

# Intro to Investment Analysis

Presented by

Lauren Rudd

[LVERudd@aol.com](mailto:LVERudd@aol.com)

Tel: 941-346-5444

[www.RuddReport.com](http://www.RuddReport.com)

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# Enterprise Value (EV)

Value of a company from the point of view of all financing sources, i.e. stock market value adjusted for debt and cash

Enterprise Value = Market Cap  
+ Debt at market value  
+ Minority Interest (if any)  
+ Preferred Equity at Market Value  
- Cash and cash equivalents

# Enterprise Value (EV) cont.

- $EV/EBITA$  = Length of time to pay back an investment
- $EBITA/EV$  = cash rate of return on investment. Used to compare returns on equivalent companies on a risk adjusted basis.
- Where EBITA is Earnings before interest, taxes and amortization

# Economic Profit

- The economic profit of a company after deducting the cost of all capital, debt and equity
- It is sometimes referred to as residual income analysis
- The commercial version is “EVA,” (economic value added) trade marked Stern Stuart & Co.

# Economic Profit

EVA is essentially net operating profit, from which is subtracted the cost of capital

$$EVA = NOPAT - (C\% \times TC)$$

C% = the weighted average cost of capital or WACC (percentage)

TC = Total Capitalization

# Market Value Added

- Market Value Added is a related concept
- $MVA = \text{Market Value of a company} - \text{Total Capital}$
- A company with a positive EVA should have a market value in excess of the book value of its capital

# Market Efficiency

- Weak Form – past price and volume
- Semi-strong form – All publicly available information
- Strong-form – all information of any kind, public or private

# Valuing a stock

## Security valuation methods:

- The basic dividend discount model
- The two-stage dividend growth model
- The earnings discount model
- Free cash flow to the firm model
- The residual income model
- Price ratio analysis



# Methods of Valuing Stocks

Expected return:

The return you should expect from an investment in a common stock. We will use the capital asset pricing model to ascertain an expected return.

# CAPM – Expected return

## Capital Asset Pricing Model

$r = R_f + \text{beta} \times (R_m - R_f)$  where:

$r$  = the expected rate return rate on a security

$R_f$  = the rate of a "risk-free" investment

$R_m$  = the return rate of the appropriate asset class

Beta measures the volatility of the security relative to the asset class.

# Expected Return

- The asset class for our purposes is the market itself
- For calculation purposes we will use the S&P 500 index
- The historical return on the S&P 500 is 11%

# Expected Return

Risk free rate - is defined as a 10 year Treasury whose rate we will assume to be 5%

# Expected Return

$$r = R_f + \text{beta} \times (R_m - R_f)$$

Therefore:

$$r = 5 + \text{beta} \times (11-5)$$

$$r = 5 + \text{beta} \times 6$$

# Expected Return

If a security is just as risky as the overall market, investors would demand a return of 11 percent

If a security is twice as risky as the overall market, investors would demand a return of 17 percent

# Expected Return

- Betas are published by Merrill Lynch, Value Line, S&P among others
- Beta can be calculated with Excel
- It is the slope of a graph of stock prices versus returns

# Intrinsic Value - DDM

## Dividend Discount Model

The **Gordon growth model** is a variant of the Dividend Discount Model using discounted cash flow as a method for valuing a stock

*See handout*



# Valuing a stock

- Assuming that the dividends will grow ***forever*** at a constant growth rate  $g$ .
- The discount rate is  $k$  (can also be  $r$ )
- For constant perpetual dividend growth, the DDM formula becomes:

$$P_0 = \frac{D_0 \times (1+g)}{k-g} = \frac{D_1}{k-g} \quad (\text{Important: } g < k)$$

# Intrinsic Value – Disc. Earnings

## Discounted Earnings Model

The easiest way to obtain an intrinsic value using discounted earnings is to log on to the web site:

[www.Quicken.com](http://www.Quicken.com)

***See Handout***

# Estimating the Growth Rate

The growth rate in dividends ( $g$ ) can be estimated in a number of ways:

- Using the company's historical average growth rate.
- Using an industry median or average growth rate.
- Using the *sustainable growth rate*.

