

Business and Accounting Concepts for Scientists and Engineers



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Overview:



- Introduction
- Important Accounting Concepts
- Financial Statements
 - Balance Sheet
 - Income Statement
 - Cash Flow Statement
- Intel vs. AMD Case

Introduction:

Accounting information serves a variety of important functions in the planning and operation of a business. These functions include projecting sources and uses of funds, communicating operating results to stakeholders, and identifying business risk. Accounting is based on conventions. An understanding of these conventions helps empower the manager/owner.

Introduction:

- External Users – Reporting financial information to investors and creditors – Generally Accepted Accounting Principles (GAAP)
- Internal Users – More flexibility in the nature of reports and analysis
- Tax Reporting – Accounting information provides the basis of measurement of income for taxation purposes – Tax accounting methods can vary from GAAP (purpose is raising revenue as opposed to resource allocation).

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Important Accounting Concepts:

“Financial Information should provide information to help present and future investors and creditors and other users in assessing the amounts, timing, and uncertainty of prospective cash receipts from dividends or interest and the proceeds from the sale, redemption, or maturity of securities or loans.”

Statement of Financial Accounting Concepts #1

Important Accounting Concepts:

- **Relevance** – Accounting information is capable of making a difference in a decision by helping users to form predictions about the outcomes of past, present, and future events or to confirm or correct prior expectations.
- **Reliability** – The reliability of a measure rests on the faithfulness what it purports to represent coupled with an assurance to the user that it has representational quality.
- **Comparability and Consistency** – Information about a particular enterprise gains greatly in usefulness if it can be compared with similar information about other enterprises and with similar information about the same enterprise for some other period or some other point in time.
- **Materiality** – The amounts involved are too small to make a difference to a decision.
- **Costs and Benefits** – In order to justify requiring a particular disclosure, the perceived benefits to be derived from that disclosure must exceed the perceived costs associated with it.

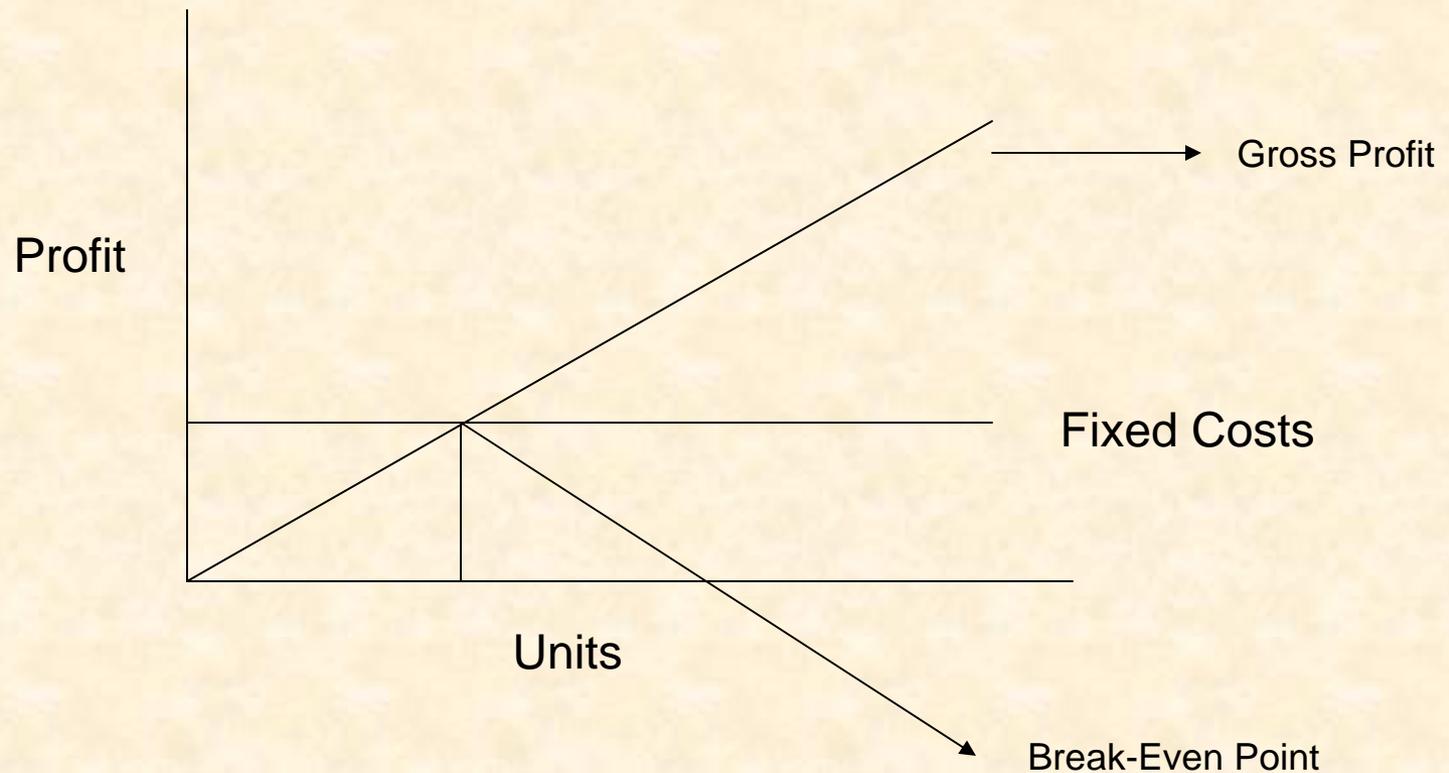
Important Accounting Concepts: Debt Leverage:

