Basic Valuation Models : Dividend Discount Model

Simple Concept of "Present Value":

If you wish to receive $3,000 a year forever, assume an investment will pay a risk-free rate of interest of 10% a year, how much money you need to invest ?

→ The answer is obvisouly $30,000 ; that is the PV of perpetual cash flow of $3,000

→ PV of perpetuity $= 30{,}000 = \frac{3{,}000}{10\%}$

In general, $PV = \sum_{t=1}^{N} \frac{CF_t}{(1+r)^t}$; if $\begin{cases} N = \infty, \\ CF = \text{Constant} \end{cases}$ $PV = \frac{CF}{r}$

Preferred Share Valuation

$$V_0 = \frac{D_0}{r}$$

r = discount rate ← Firms.
= Cost of equity (Capital)
= Required Rate of Return ← Investors

Dividend Discount Model

If dividends are correct metric to use for valuation purpose; that is, the firm is matured and stable. This firm distributs her earning as cash dividends to common shareholders according to a stable dividend policy.

$$V_0 = \sum_{t=1}^{\infty} \frac{D_t}{(1+r)^t}$$

Gordon Model: Assume
1. dividend grows at a constant rate perpetually
2. required rate of return is also constant
3. dividend growth rate < required rate of return

That is, $D_t = D_0(1+g)^t$, $t = 1, 2, \ldots \infty$

(1) $$V_0 = \sum_{t=1}^{\infty} \frac{D_0(1+g)^t}{(1+r)^t} = D_0\left(\sum_{t=1}^{\infty} \frac{(1+g)^t}{(1+r)^t}\right) = \frac{D_0(1+g)}{(1+r)} + D_0\left(\sum_{t=2}^{\infty} \frac{(1+g)^t}{(1+r)^t}\right)$$

(2) $$\frac{(1+g)}{(1+r)} V_0 = \sum_{t=2}^{\infty+1} \frac{D_0(1+g)^t}{(1+r)^t} = D_0\left(\sum_{t=2}^{\infty} \frac{(1+g)^t}{(1+r)^t}\right)$$

① − ②, we have

$$V_0\left(1-\frac{1+g}{1+r}\right)=\frac{D_0(1+g)}{1+r}$$

$$V_0\left(\frac{r-g}{1+r}\right)=\frac{D_1}{1+r}$$

Gordon Model: $V_0=\frac{D_1}{r-g}$; $r-g=\frac{D_1}{V_0}=$ Dividend Yield $=y_d$

Since $t=\infty$, $V_0=\frac{\text{Expected dividend}}{y_d}$

** Dividend Yield = required return of investor − growth rate of dividend >0

Required Rate of Return = Dividend Yield + growth rate

↑ Income

↑ Capital gain (appreciation)

Example: IBDF is a mutual stable firm with a beta coefficient of 1.1 and is expected to pay cash dividend (annual) of ₦3. The current share price of IBDF is ₦30. The risk-free rate of return is 3% and the market risk premium is 8%. What is the expected growth rate of IBDF?

The required rate of Return (r) = 3% + 1.1 (8%) = 11.1%

Growth Rate (g) = r − dividend Yield

$$= 11.1\% - \frac{3}{30}$$

$$= 1.1\%$$

GENERAL ELECTRIC NYSE-GE

RECENT PRICE **23.06** | P/E RATIO **14.3** (Trailing: 15.2 / Median: 16.0) | RELATIVE P/E RATIO **0.86** | DIV'D YLD **3.3%** | **VALUE LINE**

TIMELINESS 2 Raised 2/1/13
SAFETY 3 Lowered 3/13/09
TECHNICAL 4 Lowered 4/5/13
BETA 1.25 (1.00 = Market)

2016-18 PROJECTIONS

	Price	Gain	Ann'l Total Return
High	50	(+115%)	*24%*
Low	35	(+50%)	*14%*

Insider Decisions

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

Institutional Decisions

	2Q2012	3Q2012	4Q2012
to Buy	733	684	707
to Sell	735	785	878
Hld's(000)	5265477	5689752	5663545

	2013	2014	2015	2016	2017	2018
High:	41.8	32.4	37.8	37.3	38.5	42.2
Low:	21.4	21.3	28.9	32.7	32.1	33.9
High:	38.5	17.5	19.7	21.7	23.2	23.9
Low:	12.6	5.7	13.8	14.0	18.0	20.7

