71%	5.96%	8.58%	4.32%
Jun-05	13.47%	7.07%	7.67%	4.56%
Sep-05	16.46%	8.61%	9.12%	4.28%
Dec-05	16.47%	10.66%	8.52%	4.11%
Mar-06	16.89%	10.54%	6.79%	4.35%
Jun-06	16.10%	11.66%	9.15%	4.41%
Sep-06	17.60%	11.37%	9.13%	3.88%
Dec-06	17.90%	11.24%	9.27%	3.90%
Mar-07	17.30%	11.16%	9.24%	3.86%
Jun-07	19.41%	10.99%	8.65%	4.25%
Sep-07	16.50%	11.83%	9.00%	3.72%
Dec-07	17.16%	12.45%	8.60%	4.14%
Mar-08	17.31%	11.43%	8.71%	3.99%
Jun-08	16.14%	11.41%	8.71%	3.88%
Sep-08	16.63%	12.01%	7.65%	3.63%
Dec-08	13.88%	9.12%	3.11%	3.11%

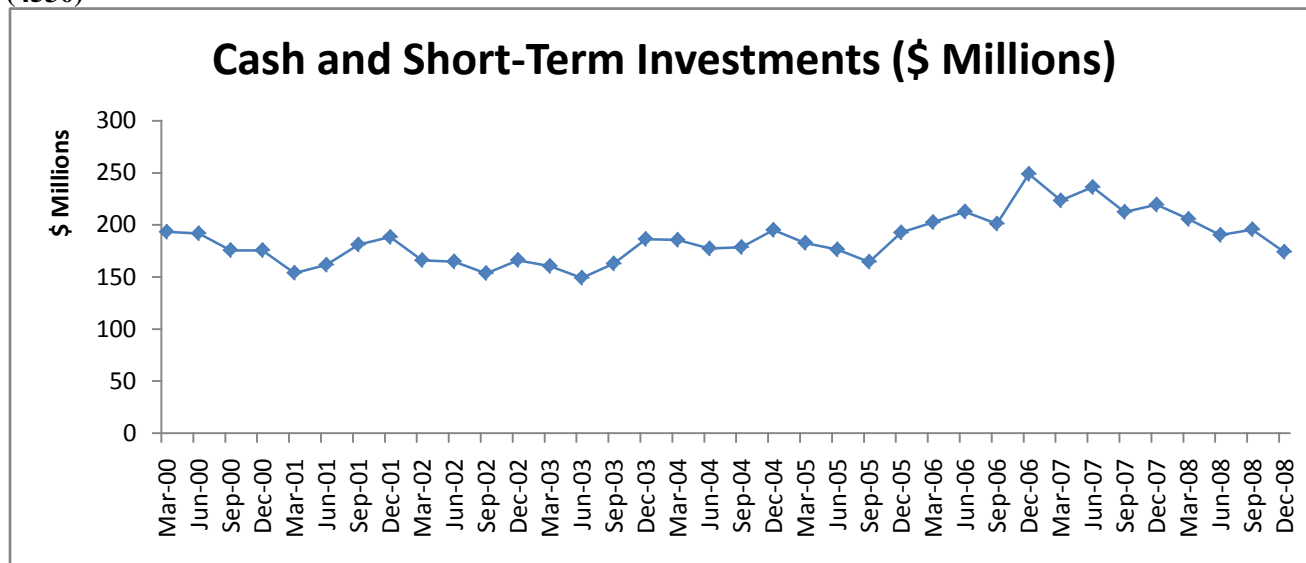
Cash Flow Measures

Exhibit 5: Median Free Cash Flow and Median Operating Cash Flow, 2000 – 2008, Semiconductors & Semiconductor Equipment (4530)



Refer to Table 2 for data supporting the graph.

Exhibit 6: Cash and Short-term Investments, 2000 – 2008, Semiconductors & Semiconductor Equipment (4530)



Refer to Table 2 for data supporting the graph.