- Debt leverage involves the capital structure
 - Net Income/Equity
- The greater the use of debt the higher the Return on Equity
- The greater the use of debt the higher the risk in the business

Important Accounting Concepts: Operating Leverage:

- Leveraging costs that do not change with changes in volume (fixed costs)
- Increases net income with increasing volume
- Operating leverage increases risk – if business goes down increases exposure to cash obligations
- Option with less risk at beginning of the business is outsourcing
- **Extremely Important Concept in semiconductor manufacturing and similar fields.**

Important Accounting Concepts: Break-Even Point:

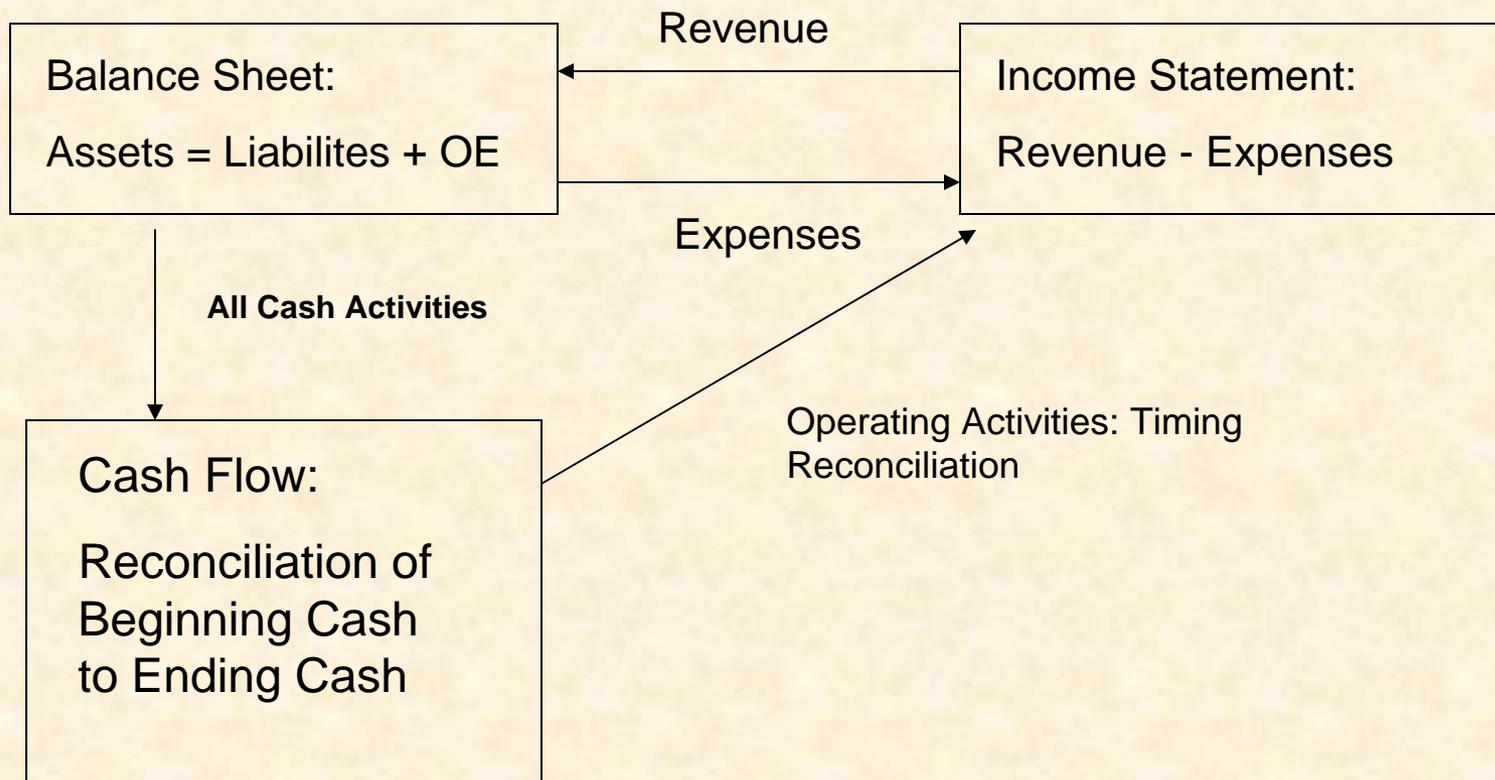


- The slope of the Gross Profit line is (revenue – variable costs)
- Generally, there is a trade-off between the slope of the GP line and the level of fixed costs