# The Historical Average Growth Rate

- Suppose the Broadway Joe Company paid the following dividends:
  - 2002: \$1.50
  - 2003: \$1.70
  - 2004: \$1.75
  - 2005: \$1.80
  - 2006: \$2.00
  - 2007: \$2.20
- The spreadsheet below shows how to estimate historical average growth rates, using arithmetic and geometric averages.

Year:	Dividend:	Pct. Chg:				
2007	\$2.20	10.00%				
2006	\$2.00	11.11%				
2005	\$1.80	2.86%				Grown at
2004	\$1.75	2.94%		Year:	7.96%	
2003	\$1.70	13.33%		2002	\$1.50	
2002	\$1.50			2003	\$1.62	
				2004	\$1.75	
	Arithmetic Average:	8.05%		2005	\$1.89	
				2006	\$2.04	
	Geometric Average:	7.96%		2007	\$2.20	

# The Sustainable Growth Rate

$$\begin{aligned}\text{Sustainable Growth Rate} &= \text{ROE} \times \text{Retention Ratio} \\ &= \text{ROE} \times (1 - \text{Payout Ratio})\end{aligned}$$

- Return on Equity (ROE) = Net Income / Equity
- Payout Ratio = Proportion of earnings paid out as dividends
- Retention Ratio = Proportion of earnings retained for investment

# Calculating Sustainable Growth Rate

- A company has an **ROE of 10.17%**, projected **earnings per share of \$2.25**, and a **dividend of \$1.56**. What is the:
  - **Retention rate?**
  - **Sustainable growth rate?**
- Payout ratio =  $\$1.56 / \$2.25 = .693$
- So, retention ratio =  $1 - .693 = .307$  or 30.7%
- Therefore, sustainable growth rate =  $.1017 \times .307 = .03122$ , or 3.122%

# Using the Sustainable Growth Rate

What is the value of the stock, using the perpetual growth model, and a discount rate of 6.7%?

$$P_0 = \frac{\$1.56 \times (1.03122)}{.067 - .03122} = \$44.96$$

# The Two-Stage Dividend Growth Model

- The two-stage dividend growth model assumes that a firm will initially grow at a rate  $g_1$  for  $T$  years
- There after grow at a rate  $g_2 < k$  during a *perpetual* second stage of growth.
- The Two-Stage Dividend Growth Model formula is:

$$P_0 = \frac{D_0(1+g_1)}{k-g_1} \left[ 1 - \left( \frac{1+g_1}{1+k} \right)^T \right] + \left( \frac{1+g_1}{1+k} \right)^T \frac{D_0(1+g_2)}{k-g_2}$$



# Two-Stage Dividend Growth Model

- Although the formula looks complicated, think of it as two parts:
  - Part 1 is the present value of the first  $T$  dividends (it is the same formula we used for the constant growth model).
  - Part 2 is the present value of all subsequent dividends.
- So, suppose MissMolly.com has a current dividend of  $D_0 = \$5$ , which is expected to shrink at the rate,  $g_1 = 10\%$  for 5 years, but grow at the rate,  $g_2 = 4\%$  forever.
- With a discount rate of  $k = 10\%$ , what is the present value of the stock?

# Two-Stage Dividend Growth Model

$$P_0 = \frac{D_0(1+g_1)}{k-g_1} \left[ 1 - \left( \frac{1+g_1}{1+k} \right)^T \right] + \left( \frac{1+g_1}{1+k} \right)^T \frac{D_0(1+g_2)}{k-g_2}$$

$$P_0 = \frac{\$5.00(0.90)}{0.10 - (-0.10)} \left[ 1 - \left( \frac{0.90}{1+0.10} \right)^5 \right] + \left( \frac{0.90}{1+0.10} \right)^5 \frac{\$5.00(1+0.04)}{0.10 - 0.04}$$

$$= \$14.25 + \$31.78$$

$$= \$46.03.$$

- The total value of \$46.03 is the sum of a \$14.25 present value of the first five dividends, plus a \$31.78 present value of all subsequent dividends.