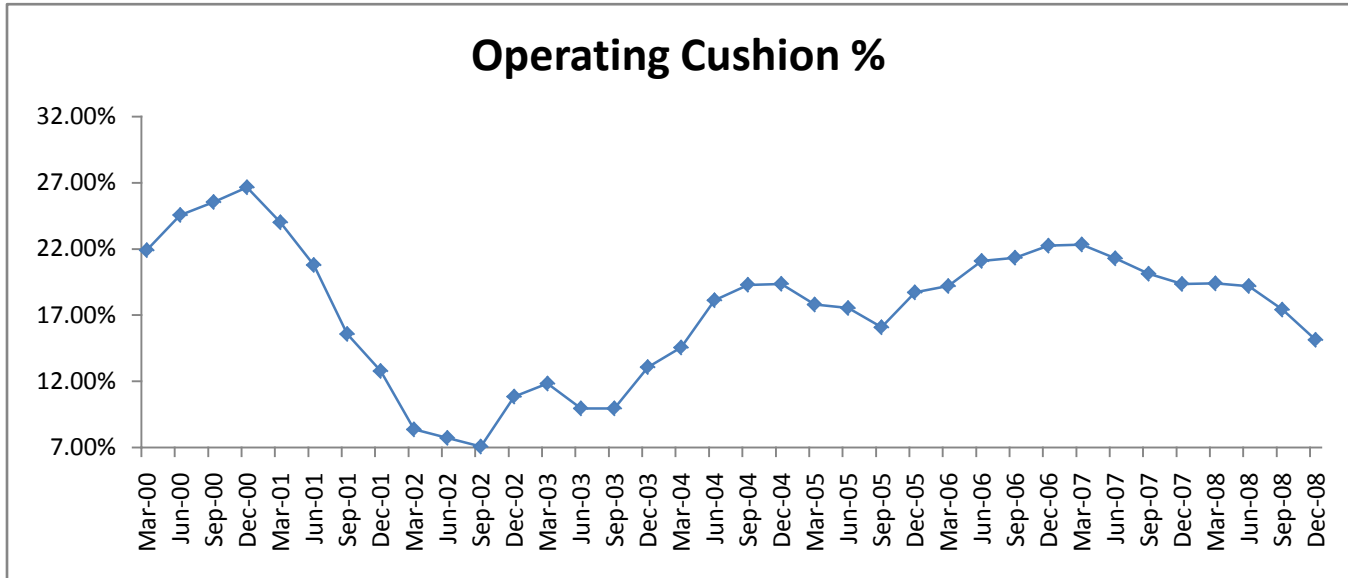
Table 2: Cash Flow Measures, 2000 – 2008, Semiconductors & Semiconductor Equipment (4530)

Date	Operating Cash Flow	% Change	Free Cash Flow	% Change	Cash and Short-Term Investments	% Change
Mar-00	27,161,000		12,258,662		193,331,500	
Jun-00	40,397,000	48.73%	18,454,750	50.54%	191,807,000	-0.79%
Sep-00	35,807,000	-11.36%	21,966,196	19.03%	175,686,000	-8.40%
Dec-00	52,040,000	45.33%	23,835,558	8.51%	175,638,000	-0.03%
Mar-01	48,647,000	-6.52%	14,993,544	-37.10%	153,925,000	-12.36%
Jun-01	41,642,000	-14.40%	10,560,637	-29.57%	161,628,000	5.00%
Sep-01	30,821,500	-25.98%	5,323,301	-49.59%	181,025,000	12.00%
Dec-01	23,362,000	-24.20%	624,401	-88.27%	188,326,500	4.03%
Mar-02	16,778,000	-28.18%	864,752	38.49%	166,055,000	-11.83%
Jun-02	11,266,500	-32.85%	2,501,312	189.25%	164,819,000	-0.74%
Sep-02	16,724,500	48.44%	4,127,567	65.02%	153,607,500	-6.80%
Dec-02	18,678,000	11.68%	2,916,385	-29.34%	166,178,000	8.18%
Mar-03	17,665,000	-5.42%	8,249,018	182.85%	160,403,000	-3.48%
Jun-03	18,039,500	2.12%	9,124,937	10.62%	149,171,000	-7.00%
Sep-03	19,769,500	9.59%	9,441,436	3.47%	162,837,000	9.16%
Dec-03	23,925,000	21.02%	13,163,478	39.42%	186,412,000	14.48%
Mar-04	27,320,000	14.19%	14,462,981	9.87%	185,555,000	-0.46%
Jun-04	33,587,000	22.94%	19,936,483	37.84%	177,251,500	-4.47%
Sep-04	36,851,000	9.72%	19,706,435	-1.15%	178,614,000	0.77%
Dec-04	36,253,000	-1.62%	17,624,524	-10.56%	195,132,500	9.25%
Mar-05	43,552,000	20.13%	18,648,120	5.81%	182,667,000	-6.39%
Jun-05	38,766,000	-10.99%	22,452,900	20.40%	176,376,000	-3.44%
Sep-05	37,621,000	-2.95%	25,600,661	14.02%	164,577,000	-6.69%
Dec-05	44,945,500	19.47%	32,223,862	25.87%	192,642,500	17.05%
Mar-06	50,686,000	12.77%	33,281,305	3.28%	202,603,000	5.17%
Jun-06	47,647,500	-5.99%	39,663,678	19.18%	212,750,500	5.01%
Sep-06	57,640,000	20.97%	41,200,683	3.88%	201,138,000	-5.46%
Dec-06	63,915,500	10.89%	45,971,461	11.58%	248,908,500	23.75%
Mar-07	61,830,500	-3.26%	44,764,178	-2.63%	223,412,000	-10.24%
Jun-07	63,976,000	3.47%	43,329,663	-3.20%	236,282,000	5.76%
Sep-07	55,325,000	-13.52%	47,962,401	10.69%	212,472,000	-10.08%
Dec-07	64,432,000	16.46%	51,258,509	6.87%	219,420,000	3.27%
Mar-08	64,865,000	0.67%	46,365,965	-9.54%	205,602,000	-6.30%
Jun-08	60,604,500	-6.57%	46,320,690	-0.10%	190,310,000	-7.44%
Sep-08	64,644,010	6.67%	46,690,797	0.80%	195,648,000	2.80%
Dec-08	46,534,970	-28.01%	30,598,520	-34.47%	174,085,000	-11.02%

