Robustness of Constant WACC Valuation under Mean-Reverting Capital Structure

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This paper examines the robustness of constant *WACC* valuation under a number of mean reverting departures from a constant debt ratio and finds that, but for extreme and persistent departures, the error committed is less than 1%, which seems relatively small when compared with the likely estimation errors in expected free cash flows and discount rates. The error of approximation appears to be more related to the costs and probability of financial distress than to fluctuation of the debt ratio. An examination of the approximation in a dynamic model of capital structure that incorporates the cost of financial distress shows that the error of approximation can exceed 1% under reasonable but relatively large costs of financial distress and cash flow volatility.

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1. Leverage fluctuations, mean reversion and constant WACC discounting

It is common in valuation practice to discount free cash flows at a constant weighted average cost of capital. This implies that the firm adheres to a constant leverage policy at all times. Casual observation and empirical evidence show that this is not the case. Debt behaves more as a residual variable driven by realization of free cash flows, investment decisions and sticky dividends. This paper investigates the robustness of the constant *WACC* enterprise valuation to departures from strict adhesion to constant leverage.

The theory of capital structure posits a tradeoff between the value of the tax shield of debt and the costs of financial distress and implies that the firm adjusts toward a target optimal debt level with the speed of adjustment determined by the firm's specific circumstances and market conditions. An alternative hypothesis is the pecking order of financing, which says that, because of asymmetric information, firms use internal sources before external funding. In this case, the observed debt ratio is not a target but the cumulative effect of prior financing decisions. However, both theories imply that debt is a residual variable in the short-run and exhibits mean reversion. Cycles in earnings and cash flows tend to induce higher debt ratios in bad years and lower debt ratios in good years and make leverage to exhibit mean reversion.

The empirical evidence suggests mean reversion, and that firms behave as if they adjust toward a target debt ratio, with the target determined by variables related to transaction costs, size, bankruptcy risk, asset composition, taxes, and earnings. [Marsch (1982), Fischer, Heinkel and Zechner (1989) and Leary and Roberts (2004)]. Average book debt ratios are reported at 22% by Taggart (1977) and 19% by Shyam-Sunder and Myers (1999) but debt ratios vary greatly from firm to firm and industry to industry. Graham and Harvey (2001) found that one-third of their sample had debt ratios lower than 20% and another third had debt ratios higher than 40%. Welsh (2004) reports an average debt ratio based upon the market value of equity equal to 30%. Estimates of yearly debt adjustment coefficients range from less than 20% (Fama and French (2002)) to 41% (Shyam-Sunder and Myers (1999)) and 56% (Jalivand and Harris (1984)).

In this paper, we investigates the robustness of constant *WACC* discounting when firms behave as if they adjust their capital structure toward a target debt ratio and (1) the debt ratio fluctuates exogenously by given percentages around a target, (2) debt partially adjusts to a target according to a distributed lag model, and (3) debt adjusts dynamically toward an optimal level. In each case, we obtain the exact value of the enterprise and compare it to the approximated values produced by discounting free cash flows at the constant *WACC* based upon a target debt ratio.

2. A simple model of mean reversion

The idea behind constant WACC robustness is simple. If debt oscillates about an expected level, the actual tax shield will be higher than the expected tax shield in some years and lower in others years. Let us consider [following Arzac (2004, p. TN-12)] a simple case in which fluctuations around the target debt ratio do not have a significant effect on enterprise value. Consider the value of the firm with constant expected free cash flow *FCF*:

$$V_L = FCF\rho^{-1} + VTS$$

where, ρ is the capitalization rate for the free cash flows and *VTS* is the value of the tax shield. Assume the firm maintains a constant level of debt *D*, pays an interest rate *r* and corporate taxes at the rate τ. Then, the value of the tax shield is $VTS_o = \sum_{t=1,\infty} \tau r D(1 + r)^{-t} = \tau r D/r = \tau D$ because $\tau r D$ is a perpetuity. Denote the value of the firm in this case by V_o. Note that in this case V_L and the value of equity *S* are constant through time such that the leverage ratio $L = D/S$ is also constant.[1]

Instead, let debt predictably alternate each year between $(1 + |\theta|)D$ and $(1 - |\theta|)D$, where $|\theta|$ is the absolute value of the yearly percent fluctuation of debt amount. Then,

$$VTS = \sum_{t=1}^{\infty} \tau r[1 \pm (-1)^{-t}|\theta|]D(1 + r)^{-t} = \tau D[1 \pm |\theta| r/(2 + r)].$$