# Discount Rates for DDM

The discount rate is estimated using  
the *capital asset pricing model*  
(*CAPM* )

# Dividend Discount Models

## ***Constant Perpetual Growth Model:***

- Simple to compute
- Not usable for firms that do not pay dividends
- Not usable when  $g > k$
- Is sensitive to the choice of  $g$  and  $k$
- $k$  and  $g$  may be difficult to estimate accurately.
- Constant perpetual growth is often an unrealistic assumption.

# Dividend Discount Models

## ***Two-Stage Dividend Growth Model:***

- More realistic in that it accounts for two stages of growth
- Usable when  $g > k$  in the first stage
- Not usable for firms that do not pay dividends
- Is sensitive to the choice of  $g$  and  $k$
- $k$  and  $g$  may be difficult to estimate accurately.

# Dividend Discount Models

- Utilize the small Excel program
- See handout
- Required data:
  - First stage growth rate
  - Second stage growth rate
  - First stage discount rate
  - Second stage discount rate

# Discounted Earnings Model

- Uses the same principles as the DDM
- See handout for small Excel model
- Same model but with less flexibility is available at ***Investing.Quicken.com***
- Inputs same as DDM plus Long Term Debt and Shares outstanding
- Uses earnings instead of dividends as cash flow

# Intrinsic Value - FCFF

## Definitions

- Operating Expenses = CGS + SG&A + R&D
- Net Operating Profit (NOP) = Operating Revenues – Operating Expenses
- Net Operating Profit Margin = NOP/Revenue



# Intrinsic Value - FCFF

## Definitions cont.

- $\text{Net Investment} = \text{New Investment} - \text{Depreciation}$
- $\text{Working Capital} = \text{Acc't Rec} + \text{Inventories} - \text{Acct's Payable}$

# Intrinsic Value - FCFF

FCFF - the cash that is left over after payment of all hard cash expenses and all operating investment

$$\text{FCFF} = \text{NOP} - \text{Taxes} - \text{Net Inv} - \text{Net Change in Working Capital}$$

# Intrinsic Value - FCFF

## Four Step Process

- Forecast Expected Cash Flows
- Estimate the WACC (weighted average cost of capital)
- Calculate Enterprise (Corporate) Value
- Calculate Intrinsic Value

# FCCF Model

The easiest way to obtain an intrinsic value using free cash flow to the firm is to log on to the web site:

[www.ValuePro.net](http://www.ValuePro.net)

***See Handout***

# Residual Income Model

- We have valued only companies that pay dividends.
  - But, there are many companies that do not pay dividends.
  - What about them?
  - It turns out that there is an elegant way to value these companies, too.
- The model is called the *Residual Income Model (RIM)*.
- *Major Assumption (known as the Clean Surplus Relationship, or CSR)*: The change in book value per share is equal to earnings per share minus dividends.

# Residual Income Model

- Inputs needed:
  - Earnings per share at time 0,  $EPS_0$
  - Book value per share at time 0,  $B_0$
  - Earnings growth rate,  $g$
  - Discount rate,  $k$
- There are two equivalent formulas for the Residual Income Model:

$$P_0 = B_0 + \frac{EPS_0(1+g) - B_0 \times k}{k - g}$$

or

$$P_0 = \frac{EPS_1 - B_0 \times k}{k - g}$$

BTW, it turns out that the RIM is mathematically the same as the constant perpetual growth model.

# Using the Residual Income Model

- Superior Offshore International, Inc. (DEEP)
- It is July 1, 2007—shares are selling in the market for \$10.94.
- Using the RIM:
  - $EPS_0 = \$1.20$
  - $DIV = 0$
  - $B_0 = \$5.886$
  - $g = 0.09$
  - $k = .13$

$$P_0 = B_0 + \frac{EPS_0 \times (1+g) - B_0 \times k}{k - g}$$

$$P_0 = \$5.886 + \frac{\$1.20 \times (1 + .09) - \$5.886 \times .13}{.13 - .09}$$

$$P_0 = \$5.886 + \frac{\$1.308 - \$0.7652}{.04} = \$19.46.$$

- What can we say about the market price of DEEP?