LEGENDS
10.5 x "Cash Flow" p sh
Relative Price Strength
3-for-1 split 5/00
Options: Yes
Shaded areas indicate recessions

Target Price Range 2016 | 2017 | 2018

Percent shares traded

% TOT. RETURN 3/13

	THIS STOCK	VL ARITH.* INDEX
1 yr.	19.1	15.7
3 yr.	40.0	43.2
5 yr.	-23.9	73.0

1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	© VALUE LINE PUB. LLC	16-18
9.28	10.24	11.33	13.07	12.69	13.21	13.33	14.44	14.28	15.90	17.30	17.32	14.70	14.15	13.93	14.16	*14.50*	*15.25*	Revenues per sh	*18.80*
1.25	1.54	1.77	2.06	2.14	2.12	2.24	2.38	2.56	2.90	3.28	2.81	2.07	2.13	2.28	2.44	*2.65*	*2.85*	"Cash Flow" per sh	*3.85*
.83	.93	1.07	1.29	1.41	1.51	1.55	1.61	1.72	1.99	2.20	1.78	1.03	1.15	1.31	1.52	*1.70*	*1.90*	Earnings per sh [B]	*2.75*
.36	.42	.49	.57	.64	.73	.77	.82	.91	1.03	1.15	1.24	.61	.46	.61	.70	*.76*	*.80*	Div'ds Decl'd per sh [C]	*1.20*
.22	.21	.21	.26	.29	.24	.97	1.24	1.38	1.62	1.79	1.52	.81	.92	1.20	1.45	*1.35*	*1.40*	Cap'l Spending per sh	*1.50*
3.52	3.96	4.32	5.08	5.52	6.39	7.87	10.47	10.43	10.93	11.57	9.93	11.00	11.20	11.01	11.82	*12.60*	*13.20*	Book Value per sh [D]	*17.50*
9793.8	9813.9	9854.5	9932.0	9925.9	9969.9	10063	10586	10484	10277	9987.6	10537	10663	10615	10573	10406	*10300*	*10250*	Common Shs Outst'g [E]	*10000*
25.1	30.3	35.9	40.1	30.8	20.7	18.1	20.5	20.5	17.3	17.2	15.7	13.0	14.4	13.9	13.3	*Bold figures are Value Line estimates*		Avg Ann'l P/E Ratio	*15.0*
1.45	1.58	2.05	2.61	1.58	1.13	1.03	1.08	1.09	.93	.91	.94	.87	.92	.87	.85			Relative P/E Ratio	*1.00*
1.7%	1.5%	1.3%	1.1%	1.5%	2.3%	2.7%	2.5%	2.6%	3.0%	3.0%	4.4%	4.6%	2.8%	3.4%	3.5%			Avg Ann'l Div'd Yield	*2.8%*
134187	152866	149702	163391	172738	182515	156783	150211	147300	147359	*149500*	*156500*	Revenues ($mill)	*188000*
27.8%	26.8%	30.6%	32.5%	35.1%	31.1%	25.4%	26.8%	30.3%	27.7%	*29.0%*	*29.4%*	Operating Margin [A]	*31.0%*
6956.0	8385.0	8538.0	9158.0	10278	11492	10636	10013	9185.0	9346.0	*9500*	*9675*	Depreciation ($mill)	*10775*
15589	16819	18275	20666	22468	18089	11434	12623	14880	16065	*17510*	*19475*	Net Profit ($mill)	*27500*
21.7%	17.9%	17.4%	16.1%	15.5%	5.5%	- -	7.4%	27.4%	14.4%	*22.0%*	*25.0%*	Income Tax Rate	*25.0%*
11.6%	11.0%	12.2%	12.6%	13.0%	9.9%	7.3%	8.4%	10.1%	10.9%	*11.7%*	*12.4%*	Net Profit Margin	*14.6%*
238969	287826	184959	235281	244405	254715	316579	314972	272131	283910	*294000*	*305000*	Working Cap'l ($mill)	*338000*
170004	212670	212281	260804	319015	330067	338215	360681	315832	312668	*310000*	*300000*	Long-Term Debt ($mill)	*270000*
79180	110821	109354	112314	115559	104665	117291	118936	116438	123026	*129900*	*135000*	Shr. Equity ($mill) [D]	*175000*
7.4%	6.3%	7.1%	6.6%	6.4%	5.6%	4.6%	3.9%	4.8%	4.8%	*6.0%*	*6.5%*	Return on Total Cap'l	*8.0%*
19.7%	15.2%	16.7%	18.4%	19.4%	17.3%	9.7%	10.6%	12.8%	13.1%	*13.5%*	*14.5%*	Return on Shr. Equity	*16.0%*
10.0%	7.7%	8.2%	9.1%	9.5%	5.4%	2.1%	6.6%	7.2%	7.2%	*7.5%*	*8.5%*	Retained to Com Eq	*9.0%%*
49%	49%	51%	50%	51%	69%	79%	38%	43%	45%	*45%*	*42%*	All Div'ds to Net Prof	*44%*