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Resource Flow Reflected in Financial Statements:



Balance Sheet: Overview

- Provides a measurement of Assets, Liabilities, and Owner's Equity at a fixed point in time.
- $\text{Assets} = \text{Liabilities} + \text{Owner's Equity}$ - reflects the sourcing of assets either from debt holders or equity holders.
- Amounts are recorded at historical cost
- Assets are resource allocations that provide long-term benefit (greater than one year) to the enterprise.
 - Creates some timing issues for certain items:
 - Advertising
 - Research and Development

Balance Sheet: Overview

<u>Assets:</u>	=	<u>Liabilities:</u>	<u>Equity:</u>
Current Assets		Current Liabilities	Contributed Capital
Long-Term Assets		Long-Term Liabilities	Retained Earnings

Understanding the Structure:

“Current” – Assets and liabilities that will be converted to cash or require cash within the next year. Assets are listed in order of liquidity.

- Examples: cash, cash equivalents (marketable securities), accounts receivable, inventory
Accounts payable, accrued obligations (amounts owed), amount of long-term debt due within the next year

“Long-Term” – Assets that are expected to provide benefits beyond the current year. Liabilities that are due beyond the current year.

- Examples: Property, Plant, and Equipment, Intangible assets
Amount of long-term debt due beyond the current year.

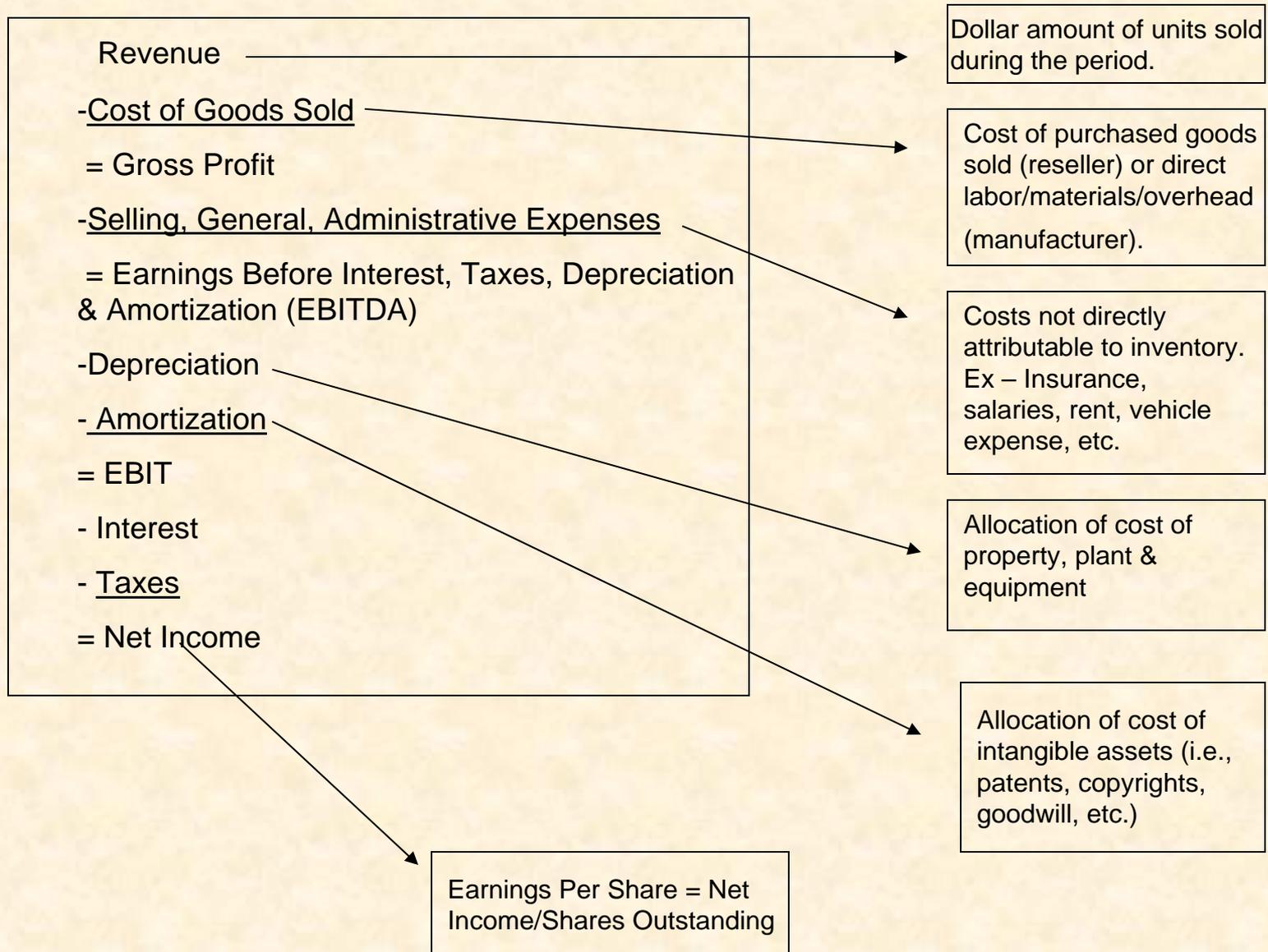
Contributed Capital – Amounts invested in the firm. This amount does not represent any increase in wealth to the investors.