# DEEP Growth

- Using the information from the previous slide, what growth rate results in a DEEP price of \$10.94?

$$P_0 = B_0 + \frac{EPS_0 \times (1+g) - B_0 \times k}{k - g}$$

$$\$10.94 = \$5.886 + \frac{\$1.20 \times (1+g) - \$5.886 \times .13}{.13 - g}$$

$$\$5.054 \times (.13 - g) = 1.20 + 1.20g - .7652$$

$$\$6.6570 - 5.054g = 1.20g + .4348$$

$$.2222 = 6.254g$$

$$g = .0355 \text{ or } 3.55\%$$



# Price Ratio Analysis

- *Price-earnings ratio (P/E ratio)*
  - Current stock price divided by annual earnings per share (EPS)
- *Earnings yield*
  - Inverse of the P/E ratio: earnings divided by price (E/P)
- High-P/E stocks are often referred to as *growth stocks*, while low-P/E stocks are often referred to as *value stocks*.

# Price Ratio Analysis

- *Price-cash flow ratio (P/CF ratio)*
  - Current stock price divided by current cash flow per share
  - In this context, cash flow is usually taken to be net income plus *depreciation*.
- Most analysts agree that in examining a company's financial performance, cash flow can be more informative than net income.
- Earnings and cash flows that are far from each other may be a signal of poor quality earnings.

# Price Ratio Analysis

- *Price-sales ratio (P/S ratio)*
  - Current stock price divided by annual sales per share
  - A high P/S ratio suggests high sales growth, while a low P/S ratio suggests sluggish sales growth.
- *Price-book ratio (P/B ratio)*
  - Market value of a company's common stock divided by its book (accounting) value of equity
  - A ratio bigger than 1.0 indicates that the firm is creating value for its stockholders.