That is, *VTS* will be larger or smaller than VTS_o depending on if debt is increased or reduced in the first year. Moreover, $|VTS - VTS_o|/V_o = |\theta| r\tau L/(1+L)/(2 + r)$, which is small even for large θ and *L*. For example, let $r = 10\%$, $\tau = 35\%$, $|\theta| = 50\%$ and $L = 3/2$. Then, $|VTS - VTS_o|/V_o = 0.005$ or 0.5%. This simple example suggests that fluctuations about a target tend to offset each other over time and have a relatively small effect on the value of the enterprise.

3. Fluctuations around a constant leverage ratio with growing expected free cash flows

Let us consider the more general case of arbitrary cash flows and a constant target leverage ratio with the actual ratio oscillating around a target by the periodic function $\varphi(t)$ such that leverage at time *t* is $\varphi(t)L$ and $D_t = \varphi(t)L(1 + \varphi(t)L)^{-1}V_{Lt}$. In this case, the value of the firm is obtained in the usual way by solving the following recursion (see, for example, Arzac and Glosten (2004)):

$$V_{Lt} = E_t[M_{t,t+1}(FCF_{t+1} + \tau r D_t + V_{Lt+1})]$$

$$= E_t[FCF_{t+1}](1+ \rho)^{-1} + \tau r\varphi(t)L(1+ \varphi(t)L)^{-1}V_{Lt}(1+r)^{-1}] + E_t[M_{t,t+1}V_{Lt+1}] \qquad (3)$$

where $M_{t,t+1}$ is the one period pricing kernel at time t for cash flows at time $t + 1$. (3) has solution

$$V_{Lt} = \sum_{t+1}^{\infty} \frac{E_t[FCF_j]}{(1+ \rho)^{j-t}[1 - \tau r\varphi(t)L(1+\varphi(t)L)^{-1}/(1+r)]^{j-t}} \qquad (4)$$

where the value of the tax shield is:

[1] The nature of the stochastic process that leads to this result is examined in Arzac and Glosten (2005).

$$VTS = \sum_{1}^{\infty} \frac{\tau r \varphi(\mathrm{t}) L (1+\varphi(\mathrm{t}) L)^{-1} V_{Lt-1}}{(1+\ \rho)^{t-1}(1+r)} \tag{5}$$

Let us examine the implications of (4) for the computation of the weighted average cost of capital. From (4) we can define the capitalization rate for the unlevered cash flows as

$$w = \rho - \tau r \varphi(t) L [1+ \varphi(t) L]^{-1} (1+ \rho)/(1+r)$$

Furthermore, the required return on equity can be shown to be

$$k = \rho + (\rho - r)\ \varphi(t) L [1 - \tau r/(1+ r)] \tag{6}$$

such that (4) can be expressed as

$$V_{Lt} = \sum_{t+1}^{\infty} E_t[FCF_{j-t}](1 + w)^{-j+t} \tag{7}$$

where w is the weighted average cost of capital

$$w = \frac{S_t k + (1-\tau) r D_t}{S_t + D_t} = \frac{k + (1-\tau) r(t) L}{1+\varphi(t) L} \tag{8}$$

Note that for $\varphi(t)= 1$, the above formulas yield the Miles and Ezzell (1980) results. Furthermore, in the absence of default and systematic risks in debt, r is the riskless rate and the beta of levered equity follows from (6):

$$\beta_L = [1 + (1 - \tau r/(1+ r))\varphi(t) L]\beta_U \tag{9}$$

(7) does not have closed-form solution for interesting functions such as

$$\varphi(t)= [1+ \theta(t)][1 + (1 - \theta(t))L]^{-1},\quad \theta(t) = A \sin\left[\left(\frac{t}{p/2} - a\right)\pi\right],\ \pi = 3.1416\ldots \tag{10}$$

where $\theta(t)$ changes the debt ratio at time t according to $[1 + \theta(t)]L(1 - L)^{-1}$. A is the amplitude, p the period of the cycle of the percent deviation of the debt ratio from its target and a is a shift parameter.