Retained Earnings – Profits retained and reinvested within the firm (i.e. not distributed as dividends). This amount does represent investors’ increase in wealth beyond the initial investment.

Income Statement: Overview

- Measures the difference between the value of goods or services traded and the resources used to obtain or create the goods or services
 - In other words, the difference between revenue and expenses over a period of time (quarterly, annually)
- **Revenue** – Goods or services sold during the period
- **Cost of Goods Sold** – costs directly attributable to the goods or services sold during the period
- **Selling, General, and Administrative Costs** – Costs not directly attributable to the goods or services sold during the period.
 - Ex. Rent, certain salaries, advertising, utilities, etc.

Income Statement: Overview



Cash Flow Statement: Overview

- The Cash Flow statement details out the sources and uses of cash for an entity.
- This statement is particularly important in assessing the liquidity of an enterprise.
- The statement is not suited for determining profitability due to not matching income and expenses.
- Important to assess the ability of the business to meet current obligations
- Independent of accounting method

Cash Flow Statement: Overview

Beginning Cash Balance

+ Net Income from Operations (or – Net Loss)

Adjustments to Income from Operations:

+ Non-Cash Expenses (Depreciation,
Amortization,Accounts Payable, etc.)

- Non-Cash Revenue (Accounts Receivable)

- Increase in Inventory or + Decrease in Inventory

Cash from Investing Activities:

+ Cash from sale of investments

- Purchase of Property, Plant & Equipment

- Purchase of Investments

Cash from Financing Activities:

+ Cash from Sale of Stock

+ Cash from debt issuance

- Dividend Payments

- Share repurchases

- Loan repayments

= Ending Cash Balance

The Cash Flow Statement reconciles the Income Statement and Balance Sheet to the change in cash position of the firm.

Cash Flow Statement: Organization (Indirect Method)

Operating Activities – Adjusts current net income to take into account non-cash income and expenses. These adjustments reconciles cash flow to current earnings.

Examples include the following:

- Depreciation
- Amortization
- Accounts Receivable
- Accounts Payable

Cash Flow Statement: Organization (Indirect Method)

Investing Activities:

Investing activities focus on the purchase of the long-term assets a company needs in order to make and sell its products, and the selling of any long-term assets.

- collections on loan principal and sales of other firms' debt instruments
- investment returns from other firms' equity instruments, including sale of those instruments
- receipts from sale of plant and equipment
- expenditure for purchase of plant and equipment
- loans made and acquisition of other firms' debt instruments
- expenditure for purchase of other firms' equity instruments (unless held for trading or considered cash equivalents)

Items under investing activities include:

- Capital expenditures, which include purchases (and sales) of property, plant and equipment
- Investments

Cash Flow Statement: Organization (Indirect Method)

Financing Activities:

Financing activities include the inflow of cash from investors such as banks and shareholders, as well as the outflow of cash to shareholders as dividends as the company generates income. Other activities which impact the long-term liabilities and equity of the company are also listed in the financing activities section of the cash flow statement.

- proceeds from issuing shares
- proceeds from issuing short-term or long-term debt
- payments of dividends
- payments for repurchase of company shares
- repayment of debt principal, including capital leases
- for non-profit organizations, receipts of donor-restricted cash that is limited to long-term purposes

Items under the financing activities section include:

- Dividends paid
- Sale or repurchase of the company's stock
- Net borrowings

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Intel Financial Ratios:

VALUATION MEASURES

Market Cap (intraday):	120.02B
Enterprise Value (24-Jun-08):	106.50B
Trailing P/E (ttm, intraday):	19.91
Forward P/E (fye 29-Dec-09) :	14.96
PEG Ratio (5 yr expected):	1.39
Price/Sales (ttm):	3.01
Price/Book (mrq):	3.15
Enterprise Value/Revenue (ttm):	2.72
Enterprise Value/EBITDA (ttm):	7.561

Profitability

Profit Margin (ttm):	17.32%
Operating Margin (ttm):	23.94%

Management Effectiveness

Return on Assets (ttm):	11.47%
Return on Equity (ttm):	17.35%

Income Statement

Revenue (ttm):	39.16B
Revenue Per Share (ttm):	6.729
Qtrly Revenue Growth (yoy):	9.30%
Gross Profit (ttm):	19.90B
EBITDA (ttm):	14.09B
Net Income Avl to Common (ttm):	6.78B
Diluted EPS (ttm):	1.14
Qtrly Earnings Growth (yoy):	-11.80%