Cash Flow Drivers

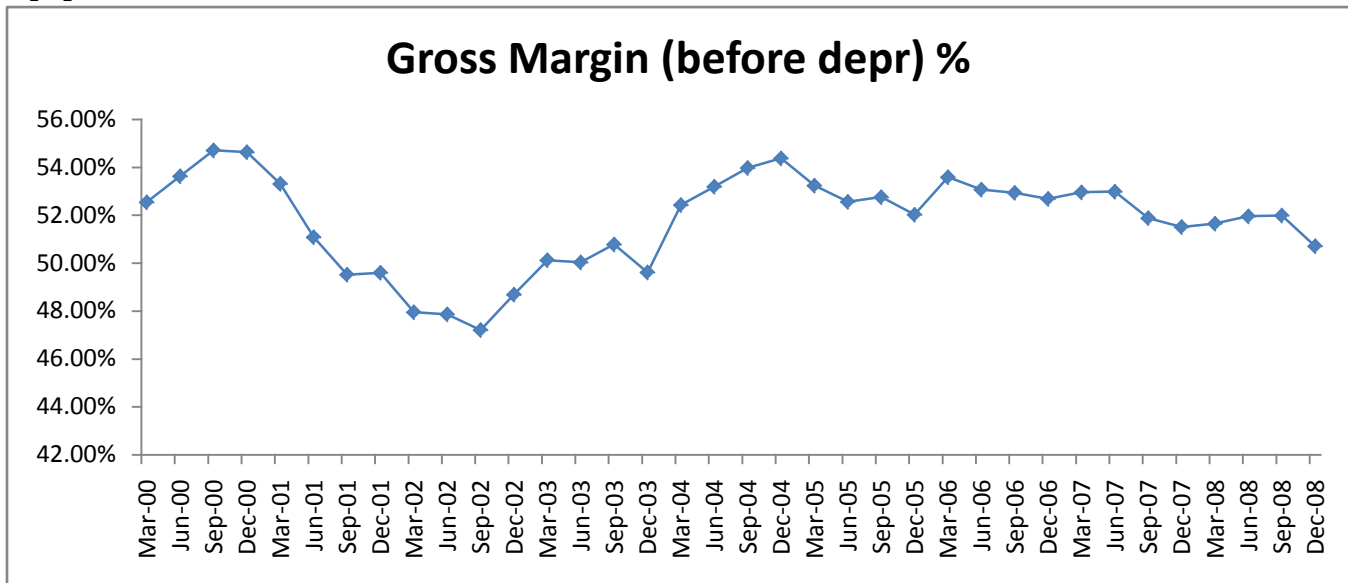
Profitability

Exhibit 7: Median Operating Cushion, 2000 – 2008, Semiconductors & Semiconductor Equipment (4530)