This specification permits examining the effect on enterprise value of periodic departures from constant leverage. We do so by examining the error committed by discounting free cash flows at the constant *WACC* that corresponds to a constant debt ratio. The valuation problem considered has the following parameters:

FCF(t = 1)	*100.0*
Growth rate of *FCF*	*5%*
Target *L/(1+L)*	*60%*
r	*4.5%*

τ	*35%*
π (equity premium)	*4%*
ρ	*8.5%*
β_U	*1*

Note that the debt ratio is purposely chosen to magnify the relative importance of the tax shield in the value of the firm.

For $\theta(t) = 0$, $\varphi(t) = 1$, formulas (9), (6) and (8) give the inputs for computing the value of the firm under the assumption of constant leverage: $\beta_L = 2.48$, $k = 14.41\%$ and $WACC = 7.52\%$.

Computing (7), the cash flow to equity discounted at (6) plus debt, and the value of the unlevered firm plus (5) for $\theta(t) = 0$ over the 99-year life of the proverbial going-concern, results in the alternative and equivalent values for the enterprise shown in Table 1.

Insert Table 1 about here.

Consider now the case in which $\theta(t)$ behaves according to (10). Table 2 shows the error committed assuming constant *WACC* for different amplitudes and periods. It shows that for variations of the debt ratio of $\pm 20\%$ the errors committed are less that 0.22%, and that the amplitude of the fluctuation has to exceed 90% for the error to exceed 1%. This error seems rather immaterial relative to estimation errors associated with cash flow and discount rate estimation.

Insert Table 2 about here.

4. A partial adjustment model

When debt partially adjusts to a “target” leverage ratio, the capital structure chases but never reaches its target. In this section, we investigate the error committed when *WACC* is computed on the basis of the target leverage but debt follows a partial adjustment process.

Let the target leverage ratio be $L = D_t/S_t$ such that the target debt level is $L(1+L)^{-1}V_{Lt}$ and debt adjusts each year by a fraction $b \in [0,1]$ of the difference from the target:

$$\Delta D_t = b[L(1+L)^{-1}V_{Lt} - D_{t-1}]$$

such that

$$D_t = (1-b)^t D_0 + bL(1+L)^{-1}\sum_{j=1}^{t}(1-b)^{t-j}V_{Lj}$$

and

$$V_{Lt} = E_t[M_{t,t+1}(FCF_{t+1} + \tau r\,[(1-b)^t D_0 + bL(1+L)^{-1}\sum_{j=1}^{t}(1-b)^{t-j}V_{Lj}] + V_{Lt+1})] \qquad (11)$$

Note that (11) is path dependent because the tax shield realized in period t depends on previous realizations of the free cash flows and previous debt adjustments. Fortunately, as shown in the Appendix, (11) generates a system of equations with a triangular structure that can be solved recursively.

Table 3 shows the error committed when the adjustment coefficient b assumes values between *20%* and *70%* and free cash flow grow between *2.5%* and *12.5%*. The other valuation parameters are as in Section 3. For the error to exceed *1%*, the firm has to experience steady growth of at least *12.5%* and the adjustment coefficient has to be less that *40%*.

Insert Table 3 about here.

The errors shown in Table 3 are the result of two effects that partially offset each other. Under positive expected growth the debt ratio lags and reduces the size and value of the tax shields with respect to the values implied by constant *WACC* valuation. On the other hand, a fraction of the future debt ratio and tax shields is pre-determined and therefore more valuable than under constant *WACC*. This means than setting the debt ratio at is average expected value will overshoot the correction and result in a smaller value of the enterprise. Still, a small reduction of the debt weight in *WACC* would reduce the error. For example, setting the debt weight at *94.4%* of its long-term target of *60%*, or at *57%*, would eliminate the error when the growth rate is *7.5%* and the adjustment coefficient is *20%*. Table 4 shows that the errors are reduced by about one-half when the target debt ratio is *30%*.

It should be noted that in the actual realization the debt ratio is likely to oscillate around the target and would result in the reversion observed in empirical studies. However, under positive growth and partial adjustment, the debt ratio would tend to lag its long term target, and produce lower tax shields.

5. Optimal dynamic capital structure

So far we have assumed that the oscillations in the debt ratio are exogenously determined rather than the result of dynamic optimization by the firm. Here, we consider the robustness of *WACC* discounting in a more complete model that allows for optimal adjustment of the capital structure. For the purpose of this analysis we employ the model developed by Goldstein, Ju and Leland (2001). In their model the total cash flow of the enterprise is generated by the process

$$\frac{d\delta}{\delta} = \mu_P dt + \sigma dz$$

where μ_P is the constant drift (growth) of the cash flow and σ is the constant volatility of the process. δ is not free cash flow but the total cash flow distributed to all the claimants: equity holders, bondholders and the government. It is well known (see, for example, Arzac (2005), pp. 129-130) that the value of the entire cash flow is

$$V(t=0) = \frac{\delta_0}{r_{AT} + \theta\sigma - \mu}$$

where r_{AT} is the after-tax riskless rate and θ is the risk premium.