# Price/Earnings Analysis - Intel

## *Intel Corp (INTC) - Earnings (P/E) Analysis*

5-year average P/E ratio	27.30
Current EPS	\$.86
EPS growth rate	8.5%

**Expected stock price** = historical P/E ratio × projected EPS

$$\mathbf{\$25.47} = 27.30 \times (\$.86 \times 1.085)$$

***stock price at the time was \$24.27***

# Price/Cash Flow - Intel

## *Intel Corp (INTC) - Cash Flow (P/CF) Analysis*

5-year average P/CF ratio	14.04
Current CFPS	\$1.68
CFPS growth rate	7.5%

**Expected stock price** = historical P/CF ratio ×  
projected CFPS

$$\mathbf{\$25.36} = 14.04 \times (\$1.68 \times 1.075)$$

*stock price at the time was \$24.27*

# Price/Sales - Intel

## *Intel Corp (INTC) - Sales (P/S) Analysis*

5-year average P/S ratio	4.51
Current SPS	\$6.14
SPS growth rate	7%

**Expected stock price** = historical P/S ratio ×  
projected SPS

$$\mathbf{\$29.63} = 4.51 \times (\$6.14 \times 1.07)$$

*stock price at the time was \$24.27*

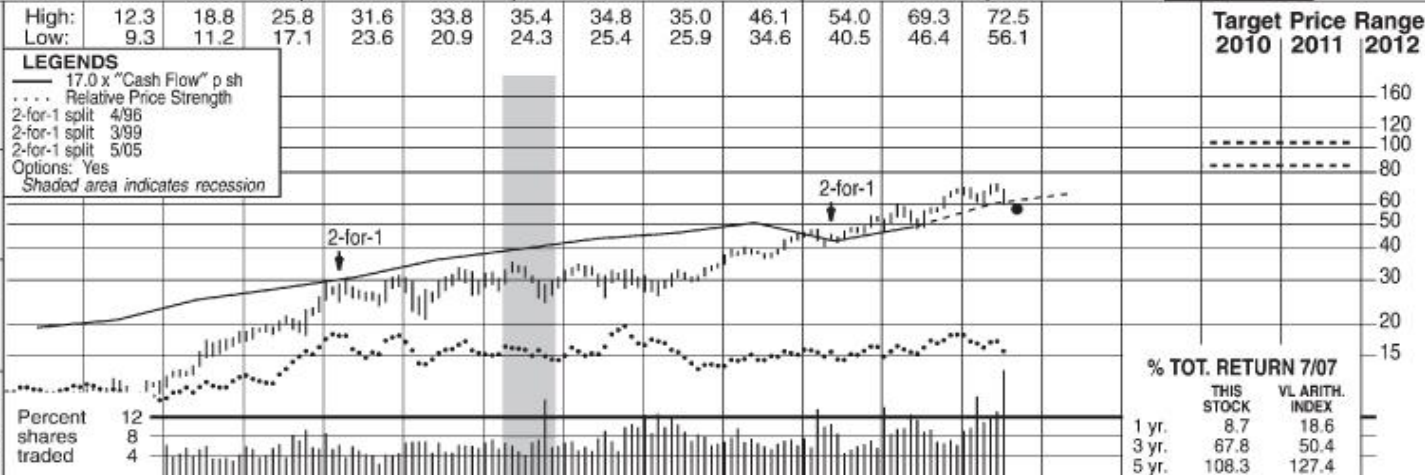
# An Analysis of McGraw-Hill

The next few slides contain a financial analysis of the McGraw-Hill Company, using data from the *Value Line Investment Survey*.

# McGRAW-HILL NYSE-MHP

RECENT PRICE **57.27** P/E RATIO **18.8** (Trailing: 20.1 Median: 22.0) RELATIVE P/E RATIO **1.01** DIV'D YLD **1.4%** **VALUE LINE**

**TIMELINESS 3** Lowered 8/17/07  
**SAFETY 1** Raised 6/4/93  
**TECHNICAL 3** Raised 7/6/07  
**BETA .90** (1.00 = Market)



**2010-12 PROJECTIONS**

	Price	Gain	Ann'l Total Return
High	105	(+85%)	17%
Low	85	(+50%)	12%

**Insider Decisions**

	S	O	N	D	J	F	M	A	M
to Buy	0	0	0	0	0	0	0	0	1
Options	0	2	0	2	0	1	0	0	1
to Sell	0	2	0	1	0	0	1	0	0

**Institutional Decisions**

	3Q2006	4Q2006	1Q2007
to Buy	251	285	263
to Sell	302	310	350
Hld's(000)	276965	279993	275731