CAPITAL STRUCTURE as of 12/31/12
Total Debt $414.1 bill. **Due in 5 Yrs** $215.0 bill.
LT Debt $312.7 bill. **LT Interest** $17.0 bill.
(Total Interest Coverage: 2.3x)
(72% of Cap'l)
Leases, Uncapitalized $1.2 bill.
Pension Assets-12/12 $54.4 bill.
Obligation $77.1 bill.
Pfd. Stock None
Pfd. Div'd None
Common Stock 10,406,000,000 shares
MARKET CAP: $240 billion (Large Cap)

CURRENT POSITION ($MILL.)	2010	2011	12/31/12
Cash Assets	122896	131875	125866
Receivables	337267	307470	287489
Inventory (LIFO)	11526	13792	15374
Other	- -	- -	- -
Current Assets	471689	453137	428729
Accts Payable	14657	16400	15675
Debt Due	117959	137611	101392
Other	24101	26995	27752
Current Liab.	156717	181006	144819

ANNUAL RATES of change (per sh)	Past 10 Yrs.	Past 5 Yrs.	Est'd '10-'12 to '16-'18
Revenues	1.0%	-2.5%	*5.0%*
"Cash Flow"	1.0%	-5.0%	*9.0%*
Earnings	-0.5%	-7.5%	*13.0%*
Dividends	-1.0%	-10.5%	*13.0%*
Book Value	7.0%	0.5%	*8.0%*

Calendar	QUARTERLY REVENUES ($ mill.) [F] Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2010	36305	37193	35692	41529	150211
2011	35938	36199	36043	39120	147300
2012	35182	36501	36349	39327	147359
2013	*34700*	*36850*	*37200*	*40750*	*149500*
2014	*36450*	*38600*	*38950*	*42500*	*156500*

Calendar	EARNINGS PER SHARE [B] Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2010	.21	.30	.29	.36	1.15
2011	.31	.33	.30	.37	1.31
2012	.34	.38	.36	.44	1.52
2013	*.35*	*.41*	*.41*	*.53*	*1.70*
2014	*.38*	*.45*	*.48*	*.59*	*1.90*

Calendar	QUARTERLY DIVIDENDS PAID [C] ■ Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2009	.31	.31	.10	.10	.82
2010	.10	.10	.10	.12	.42
2011	.14	.14	.15	.15	.58
2012	.17	.17	.17	.17	.68
2013	.19				

BUSINESS: General Electric Company is one of the largest & most diversified technology and financial services companies in the world. With products ranging from aircraft engines, power generation, water processing, and household appliances to medical imaging, business and consumer financing, and industrial products, it serves customers in more than 100 countries. 2012 research & development outlays: $4.5 billion, 3.1% of revenues; 2012 international sales: $77.4 billion, 52.2% of total top line. Employs approximately 305,000. Officers & directors own less than 1% of common stock; BlackRock, 5.0% (3/13 Proxy). Chairman & CEO: Jeffrey Immelt. Incorporated: NY. Address: 3135 Easton Turnpike, Fairfield, CT 06828. Telephone: 203-373-2211. Internet: www.ge.com.