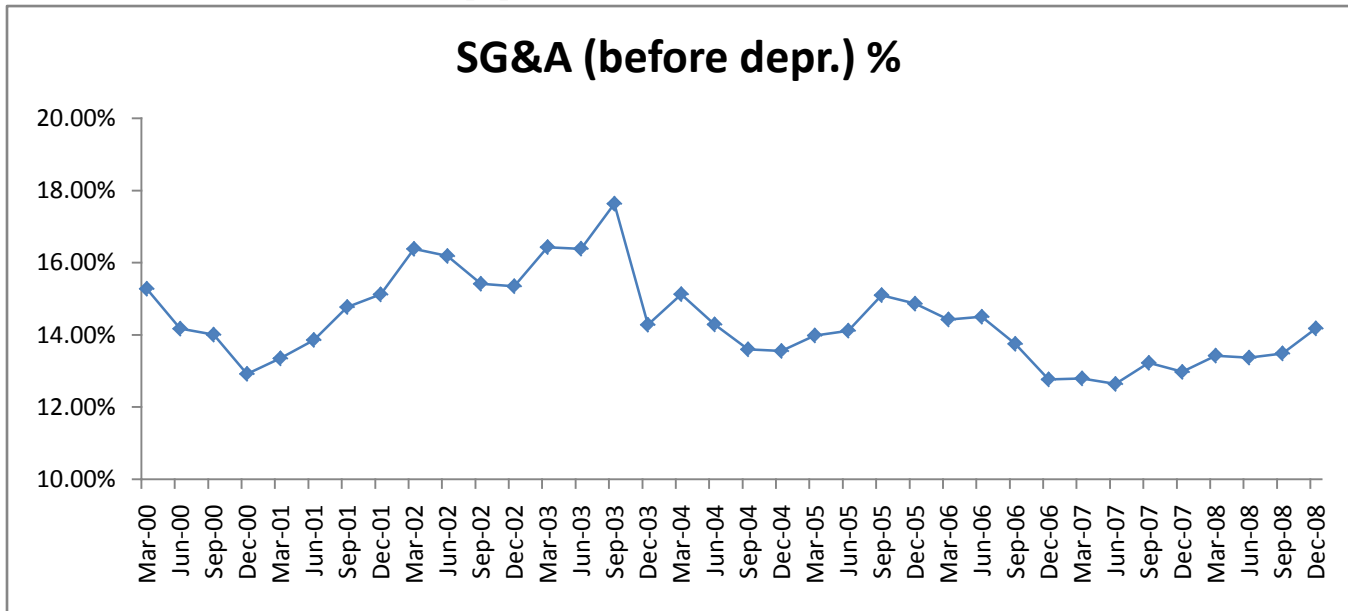
Refer to Table 3 for data supporting the graph.

Exhibit 8: Median Gross Margin % (before depreciation), 2000 – 2008, Semiconductors & Semiconductor Equipment (4530)



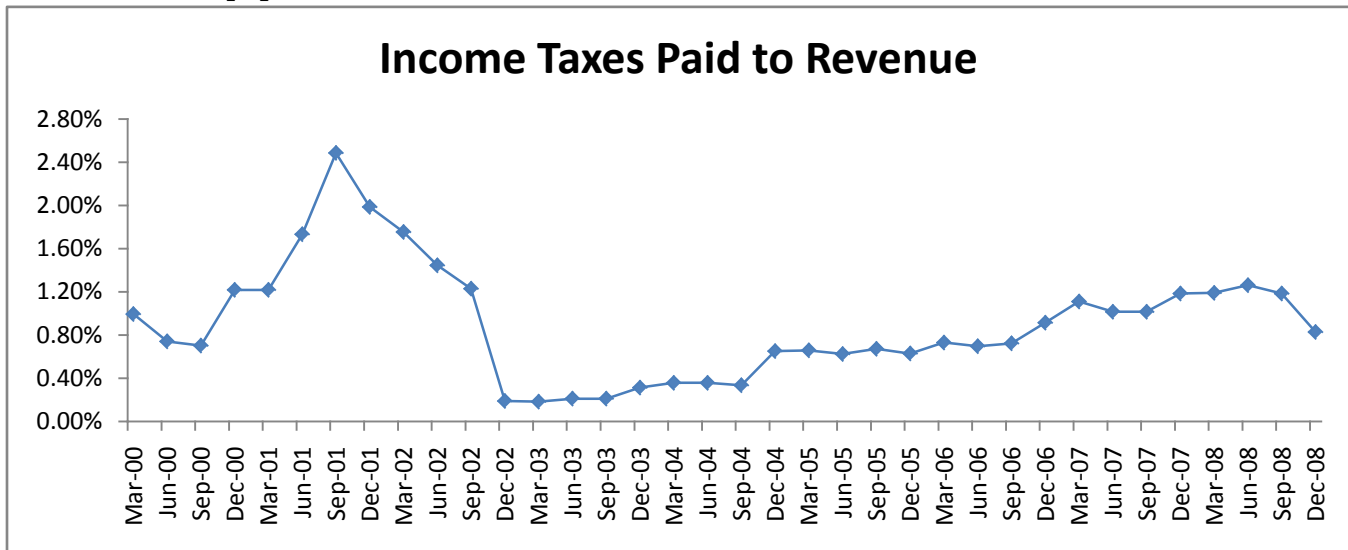
Refer to Table 3 for data supporting the graph.