This model incorporates a number of additional features normally ignored in the practice of valuation: (1) Cash payouts are subject to corporate and personal taxation on income, dividends and interest at the rates τ, τ_d and τ_i, respectively. (2) The firm would go bankrupt below a bankruptcy point V_B and lose an amount αV_B of its value. (3) When the cash flow falls below the promised interest payment, equity holders can add equity to avoid bankruptcy but they will optimally choose to default at a sufficiently low level of cash flow such that $V(t) = V_B$. (4) At an endogenously determined upper threshold level V_U, the firm will recall the old debt and issue a larger amount. This is done at a restructuring cost q that reduces the proceeds by $(1 - q)\%$. (5) When the value of the firm drops below a certain level, the tax shelter is reduced to a fraction ε. (6) The total payout is an increasing function of debt financing. Goldstein, *et al.,* assume that $\delta/V_0 = 0.035 + 0.65\, C/V_0$, where C is the optimal coupon payment.

The solution of this model is detailed in Goldstein *et al*. It yields the optimal dynamic capital structure and the enterprise value under the optimal policy. Table 4 shows the original calibration of the model and its solution. Columns 3 to 6 show the initial debt ratio and the enterprise values for different values of α and ε as well as the approximate enterprise values that result from discounting free cash flows at *WACC*, and the error committed by the approximation. In computing *WACC* we assumed *CAPM*, continuous adjustment of the capital structure, which reduces (9) to $\beta_L = (1 + L)]\beta_U$, and took into account that, under corporate and personal taxation, the cost of equity becomes[2] $k = r_{AT} (1 - \tau_d)^{-1} + \beta_L[R_m - r_{AT}(1- \tau_i)^{-1}]$, where R_m is the required return on the market.

Since the riskless drift of the process $r_{TA} - (\mu - \theta\sigma)$ does not correspond to a unique pair of required market return and unlevered beta, we chose the one such pair for which *WACC* discounting gives the exact enterprise value produced by the model. This is shown on the column corresponding to the baseline projection. We then maintained R_m and β_U constant and examined the nature of the *WACC* approximation under changes in bankruptcy costs and tax shelter retention under distress. The error committed is *1.86%* when the bankruptcy costs doubles to *10%* of assets and changes in tax shield retention under distress produce errors between *1.34%* and *–1.57%*. Thus, constant *WACC* discounting would yield a poorer approximation when the probability and costs of financial distress are significant.

6. Conclusion

Empirical evidence shows that debt ratios vary widely over time and exhibit mean reversion. For predictable varying debt ratios it is possible to solve the valuation problem allowing the cost of capital to change over time. In this paper we examined the more common problem in which debt ratios are not predictable and enterprise values are estimated discounting free cash flows at a constant *WACC* based upon a target debt ratio.

We examined the robustness of constant *WACC* valuation under a number of mean reverting departures from a constant debt ratio and we found that, but for extreme and

[2] See Arzac (2005), p. 25.

persistent departures, the error committed is less than *1%*, which seems relatively small when compared with the likely estimation errors in expected free cash flows and discount rates. The case in which debt adjusts to a target can result in a significant error for high growth rates and small adjustment coefficients. For cases of slow adjustment, a small reduction in the debt weight would improve the constant *WACC* approximation. Moreover, the debt path would be predictable under slow adjustment and that would permit the use of adjusted present value procedures.[3]

We also examined the robustness of constant *WACC* valuation in a dynamic model of capital structure that incorporates the costs of financial distress and a number of other characteristics commonly ignored in the practice of valuation. The results suggest that constant *WACC* valuation would produce errors in excess to *1%* when the costs and probability of financial distress are material.

In conclusion, constant *WACC* valuation yields reasonable approximations to the enterprise value when the adjustment toward the target debt ratio is not too slow and the probability and cost of financial distress are not material.

[3] See Arzac (2005), Chapter 6, for a survey of adjusted present value procedures.