General Electric probably started 2013 off on a flat note. First-quarter results were due on the day this report headed to press. Industrial organic growth appeared to be turning negative as the interim progressed, and comparisons from the same 2012 period are tough. Too, fewer shipments at the company's power and water businesses bode ill for overall performance. On the bright side, we expect a lower tax rate and a strong showing from the finance arm to offset these woes to some degree. And more importantly, we think the March figures will mark the low point of the year for GE. That said, we look for share net of $1.70 for 2013, a 12% year-over-year gain.

This year's annual letter to shareholders was chock full of information. The basis of the letter should be music to long-time stockholders' ears. CEO Jeffrey Immelt launched a simplification initiative centered on reducing complexity, increasing speed, and refocusing investments around core operations. Also, a major board shakeup began, and the an increased emphasis on returning cash to shareholders was laid out. Oftentimes disclosures of this nature are propaganda, but this is GE. The company has been criticized for years for being resistant to change. To say this kind of talk is refreshing would be a huge understatement.

Recent sales may well hasten the unraveling of GE Capital. Roughly $1.5 billion of office property was divested in Australia last month. This figure is small relative to the more than $46 billion still on the books for real estate, but the move is in the right direction regardless. Rising assets on real estate may bring in even more cash upon sale than we originally expected. As the GE Capital portfolio dwindles, that funding should be redeployed in a shareholder-friendly manner (as hinted at above). Buybacks, dividends, and bolt-on acquisitions will be the likely pecking order when this scenario begins to materialize.

We like this blue-chip stock from many perspectives. We think momentum accounts will like what they see on a relative basis in the coming six to 12 months. Also, income-minded investors can pocket this equity's handsome yield.

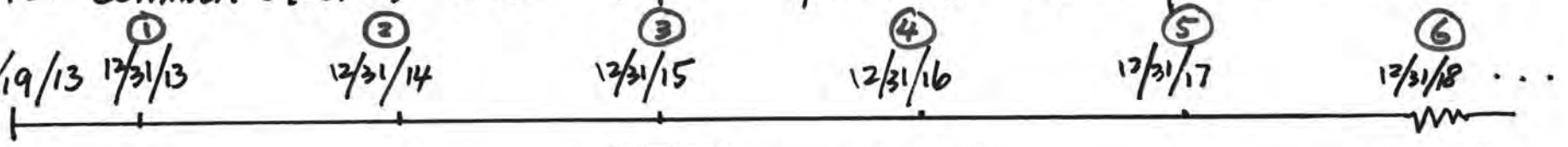
Erik M. Manning *April 19, 2013*

(A) Operating margin includes all expenses except interest, depreciation, and taxes. **(B)** Diluted EPS. Excludes nonrecuring and/or discontinued items: '00, 24¢; '01, 4¢; '02, 10¢; '05, (18¢); '06, 1¢; '07, (3¢); '08, (6¢); '09, (2¢); '10, (9¢); '11, (7¢). Quarterly EPS may not sum due to rounding. Next earnings report due mid July. **(C)** Divs. historically paid late January, April, July, and October. ■ DRIP available. **(D)** Includes intangibles. In '12: $85.4 billion, $8.21/share. **(E)** In millions, adjusted for split. **(F)** Revenues may not sum, as reported.

Company's Financial Strength	B++
Stock's Price Stability	60
Price Growth Persistence	10
Earnings Predictability	70

Dividend Discount Model: Two-Stage Approach (Value Line)

GE Common stock; Date = April 19, 2013, Share price = $23.06



D_t	.76	.80	D_3	D_4	1.20	D_6

$$D_5 = D_2(1+g_1)^3 \; ; \quad 1.2 = 0.8(1+g_1)^3 \; ; \quad \boxed{g_1 = \left(\frac{1.2}{0.8}\right)^{\frac{1}{3}} - 1 = 14.47\%}$$

$$\therefore \; \underline{D_3 = 0.8(1.1447) = \$0.92} \; ; \quad \underline{D_4 = 0.8(1.1447)^2 = \$1.05}$$