Balance Sheet

Total Cash (mrq):	13.69B
Total Cash Per Share (mrq):	2.594
Total Debt (mrq):	2.18B
Total Debt/Equity (mrq):	0.054
Current Ratio (mrq):	2.545
Book Value Per Share (mrq):	7.106

Cash Flow Statement

Operating Cash Flow (ttm):	13.29B
Levered Free Cash Flow (ttm):	8.31B

Intel Corporation: Income Statement

PERIOD ENDING	29-Dec-07	30-Dec-06	31-Dec-05
Total Revenue	38,334,000	35,382,000	38,826,000
Cost of Revenue	18,430,000	17,164,000	15,777,000
Gross Profit	19,904,000	18,218,000	23,049,000
Operating Expenses			
Research Development	5,755,000	5,873,000	5,145,000
Selling General and Administrative	5,401,000	6,096,000	5,688,000
Non Recurring	516,000	555,000	-
Others	16,000	42,000	126,000
Total Operating Expenses	11,688,000	12,566,000	10,959,000
Operating Income or Loss	8,216,000	5,652,000	12,090,000
Income from Continuing Operations			
Total Other Income/Expenses Net	965,000	1,440,000	539,000
Earnings Before Interest And Taxes	9,181,000	7,092,000	12,629,000
Interest Expense	15,000	24,000	19,000
Income Before Tax	9,166,000	7,068,000	12,610,000
Income Tax Expense	2,190,000	2,024,000	3,946,000
Minority Interest	-	-	-
Net Income From Continuing Ops	6,976,000	5,044,000	8,664,000
Non-recurring Events			
Discontinued Operations	-	-	-
Extraordinary Items	-	-	-
Effect Of Accounting Changes	-	-	-
Other Items	-	-	-
Net Income	6,976,000	5,044,000	8,664,000
Preferred Stock And Other Adjustments	-	-	-
Net Income Applicable To Common Shares	\$6,976,000	\$5,044,000	\$8,664,000

EBIT



Intel Corporation: Balance Sheet: Assets

PERIOD ENDING	29-Dec-07	30-Dec-06	31-Dec-05
Assets			
Current Assets			
Cash And Cash Equivalents	9,873,000	7,732,000	8,782,000
Short Term Investments	5,490,000	2,270,000	3,990,000
Net Receivables	3,762,000	3,706,000	5,063,000
Inventory	3,370,000	4,314,000	3,126,000
Other Current Assets	1,390,000	258,000	233,000
Total Current Assets	23,885,000	18,280,000	21,194,000
Long Term Investments	5,385,000	4,421,000	4,672,000
Property Plant and Equipment	16,918,000	17,602,000	17,111,000
Goodwill	3,916,000	3,861,000	3,873,000
Intangible Assets	960,000	987,000	-
Accumulated Amortization	-	-	-
Other Assets	4,587,000	3,217,000	-
Deferred Long Term Asset Charges	-	-	1,464,000
Total Assets	55,651,000	48,368,000	48,314,000

Intel Corporation: Balance Sheet: Liabilities & Stockholder's Equity

Liabilities	29-Dec-07	30-Dec-06	31-Dec-05
Current Liabilities			
Accounts Payable	7,804,000	7,735,000	8,289,000
Short/Current Long Term Debt	142,000	180,000	313,000
Other Current Liabilities	625,000	599,000	632,000
Total Current Liabilities	8,571,000	8,514,000	9,234,000
Long Term Debt	1,980,000	1,848,000	2,106,000
Other Liabilities	1,927,000	989,000	89,000
Deferred Long Term Liability Charges	411,000	265,000	703,000
Minority Interest	-	-	-
Negative Goodwill	-	-	-
Total Liabilities	12,889,000	11,616,000	12,132,000
Stockholders' Equity			
Misc Stocks Options Warrants	-	-	-
Redeemable Preferred Stock	-	-	-
Preferred Stock	-	-	-
Common Stock	11,653,000	7,825,000	6,245,000
Retained Earnings	30,848,000	28,984,000	29,947,000
Treasury Stock	-	-	-
Capital Surplus	-	-	-
Other Stockholder Equity	261,000	(57,000)	(10,000)
Total Stockholder Equity	42,762,000	36,752,000	36,182,000