Exhibit 9: Median Selling, General and Administrative Expense % (before depreciation), 2000 – 2008, Semiconductors & Semiconductor Equipment (4530)



Refer to Table 3 for data supporting the graph.

Exhibit 10: Median Income Taxes Paid % (before depreciation), 2000 – 2008, Semiconductors & Semiconductor Equipment (4530)



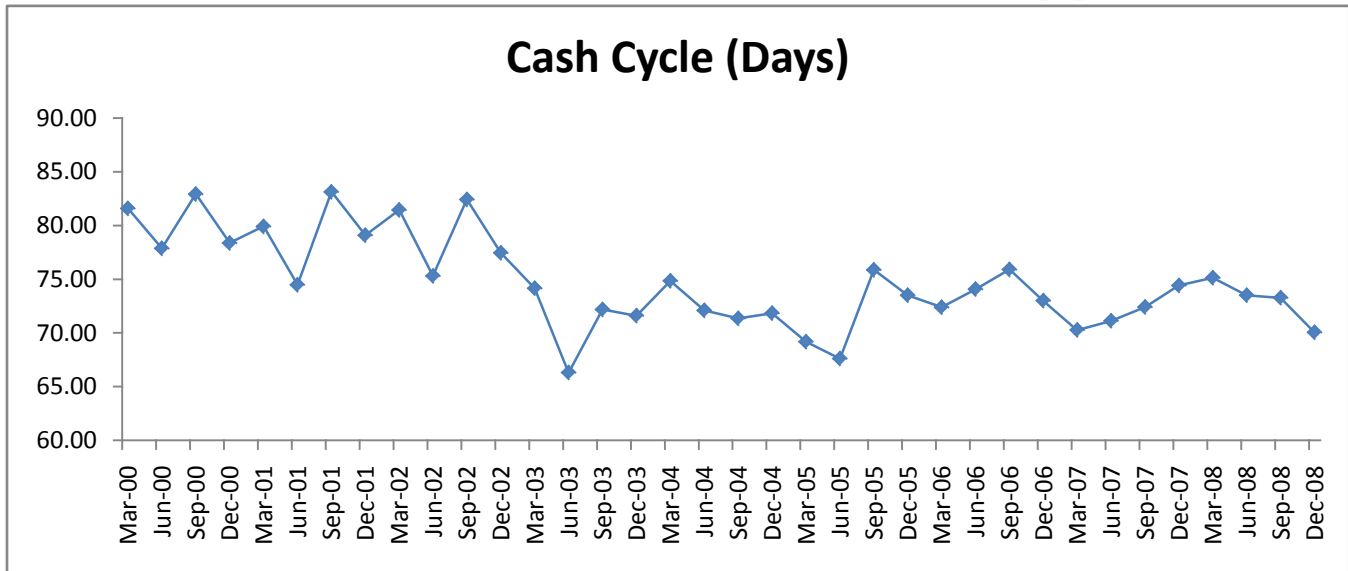
Refer to Table 3 for data supporting the graph.

Table 3: Profitability, 2000 – 2008, Semiconductors & Semiconductor Equipment (4530)