Appendix

(11) can be written as

$$V_{Lt} = \frac{E_t[FCF_{t+1}]}{1+\rho} + \frac{\tau r}{1+r}\left[(1-b)^t D_0 + \frac{bL}{1+L}\sum_{j=1}^{t}(1-b)^{t-j}V_{Lj}\right] + E_t[M_{t,t+1}V_{Lt+1}]$$

$$= \left(1 - \frac{\tau r}{1+r}\frac{bL}{1+L}\right)^{-1}\left[\frac{E_t[FCF_{t+1}]}{1+\rho} + \frac{\tau r}{1+r}[(1-b)^t D_0 + \frac{bL}{1+L}\sum_{j=1}^{t-1}(1-b)^{t-j}V_{Lj} + E_t[M_{t,t+1}V_{Lt+1}]\right]$$

Let

$$m = \left(1 - \frac{\tau r}{1+r}\frac{bL}{1+L}\right)^{-1}$$

then, V_{L0} can be expressed as the solution in terms of V_{LT} to the following system of T equations for V_{Lt}, $t = 0, \ldots T-1$:

$$V_{L0} - E_0[M_{0,1}V_{L1}] = \frac{E_0[FCF_1]}{1+\rho} + \frac{\tau r}{1+r}D_0$$

$$V_{L1} - mE_0[M_{1,2}V_{L2}] = m\left[\frac{E_0[FCF_2]}{1+\rho} + \frac{\tau r}{1+r}(1-b)D_0\right]$$

$$(1-m)(1-b)V_{L1} + V_{L2} - mE_0[M_{2,3}V_{L3}] = m\left[\frac{E_0[FCF_3]}{1+\rho} + \frac{\tau r}{1+r}(1-b)^2 D_0\right]$$

$$(1-m)\sum_{j=1}^{2}(1-b)^{3-j}V_{Lj} + V_{L3} - mE_0[M_{3,4}V_{L4}] = m\left[\frac{E_0[FCF_4]}{1+\rho} + \frac{\tau r}{1+r}(1-b)^3 D_0\right]$$

…

$$(1-m)\sum_{j=1}^{t-1}(1-b)^{t-j}V_{Lj} + V_{Lt} - mE_0[M_{t,t+1}V_{Lt+1}] = m\left[\frac{E_0[FCF_{t+1}]}{1+\rho} + \frac{\tau r}{1+r}(1-b)^t D_0\right]$$

…

$$(1-m)\sum_{j=1}^{T-2}(1-b)^{t-j}V_{Lj} + V_{LT-1} - mE_0[M_{T-1,T}V_{LT}] = m\left[\frac{E_0[FCF_T]}{1+\rho} + \frac{\tau r}{1+r}(1-b)^{T-1} D_0\right]$$

This system has a triangular structure. To solve it set $T = 99$ and, for $V_{LT} = 0$, compute recursively $V_{LT-1}, V_{LT-2}, \ldots, V_{L0}$ according to

$$V_{LT-1} = m\left[\frac{E_0[FCF_T]}{1+\rho} + \frac{\tau r}{1+r}(1-b)^{T-1} D_0\right] + (m-1)\sum_{j=1}^{T-2}(1-b)^{T-1-j}V_{Lj}$$

and

$$
\begin{aligned}
V_{LT-t} = {} & q_{t-1}\left\{ m\left[\frac{E_0[FCF_{T-t+1}]}{1+\rho} + \frac{\tau r}{1+r_D} 1-b)^{T-t} D_0 \right] + (m-1)\sum_{j=1}^{T-t-1}(1-b)^{T-t-j} V_{Lj} \right. \\
& + \frac{m}{1+\rho}\left[\sum_{j=1}^{t-2}\left(\prod_{i=1}^{j} q_{t-1-i} \right) m^{j} \frac{E_0[FCF_{T-t-1-j}]}{(1+\rho)^{j}} + \left(\prod_{i=1}^{t-2} q_{t-1-i} \right) m^{t-1} \frac{E_0[FCF_T]}{(1+\rho)^{t-1}} \right] \\
& + \frac{m}{1+r_D}\left[\sum_{j=1}^{t-2}\left(\prod_{i=1}^{j} q_{t-1-i} \right) m^{j} \frac{\tau r}{(1+r)^{j}} (1-b)^{T-t+j} D_0 + \left(\prod_{i=1}^{t-2} q_{t-1-i} \right) m^{t-1} \frac{\tau r}{(1+r)^{t-1}} (1-b)^{T-1} \right] \\
& \left. + \frac{m}{1+r_D} q_{t-2}\left[\frac{(1-q_{t-1}^{-1})}{(1-b)} \sum_{j=1}^{T-t-1}(1-b)^{T-t+1-j} V_{Li} \right] \right\}
\end{aligned}
$$

where $q_k = \left\langle 1 - \left[\left(\frac{m}{1+r} + m - 1 \right) q_{k-1} - \frac{m}{1+r} \right] (1-b) \right\rangle^{-1}$ and $q_o = \frac{m}{1+(1-m^{-1})(1+r_D)}$.