Intel Corporation: Cash Flow Statement

PERIOD ENDING	29-Dec-07	30-Dec-06	31-Dec-05
Net Income	6,976,000	5,044,000	8,664,000
Operating Activities, Cash Flows Provided By or Used In			
Depreciation	4,798,000	4,912,000	4,595,000
Adjustments To Net Income	777,000	736,000	57,000
Changes In Accounts Receivables	316,000	1,217,000	(914,000)
Changes In Liabilities	(146,000)	(53,000)	1,396,000
Changes In Inventories	700,000	(1,116,000)	(500,000)
Changes In Other Operating Activities	(796,000)	(120,000)	1,525,000
Total Cash Flow From Operating Activities	12,625,000	10,620,000	14,823,000
Investing Activities, Cash Flows Provided By or Used In			
Capital Expenditures	(5,000,000)	(5,779,000)	(5,818,000)
Investments	(5,176,000)	153,000	(42,000)
Other Cashflows from Investing Activities	250,000	719,000	(502,000)
Total Cash Flows From Investing Activities	(9,926,000)	(4,907,000)	(6,362,000)
Financing Activities, Cash Flows Provided By or Used In			
Dividends Paid	(2,618,000)	(2,320,000)	(1,958,000)
Sale Purchase of Stock	264,000	(3,547,000)	(9,435,000)
Net Borrowings	246,000	(695,000)	1,849,000
Other Cash Flows from Financing Activities	118,000	123,000	-
Total Cash Flows From Financing Activities	(1,990,000)	(6,439,000)	(9,544,000)
Effect Of Exchange Rate Changes	-	-	-
Change In Cash and Cash Equivalents	\$709,000	(\$726,000)	(\$1,083,000)

AMD Financial Ratios:

VALUATION MEASURES

Market Cap (intraday):	3.92B
Enterprise Value (25-Jun-08):	7.32B
Trailing P/E (ttm, intraday):	N/A
Forward P/E (fye 29-Dec-09) :	N/A
PEG Ratio (5 yr expected):	N/A
Price/Sales (ttm):	0.60
Price/Book (mrq):	1.43
Enterprise Value/Revenue (ttm):	1.17
Enterprise Value/EBITDA (ttm):	23.919

Profitability

Profit Margin (ttm):	-49.74%
Operating Margin (ttm):	-15.94%

Management Effectiveness

Return on Assets (ttm):	-5.24%
Return on Equity (ttm):	-79.72%

Income Statement

Revenue (ttm):	6.29B
Revenue Per Share (ttm):	10.983
Qtrly Revenue Growth (yoy):	22.10%
Gross Profit (ttm):	2.26B
EBITDA (ttm):	306.00M
Net Income Avl to Common (ttm):	-3.13B
Diluted EPS (ttm):	-5.46
Qtrly Earnings Growth (yoy):	N/A

Balance Sheet

Total Cash (mrq):	1.75B
Total Cash Per Share (mrq):	2.89
Total Debt (mrq):	5.29B
Total Debt/Equity (mrq):	2.005
Current Ratio (mrq):	1.283
Book Value Per Share (mrq):	4.351

Cash Flow Statement

Operating Cash Flow (ttm):	-335.00M
Levered Free Cash Flow (ttm):	-973.25M

Advanced Micro Devices: Balance Sheet: Assets

PERIOD ENDING	29-Dec-07	31-Dec-06	25-Dec-05
Assets			
Current Assets			
Cash And Cash Equivalents	1,432,000	1,380,000	633,067
Short Term Investments	457,000	161,000	1,161,699
Net Receivables	704,000	1,175,000	1,041,423
Inventory	821,000	814,000	388,631
Other Current Assets	402,000	433,000	334,016
Total Current Assets	3,816,000	3,963,000	3,558,836
Long Term Investments	-	376,000	724,649
Property Plant and Equipment	4,720,000	3,987,000	2,701,000
Goodwill	1,907,000	3,217,000	-
Intangible Assets	587,000	1,207,000	-
Accumulated Amortization	-	-	-
Other Assets	520,000	397,000	303,294
Deferred Long Term Asset Charges	-	-	-
Total Assets	11,550,000	13,147,000	7,287,779

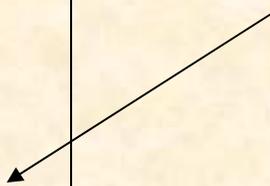
Advanced Micro Devices: Balance Sheet: Liabilities & Stockholder's Equity

Liabilities	29-Dec-07	31-Dec-06	25-Dec-05
Current Liabilities			
Accounts Payable	2,088,000	2,309,000	1,493,647
Short/Current Long Term Debt	238,000	125,000	43,224
Other Current Liabilities	299,000	418,000	285,090
Total Current Liabilities	2,625,000	2,852,000	1,821,961
Long Term Debt	5,031,000	3,672,000	1,327,065
Other Liabilities	633,000	135,000	459,322
Deferred Long Term Liability Charges	6,000	413,000	92,606
Minority Interest	265,000	290,000	234,988
Negative Goodwill	-	-	-
Total Liabilities	8,560,000	7,362,000	3,935,942
Stockholders' Equity			
Misc Stocks Options Warrants	-	-	-
Redeemable Preferred Stock	-	-	-
Preferred Stock	-	-	-
Common Stock	6,000	5,000	4,355
Retained Earnings	(3,100,000)	308,000	473,678
Treasury Stock	(95,000)	(93,000)	(90,138)
Capital Surplus	6,016,000	5,409,000	2,800,306
Other Stockholder Equity	163,000	156,000	163,636
Total Stockholder Equity	2,990,000	5,785,000	3,351,837