Date	Operating Cushion %	Gross Margin (before depr) %	SG&A (before depr.) %	Revenue	% Change	Income Taxes Paid to Revenue
Mar-00	21.90%	52.54%	15.28%	255,442,000		0.99%
Jun-00	24.56%	53.63%	14.17%	295,276,000	15.59%	0.74%
Sep-00	25.54%	54.71%	14.01%	307,736,000	4.22%	0.70%
Dec-00	26.64%	54.63%	12.92%	359,782,000	16.91%	1.22%
Mar-01	24.01%	53.31%	13.35%	349,093,000	-2.97%	1.22%
Jun-01	20.78%	51.08%	13.86%	305,574,000	-12.47%	1.73%
Sep-01	15.58%	49.52%	14.77%	310,035,000	1.46%	2.49%
Dec-01	12.79%	49.60%	15.12%	290,419,000	-6.33%	1.99%
Mar-02	8.38%	47.95%	16.38%	234,987,000	-19.09%	1.75%
Jun-02	7.74%	47.86%	16.19%	220,964,000	-5.97%	1.44%
Sep-02	7.09%	47.20%	15.42%	247,604,500	12.06%	1.23%
Dec-02	10.86%	48.68%	15.35%	267,313,000	7.96%	0.19%
Mar-03	11.84%	50.12%	16.43%	253,115,000	-5.31%	0.18%
Jun-03	9.97%	50.03%	16.39%	246,021,500	-2.80%	0.21%
Sep-03	9.97%	50.78%	17.63%	249,443,500	1.39%	0.21%
Dec-03	13.08%	49.61%	14.28%	267,496,000	7.24%	0.31%
Mar-04	14.56%	52.43%	15.13%	281,271,500	5.15%	0.36%
Jun-04	18.13%	53.19%	14.29%	318,220,000	13.14%	0.36%
Sep-04	19.29%	53.97%	13.60%	335,029,500	5.28%	0.33%
Dec-04	19.36%	54.37%	13.56%	352,561,000	5.23%	0.65%
Mar-05	17.80%	53.24%	13.99%	312,730,500	-11.30%	0.66%
Jun-05	17.54%	52.56%	14.12%	317,535,000	1.54%	0.62%
Sep-05	16.09%	52.75%	15.10%	297,440,000	-6.33%	0.67%
Dec-05	18.72%	52.02%	14.87%	302,316,000	1.64%	0.63%
Mar-06	19.20%	53.59%	14.43%	315,702,000	4.43%	0.73%
Jun-06	21.09%	53.07%	14.50%	340,285,500	7.79%	0.70%
Sep-06	21.33%	52.94%	13.75%	362,267,500	6.46%	0.72%
Dec-06	22.24%	52.68%	12.77%	408,926,000	12.88%	0.91%
Mar-07	22.33%	52.95%	12.80%	401,292,500	-1.87%	1.11%
Jun-07	21.28%	52.98%	12.64%	394,121,000	-1.79%	1.01%
Sep-07	20.12%	51.88%	13.23%	405,396,000	2.86%	1.01%
Dec-07	19.35%	51.51%	12.98%	411,748,000	1.57%	1.18%
Mar-08	19.40%	51.65%	13.43%	405,616,000	-1.49%	1.19%
Jun-08	19.19%	51.95%	13.37%	406,072,500	0.11%	1.26%
Sep-08	17.42%	51.99%	13.49%	388,766,000	-4.26%	1.18%
Dec-08	15.14%	50.71%	14.18%	335,363,000	-13.74%	0.83%

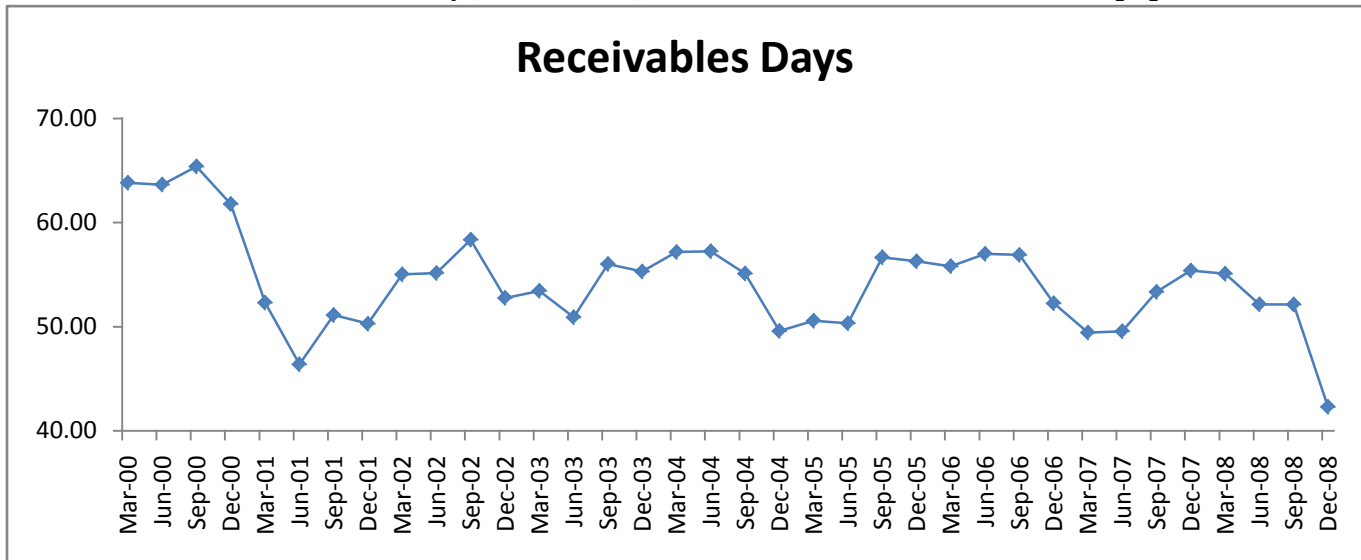
Efficiency

Exhibit 11: Median Cash Cycle, 2000 – 2008, Semiconductors & Semiconductor Equipment (4530)