1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	© VALUE LINE PUB., INC.	10-12
4.95	5.22	5.55	6.95	7.33	7.72	8.92	9.46	10.20	11.02	12.02	12.48	12.68	13.83	16.35	17.67	<b>20.25</b>	<b>21.60</b>	Sales per sh <sup>A</sup>	25.10
.50	.52	.57	1.09	1.14	1.23	1.47	1.63	1.81	2.12	2.33	2.57	2.71	2.97	2.52	2.87	<b>3.55</b>	<b>3.90</b>	"Cash Flow" per sh	5.05
.38	.39	.44	.51	.57	.63	.73	.86	1.01	1.18	1.23	1.48	1.64	1.91	2.28	2.56	<b>3.05</b>	<b>3.45</b>	Earnings per sh <sup>B</sup>	4.50
.28	.28	.29	.29	.30	.33	.36	.39	.43	.47	.49	.51	.54	.60	.66	.73	<b>.82</b>	<b>.82</b>	Div'ds Decl'd per sh <sup>D</sup>	.88
.13	.14	.13	.19	.15	.16	.20	.45	.39	.25	.30	.18	.30	.37	.33	.36	<b>.55</b>	<b>.60</b>	Cap'l Spending per sh	.70
2.55	2.31	2.08	2.30	2.58	3.42	3.62	3.94	4.32	4.53	4.80	5.65	6.72	7.86	8.48	7.57	<b>6.50</b>	<b>9.25</b>	Book Value per sh <sup>E</sup>	18.95
392.37	393.07	395.31	397.38	400.57	398.12	396.41	394.22	391.42	388.57	386.44	383.67	380.79	379.63	367.18	353.96	<b>338.00</b>	<b>338.00</b>	Common Shs Outst'g <sup>C</sup>	338.00
18.6	19.1	18.2	16.9	16.7	17.7	20.6	23.6	26.8	23.6	24.6	21.1	18.7	20.6	20.4	22.2	<i>Bold figures are Value Line estimates</i>		Avg Ann'l P/E Ratio	21.0
1.19	1.16	1.08	1.11	1.12	1.11	1.19	1.23	1.53	1.53	1.26	1.15	1.07	1.09	1.09	1.20			Relative P/E Ratio	1.40
3.9%	3.7%	3.6%	3.4%	3.2%	3.0%	2.4%	1.9%	1.6%	1.7%	1.6%	1.6%	1.8%	1.5%	1.4%	1.3%			Avg Ann'l Div'd Yield	1.5%

CAPITAL STRUCTURE as of 6/30/07		2007	2008	2009	2010	2011	2012
Total Debt \$994.5 mill.	Due in 5 Yrs \$994.5 mill.	6840	7300	7300	7300	7300	7300
LT Debt \$.3 mill.	LT Interest Nil	28.0%	29.0%	29.0%	29.0%	29.0%	29.0%
(Less than 1% of Cap'l)		115	120	120	120	120	120
Leases, Uncapitalized Annual rentals \$190.5 mill.		1070	1200	1200	1200	1200	1200
Pension Assets-12/06 \$1349 mill.	Oblig. \$1205 mill.	37.0%	37.0%	37.0%	37.0%	37.0%	37.0%
Pfd Stock None		15.6%	16.4%	16.4%	16.4%	16.4%	16.4%
Common Stock 338,900,000 shs. as of 7/13/07		d370	475	475	475	475	475
		Nil	Nil	Nil	Nil	Nil	Nil
		2200	3125	3125	3125	3125	3125
		48.5%	38.5%	38.5%	38.5%	38.5%	38.5%
		48.5%	38.5%	38.5%	38.5%	38.5%	38.5%
		36.0%	29.5%	29.5%	29.5%	29.5%	29.5%
		26%	23%	23%	23%	23%	23%

MARKET CAP: \$19.4 billion (Large Cap)



CURRENT POSITION (SMILL.)	2005	2006	6/30/07
Cash Assets	748.8	353.5	358.1
Receivables	1114.3	1237.3	1296.2
Inventory (FIFO)	335.3	322.2	430.2
Other	392.5	344.9	361.8
Current Assets	2590.9	2257.9	2446.3
Accts Payable	336.3	372.5	362.4
Debt Due	2.9	2.4	994.2
Other	1885.6	2093.1	2145.5
Current Liab.	2224.8	2468.0	3502.1

ANNUAL RATES of change (per sh)	Past 10 Yrs.	Past 5 Yrs.	Est'd '04-'06 to '10-'12
Sales	8.0%	7.5%	19.0%
"Cash Flow"	9.0%	6.0%	11.5%
Earnings	14.5%	14.5%	14.5%
Dividends	8.0%	7.5%	4.5%
Book Value	11.0%	12.0%	17.0%

Cal-endar	QUARTERLY SALES (\$ mill.) <sup>B</sup>				Full Year
	Mar.31	Jun.30	Sep.30	Dec.31	
2004	919.9	1245	1722	1361	5250.5
2005	1029	1456	1977	1541	6003.6
2006	1140.7	1527.5	1992.6	1594.3	6255.1
2007	1296.4	1718.2	2120	1705.4	6840
2008	1390	1835	2260	1815	7300