Advanced Micro Devices: Income Statement

PERIOD ENDING	29-Dec-07	31-Dec-06	25-Dec-05
Total Revenue	6,013,000	5,649,000	5,847,577
Cost of Revenue	3,751,000	2,856,000	3,455,812
Gross Profit	2,262,000	2,793,000	2,391,765
Operating Expenses			
Research Development	1,847,000	1,205,000	1,144,025
Selling General and Administrative	1,373,000	1,140,000	1,016,085
Non Recurring	1,608,000	416,000	-
Others	299,000	79,000	-
Total Operating Expenses	5,127,000	2,840,000	-
Operating Income or Loss	(2,865,000)	(47,000)	231,655
Income from Continuing Operations			
Total Other Income/Expenses Net	66,000	103,000	(96,110)
Earnings Before Interest And Taxes	(2,799,000)	(17,000)	135,545
Interest Expense	367,000	126,000	104,960
Income Before Tax	(3,166,000)	(143,000)	30,585
Income Tax Expense	23,000	23,000	(6,642)
Minority Interest	(35,000)	(28,000)	125,151
Net Income From Continuing Ops	(3,379,000)	(166,000)	165,483
Non-recurring Events			
Discontinued Operations	-	-	-
Extraordinary Items	-	-	-
Effect Of Accounting Changes	-	-	-
Other Items	-	-	-
Net Income	(3,379,000)	(166,000)	165,483
Preferred Stock And Other Adjustments	-	-	-
Net Income Applicable To Common Shares	(\$3,379,000)	(\$166,000)	\$165,483