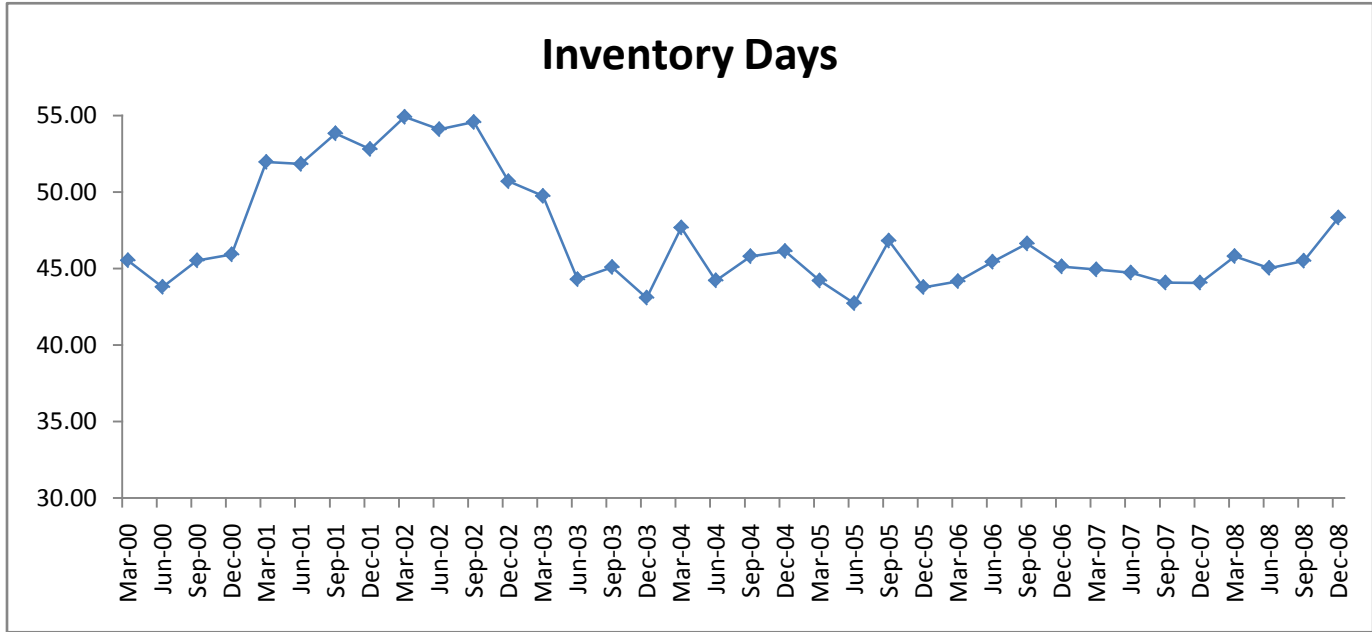
Refer to Table 4 for data supporting the graph.

Exhibit 12: Median Receivables Days, 2000 – 2008, Semiconductors & Semiconductor Equipment (4530)