Cal-endar	EARNINGS PER SHARE <sup>B</sup>				Full Year
	Mar.31	Jun.30	Sep.30	Dec.31	
2004	.14	.43	.85	.49	1.91
2005	.21	.51	.99	.57	2.28
2006	.24	.63	1.06	.63	2.56
2007	.37	.79	1.19	.70	3.05
2008	.46	.87	1.32	.80	3.45

Cal-endar	QUARTERLY DIVIDENDS PAID <sup>D</sup>				Full Year
	Mar.31	Jun.30	Sep.30	Dec.31	
2003	.270	.270	.270	.270	1.08
2004	.300	.300	.300	.300	1.20
2005	.165	.165	.165	.165	.66
2006	.18	.18	.18	.18	.72
2007	.205	.205	.205		

**BUSINESS:** The McGraw-Hill Companies, Inc. is a global information provider serving financial, education, and business information markets through brands such as *Standard & Poors*, *McGraw-Hill Education*, *Business Week*, *Aviation Week*, and *Platts*. 2006 sales and oper. profit by bus. seg.: Educ., 40%, 20%; Fin'l Svcs., 44%, 76%; Media, 16%, 4%. Has active acquisition program, incl. Mac-

### McGraw-Hill subsidiary, Standard & Poor's (S&P), has acquired ClariFI.

The company's financial services unit purchased ClariFI, a provider of software and services that focus on quantitative portfolio management research, for an undisclosed amount. This new subsidiary will support S&P's Capital IQ operation and improve the business' efficiency in providing fundamental research solutions. ClariFI will help expand S&P's already elite client base. We view the move as a positive one, as the companies' goals are clearly well-matched.

**S&P remains the m49 notable contributor to gains.** The unit continues to benefit from firm demand for its equity and fixed-income information services, both in the U.S. and abroad. In particular, domestic commercial mortgage-backed securities and collateralized debt obligations are doing well despite the contraction in the subprime market. We believe this segment will continue to boost the top and bottom lines.

**Meanwhile, the education segment's sales are up and margins have widened considerably.** State new-adoption

millan/McGraw-Hill Sch. Pub. joint vent. in '89; purchased remaining 50%, 10/93; divested S&P ComStock, 2/03; Juvenile Retail Publishing, 1/04. Owns 4 TV stations. Has 20,214 empls. Off./dir. own 2.7% of shrs. (3/07 Proxy). Chrmn., Pres. and CEO: Harold (Terry) McGraw III. Inc.: NY. Addr.: 1221 Ave. of the Americas, NY, NY 10020. Tel.: 212-512-2000. Internet: www.mcgraw-hill.com.

markets have been strong with growth in the double digits. The notable success has been in the areas of math and science from the kindergarten to 12th-grade levels. Also, the education division is enjoying significant adoptions in large urban markets. In all, we expect this segment to continue to thrive from the positive swing in the textbook adoption cycle.

**McGraw-Hill's shares are a sound investment choice.** Concerns regarding the recent downturn in the corporate lending arena have driven investors to take some profits and caused MHP to lose some ground since our last review. Investors may wish to hold off until the quotation stabilizes. However, we believe the company's business model is solid, and the stock offers worthwhile price appreciation potential out to 2010-2012.

Simon R. Shoucair

August 17, 2007

Sales (and Operating Margins\*) by Business Line

	2005	2006	2007	2008
Education	2672(15.4%)	2524(13.0%)	2690(13.0%)	2800(14.0%)
Financial Svcs.	2401(37.8%)	2746(43.8%)	3100(48.0%)	3250(49.0%)
Info./Media Svc.	931(6.5%)	985(5.0%)	1050(6.0%)	1150(6.5%)
Segment Total	6004(24.8%)	6255(25.3%)	6840(27.0%)	7300(28.0%)

\* After depreciation; before corporate and interest expenses.