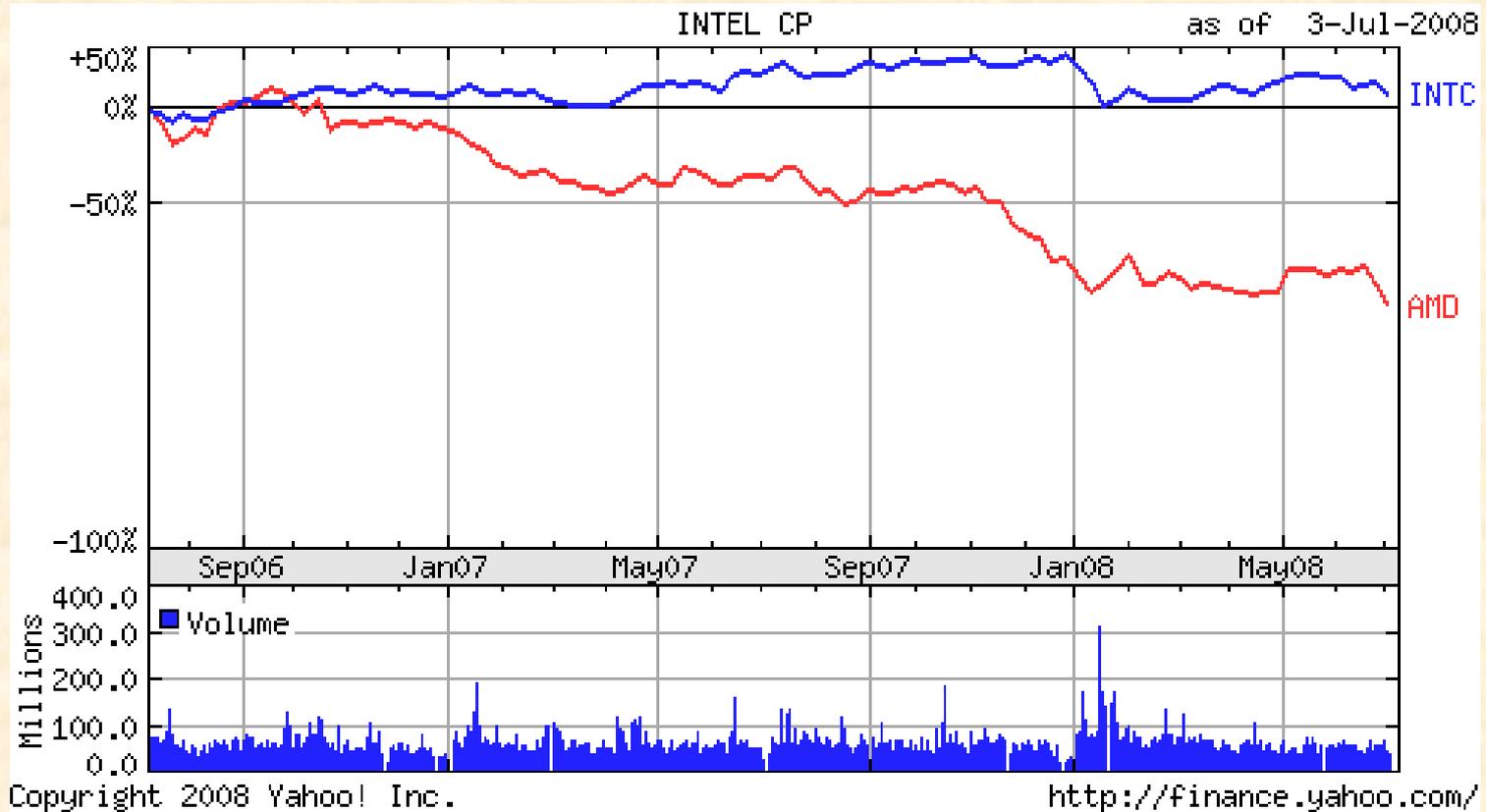
EBIT



Advanced Micro Devices: Cash Flow Statement

PERIOD ENDING	29-Dec-07	31-Dec-06	25-Dec-05
Net Income	(3,379,000)	(166,000)	165,483
Operating Activities, Cash Flows Provided By or Used In			
Depreciation	1,138,000	837,000	1,219,344
Adjustments To Net Income	1,904,000	444,000	(121,249)
Changes In Accounts Receivables	503,000	60,000	(221,938)
Changes In Liabilities	(397,000)	300,000	464,557
Changes In Inventories	4,000	6,000	(27,780)
Changes In Other Operating Activities	(83,000)	(194,000)	4,438
Total Cash Flow From Operating Activities	(310,000)	1,287,000	1,482,855
Investing Activities, Cash Flows Provided By or Used In			
Capital Expenditures	(1,685,000)	(1,857,000)	(1,513,173)
Investments	(238,000)	1,422,000	(756,963)
Other Cashflows from Investing Activities	248,000	(3,868,000)	554
Total Cash Flows From Investing Activities	(1,675,000)	(4,303,000)	(2,269,582)
Financing Activities, Cash Flows Provided By or Used In			
Dividends Paid	-	-	-
Sale Purchase of Stock	686,000	726,000	278,955
Net Borrowings	1,176,000	3,037,000	223,247
Other Cash Flows from Financing Activities	175,000	-	(8,013)
Total Cash Flows From Financing Activities	2,037,000	3,763,000	494,189
Effect Of Exchange Rate Changes -	-	7,228	
Change In Cash and Cash Equivalents	\$52,000	\$747,000	(\$285,310)

Intel versus AMD: Three-year Chart



Conclusion

- Accounting information is used for internal, external and regulatory purposes
- An understanding of the cost structure and results is critical to the success of a business.
- An understanding of the differences between cash flow and profitability is critical to the success of a business.

Definitions of Common Accounting and Financial Terms:

Current Assets & Liabilities – Assets and liabilities that will be converted to cash or require cash within the next year. Assets are listed in order of liquidity.

Long-Term Assets & Liabilities – Assets that are expected to provide benefits beyond the current year. Liabilities that are due beyond the current year.

Contributed Capital – Amounts invested in the firm. This amount does not represent any increase in wealth to the investors.

Retained Earnings – Profits retained and reinvested within the firm (i.e. not distributed as dividends). This amount does represent investors' increase in wealth beyond the initial investment.

Revenue - Dollar amount of units sold during the period.

Cost of Goods Sold - Cost of purchased goods sold (reseller) or direct labor/materials/overhead (manufacturer).

Selling, General, and Administrative Costs - Costs not directly attributable to inventory.

Depreciation - Allocation of cost of property, plant & equipment

Amortization - Allocation of cost of intangible assets (i.e., patents, copyrights, goodwill, etc.)

EBITDA – Earnings before interest, taxes, depreciation and Amortization

EBIT – Earnings before interest and taxes

Cash from Operating Activities – Cash flow provided from the primary business functions of the firm.

Cash from Investing Activities – Cash flow provided from purchase and sale of firm operating assets

Cash from Financing Activities – Cash flow provided from the firms obtaining equity and debt, repaying debt, providing a return on invested capital (i.e., dividends)

Definitions of Common Accounting and Financial Terms:

Break-Even Analysis:

Fixed Cost – Costs that does not vary with increases or decreases in sales volume

Variable Cost – Costs that are a direct function of sales volume

Contribution Margin – Revenue per unit – variable cost per unit

Break-Even Point – Number of units where total contribution margin equals fixed costs

Financial Analysis:

Market Cap – Price per share x shares outstanding

Enterprise Value - market cap plus debt, minority interest and preferred shares, minus total cash and cash equivalents.

Trailing P/E – Price per share divided by prior period earnings per share

Forward P/E – Price per share divided by estimated next period earnings per share

PEG Ratio – Price to Earnings ratio divided by annual earnings growth percentage

Price to Book Ratio – Market price per share divided by book value of equity (i.e., amount recorded on the balance sheet)

Profit Margin – Net Income/Revenue

Operating Margin – Gross Profit/Revenue

Current Ratio – Current Assets/Current Liabilities

Levered Free Cash Flow – the amount of cash available to shareholders after payment of interest on debt