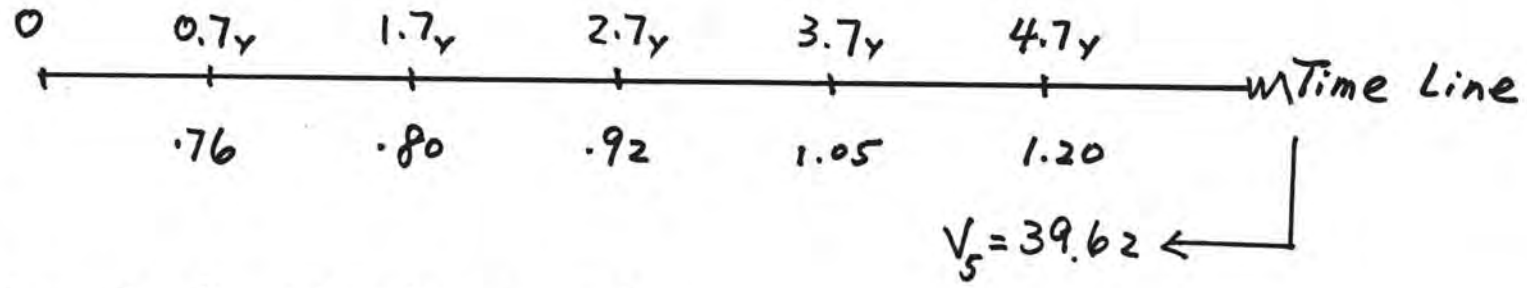
$$\underline{\text{Long-term growth rate } (g_2)} = (1 - \text{payout ratio}) * \text{ROE}$$
$$= (1 - 44\%) * 16\%$$
$$= \underline{8.96\%}$$

$$D_6 = D_5(1+g_2) = 1.2(1.0896) = \$1.31$$

Dividend Discount Model: Value Line

$$\begin{cases} V_5 = \dfrac{D_6}{r_2 - g_2} = \dfrac{1.31}{r_2 - .0896} = \$39.62 \\ r_2 = \text{Expected Dividend Yield} + g_2 = 3.3\% + 8.96\% = 12.26\% \end{cases}$$

* There is 256 days between 4/19 and 12/31; That is 0.70 year



$r_1 = 3.3\% + 14.47\% = 17.77\%$

$$V_0 = \frac{.76}{(1.1777)^{.7}} + \frac{.80}{(1.1777)^{1.7}} + \frac{.92}{(1.1777)^{2.7}} + \frac{1.05}{(1.1777)^{3.7}} + \frac{1.20 + 39.62}{(1.1777)^{4.7}}$$

$= \$21.36$

Discounted Dividend Model: Value Line

Value Line projected GE stock value on 2017 :

$$\begin{cases} \text{Upper} & 50 = V_5^U \\ \text{Lower} & 35 = V_5^L \end{cases}$$

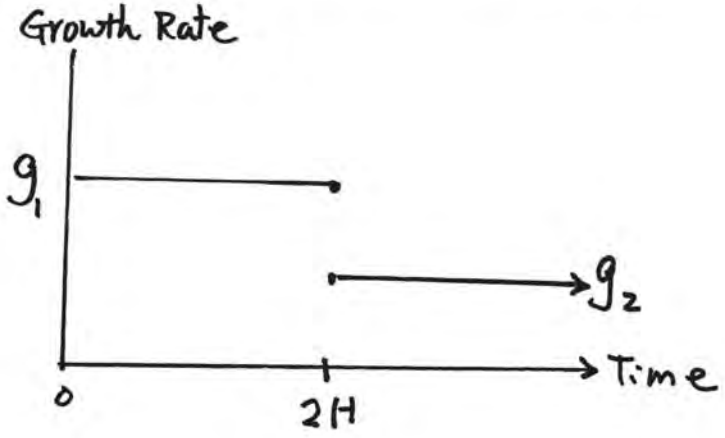
$$V_0^U = \frac{.76}{(1.1777)^{.7}} + \frac{.80}{(1.1777)^{1.7}} + \frac{.92}{(1.1777)^{2.7}} + \frac{1.05}{(1.1777)^{3.7}} + \frac{1.20 + 50}{(1.1777)^{4.7}} = 26.17$$