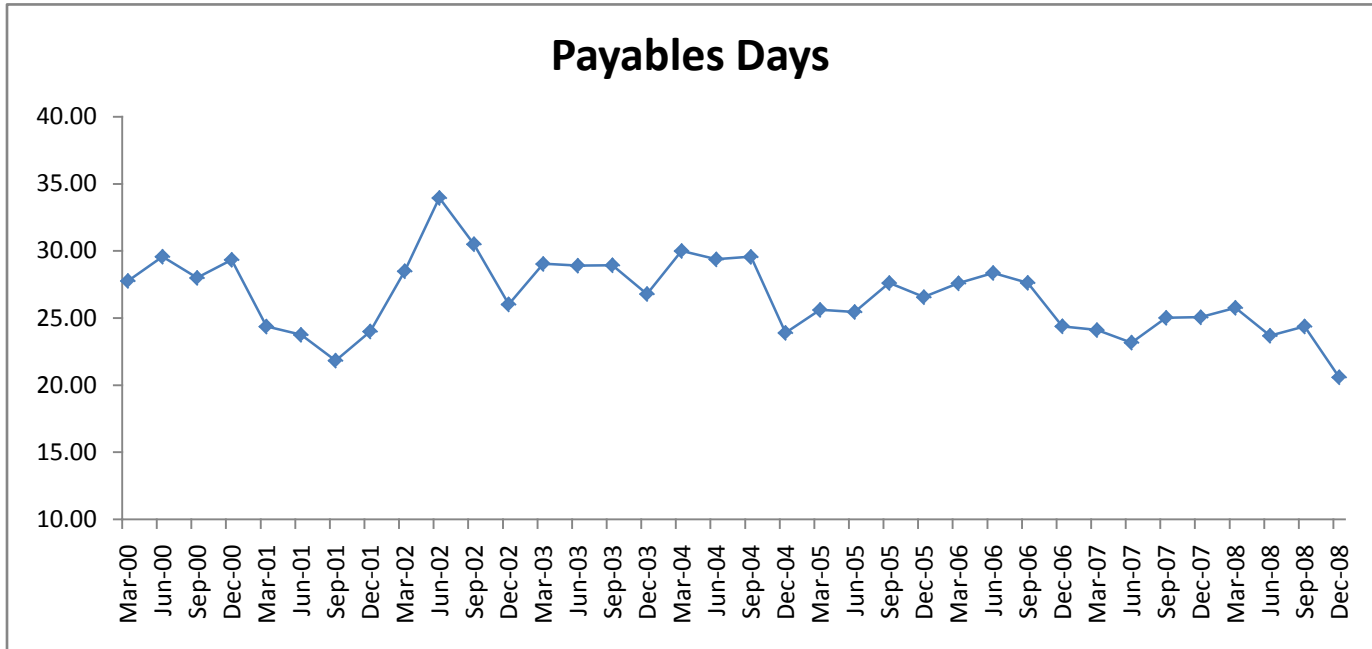
Refer to Table 4 for data supporting the graph.

Exhibit 14: Median Inventory Days, 2000 – 2008, Semiconductors & Semiconductor Equipment (4530)



Refer to Table 4 for data supporting the graph.

Exhibit 14: Median Payables Days, 2000 – 2008, Semiconductors & Semiconductor Equipment (4530)



Refer to Table 4 for data supporting the graph.

Table 4: Efficiency, 2000 – 2008, Semiconductors & Semiconductor Equipment (4530)

Date	Cash Cycle (Days)	Receivables Days	Inventory Days	Payables Days
Mar-00	81.59	63.82	45.54	27.77
Jun-00	77.87	63.64	43.80	29.57
Sep-00	82.92	65.38	45.53	27.99
Dec-00	78.37	61.79	45.92	29.34
Mar-01	79.91	52.31	51.97	24.36
Jun-01	74.48	46.39	51.83	23.75
Sep-01	83.13	51.12	53.84	21.83
Dec-01	79.09	50.28	52.81	24.00
Mar-02	81.45	55.02	54.91	28.49
Jun-02	75.30	55.15	54.10	33.95
Sep-02	82.42	58.35	54.57	30.50
Dec-02	77.45	52.77	50.70	26.02
Mar-03	74.15	53.44	49.74	29.03
Jun-03	66.31	50.91	44.30	28.90
Sep-03	72.18	56.02	45.09	28.93
Dec-03	71.60	55.30	43.09	26.79
Mar-04	74.84	57.17	47.68	30.00
Jun-04	72.09	57.24	44.22	29.37
Sep-04	71.35	55.10	45.80	29.56
Dec-04	71.84	49.59	46.14	23.89
Mar-05	69.18	50.57	44.21	25.60
Jun-05	67.60	50.32	42.73	25.45
Sep-05	75.87	56.66	46.82	27.61
Dec-05	73.50	56.28	43.78	26.55
Mar-06	72.39	55.80	44.17	27.59
Jun-06	74.08	57.00	45.44	28.36
Sep-06	75.90	56.89	46.64	27.62
Dec-06	73.00	52.25	45.14	24.38
Mar-07	70.27	49.44	44.94	24.10
Jun-07	71.13	49.57	44.73	23.17
Sep-07	72.41	53.34	44.08	25.02
Dec-07	74.41	55.39	44.08	25.06
Mar-08	75.13	55.09	45.81	25.76
Jun-08	73.50	52.14	45.04	23.68
Sep-08	73.27	52.14	45.51	24.37
Dec-08	70.05	42.31	48.33	20.59