Table 1. WACC, Cash Flow to Equity, and Adjusted Present Values

	WACC Valuation	Cash Flow to Equity	Adjusted Present Value
Value of equity		1,504	
Value of debt		2,257	
Value of unlevered firm			2,746
Value of tax shield			1,015 .
Enterprise value	3,761	3,761	3,761

Table 2. Absolute Value of Deviation of Constant WACC Value from Exact Value

		Duration of Debt Ratio Cycle		
		2 years	**4 years**	**6 years**
	10%	0.05%	0.07%	0.09%
	20%	0.10%	0.15%	0.18%
	30%	0.15%	0.23%	0.28%
	40%	0.20%	0.31%	0.38%
Deviation	50%	0.26%	0.39%	0.47%
Amplitude	60%	0.32%	0.47%	0.57%
	70%	0.38%	0.55%	0.68%
	80%	0.44%	0.64%	0.78%
	90%	0.51%	0.73%	0.88%
	100%	0.58%	0.82%	0.99%

Table 3. Error Committed by Constant WACC Valuation Under Partial Debt Adjustment with Initial Debt Ratio Set at Target Value

		Adjustment Coefficient					
		20%	**30%**	**40%**	**50%**	**60%**	**70%**
	2.5%	0.85%	0.49%	0.29%	0.17%	0.10%	0.05%
Growth rate	**7.5%**	1.84%	0.91%	0.48%	0.26%	0.13%	0.07%
	12.5%	4.89%	2.48%	1.35%	0.74%	0.40%	0.20%

Table 4. Error Committed by Constant WACC Valuation Under Partial Debt Adjustment with Initial Debt Ratio Set at Target Value

		Adjustment Coefficient					
		20%	**30%**	**40%**	**50%**	**60%**	**70%**
	2.5%	0.35%	0.20%	0.12%	0.07%	0.04%	0.02%
Growth rate	**7.5%**	1.02%	0.54%	0.30%	0.17%	0.09%	0.05%
	12.5%	2.75%	1.45%	0.82%	0.46%	0.25%	0.13%

Table 5. Error Committed by Constant WACC Approximation
When the Firm Follows an Optimal Dynamic Capital Structure Policy

	Baseline	Bankruptcy Cost		Tax Shelter	
Model Parameters:					
τ_C	35.0%				
τ_i	35.0%				
τ_d	20.0%				
$r_{AT} = (1 - \tau_i)r$	4.5%				
σ	25.0%				
α	5.0%	**3.0%**	**10.0%**		
q	1.0%				
β_U	0.70				
π	2.68%				
ε	50.0%			**30.0%**	**70.0%**
$EBIT_o$	100.0				
Model output:					
$D_o/(D_o + E_o)$	37.14%	38.24%	34.63%	35.55%	39.93%
E_o	433.92	429.68	446.17	409.12	471.69
D_o	355.02	366.44	330.28	338.72	385.55
$D_o + E_o$	788.95	796.12	776.44	747.84	857.24
δ	79.94	80.72	78.29	78.73	82.26
μ_P	1.30%	1.25%	1.40%	1.37%	1.16%
Constant WACC approximation					
β_L	1.27	1.30	1.22	1.28	1.27
k	10.69%	10.79%	10.47%	10.72%	10.69%
$(1 - \tau_C)r$	4.50%	4.50%	4.50%	4.50%	4.50%
FCF	55.95	57.14	53.40	54.08	59.52
$WACC$	8.39%	8.38%	8.40%	8.51%	8.22%
$WACC - \mu_P$	7.09%	7.13%	7.01%	7.14%	7.05%
$D_o + E_o$	788.95	801.54	762.02	757.83	843.75
Error		**0.68%**	**-1.86%**	**1.34%**	**-1.57%**

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