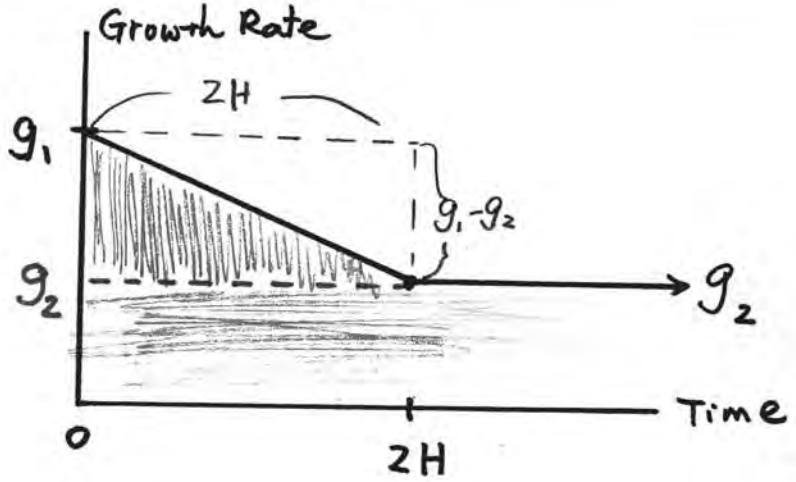
$$V_0^L = \frac{.76}{(1.1777)^{.7}} + \frac{.80}{(1.1777)^{1.7}} + \frac{.92}{(1.1777)^{2.7}} + \frac{1.05}{(1.1777)^{3.7}} + \frac{1.20 + 35}{(1.1777)^{4.7}} = 19.22$$

$$19.22 < P_0 = 23.06 < 26.17$$

on 4/19/2013

Dividend Discount Model: Two-stage H-Model



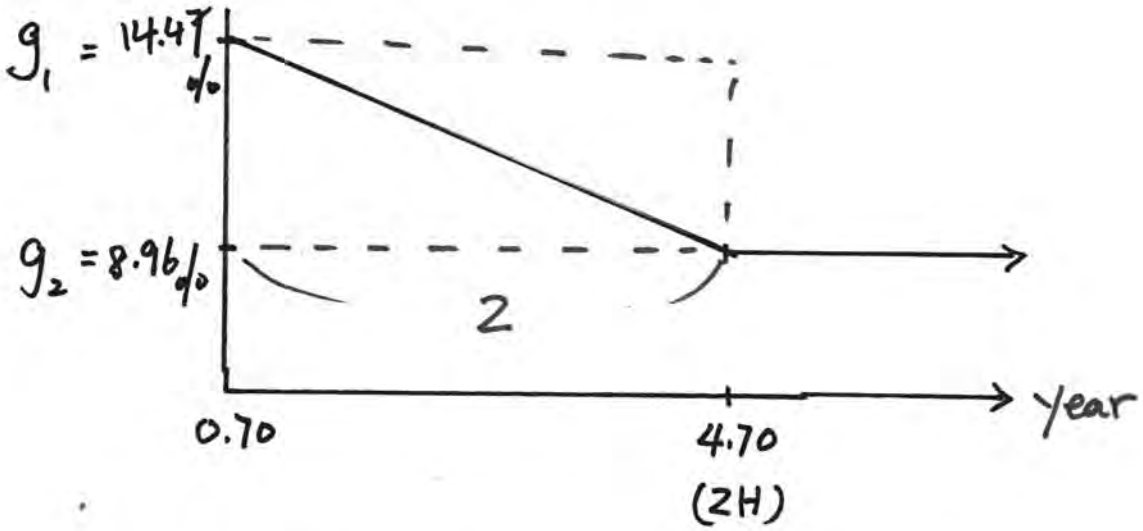


$$V_0 = \frac{D_0(1+g_2)}{r_2-g_2} + \frac{D_0\left(H*(g_1-g_2)\right)}{r_2-g_2}$$

$$= \frac{D_0}{r_2-g_2}\left[(1+g_2) + \frac{2H*(g_1-g_2)}{2}\right]$$

Dividend Discount Model: H-Model applied to Value Line (GE)

Consider a two-stage DDM:



$H = 2$

$D_1 = \$0.76$

$r_2 = 12.26\%$

$r_1 = 17.77\%$

$$V_1 = \frac{D_1}{r_2 - g_2}\left[(1+g_2) + \frac{2H(g_1 - g_2)}{2}\right] = \frac{.76}{.033}\left(1.0896 + 2(.1447 - .0896)\right)$$

$$= \$27.63$$

$$V_0 = \frac{V_1}{(1+r_1)^{.7}} = \frac{27.63}{(1.1777)^{.7}} = \$25.32$$