(A) Incl. Macmillan/McGraw-Hill Pub. Co. from 10/93. (B) Dil. egs., beg. 1997. Excl. nonrecur. gains, (losses): '93, (82c); '96, \$1.23; '98, (5c); '99, (12c); '00, 5c; '01, (53c); '03, 30c; '04,

10c; '05, (7c); '06, (6c). Excl. charge for acctg. change: '00, (35c). Next egs. report due early Oct.

(C) In millions, adjusted for splits. (D) Div. hist.

paid in Mar., June, Sept., & Dec. ■ Div. reinv. plan available.

(E) Incl. int'gbls., at 12/31/06: \$2,325 million, \$15.22/share.

Company's Financial Strength	A+
Stock's Price Stability	90
Price Growth Persistence	100
Earnings Predictability	100

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## McGraw-Hill

- Based on the CAPM,  $k = 3.1\% + (.80 \times 9\%) = 10.3\%$
- Retention ratio =  $1 - \$.66/\$2.65 = .751$
- Sustainable  $g = .751 \times 23\% = 17.27\%$
- Because  $g > k$ , the constant growth rate model cannot be used. (We would get a value of - \$11.10 per share)

# McGraw-Hill – residual income

- Let's assume that "today" is January 1, 2008,  $g = 7.5\%$ , and  $k = 12.6\%$ .
- Using the *Value Line Investment Survey* (VL), we can fill in column two (VL) of the table below.
- We use column one and our growth assumption for column three (CSR) of the table below.

	End of 2007	2008 (VL)	2008 (CSR)
Beginning BV per share	NA	\$6.50	\$6.50
EPS	\$3.05	\$3.45	\$3.2788
DIV	\$.82	\$.82	\$2.7913
Ending BV per share	\$6.50	\$9.25	\$6.9875

$$3.05 \times 1.075$$

$$6.50 \times 1.075$$

$$\text{"Plug"} = 3.2788 - (6.9875 - 6.50)$$

# McGraw-Hill – residual income

- Using the CSR assumption:

Stock price at the time = \$57.27.  
What can we say?

$$P_0 = B_0 + \frac{EPS_0 \times (1+g) - B_0 \times k}{k-g}$$

$$P_0 = \$6.50 + \frac{\$3.05 \times (1+.075) - \$6.50 \times .126}{.126 - .075}$$

$$P_0 = \$54.73.$$

- Using *Value Line* numbers for  $EPS_1 = \$3.45$ ,  $B_1 = \$9.25$   
 $B_0 = \$6.50$ ; and using the actual change in book value instead of an estimate of the new book value, (i.e.,  $B_1 - B_0$  is =  $B_0 \times k$ )

$$P_0 = B_0 + \frac{EPS_0 \times (1+g) - B_0 \times k}{k-g}$$

$$P_0 = \$6.50 + \frac{\$3.45 - (\$9.25 - 6.50)}{.126 - .075}$$

$$P_0 = \$20.23$$

# McGraw-Hill Price - Ratio

**TABLE 6.4**

**Price Ratio Analysis for McGraw-Hill Co. (MHP) July 2007 Stock Price: \$57.27**

	<b>Earnings</b>	<b>Cash Flow</b>	<b>Sales</b>
Five-year average price ratio	20.60 (P/E)	14.99 (P/CF)	2.77 (P/S)
Current value per share, 2006	\$ 2.56 (EPS)	\$ 2.87 (CFPS)	\$17.67 (SPS)
Growth rate	14.5%	11.5%	19.0%
Expected share price	\$60.38	\$47.97	\$58.25

# Valuing a stock

Collect the data you will need:

- Sustainable growth rate
- Expected growth rate
- Estimated growth rate
- Discount rate
- Beta
- Risk free rate of return

# Valuing a stock

Financial ratios you will need:

- Price/share
- Earnings/share
- Cash flow/share
- Sales/share
- Price/earnings
- Price/sales
- Price/cash flow

# Valuing a stock

## Intrinsic Value Models:

- Discounted Earnings
- Discounted Free Cash Flow to the Firm
- Dividend Discount Model
- Residual Income Model
- Price Ratio Analysis