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Working Paper
WP no 715
November, 2007

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APV AND WACC WITH CONSTANT BOOK LEVERAGE RATIO**

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Pablo Fernández¹

Abstract

We value a company that targets its capital structure in book-value terms. This capital structure definition provides us with a valuation that lies between those of Modigliani-Miller (fixed debt) and Miles-Ezzell (fixed market-value leverage ratio).

We show that if a company targets its leverage in market-value terms, it has less value than if it targets the leverage in book-value terms. We also present empirical evidence that permits us to conclude that debt is more related to the book-value of the assets than to their market-value.

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JEL classification: G12; G31; G32

Keywords: value of tax shields, required return to equity, WACC, company valuation, APV, cost of equity.

A MORE REALISTIC VALUATION: APV AND WACC WITH CONSTANT BOOK LEVERAGE RATIO*

We value a company when its debt policy is determined by a book-value ratio. We argue that when managers have a target capital structure, it is usually in book-value terms (as opposed to market-value terms), in large part because this is what credit rating agencies pay attention to.

Credit rating is the second most important factor, after the maintenance of financial flexibility, in the decision to issue more debt (Graham and Harvey, 2001). While rating agencies emphasize that both financial and non-financial factors matter, academic literature has focused primarily on the ability of financial ratios to predict ratings. Existing literature (such as Blume, Lim and MacKinlay, 1998) shows us that interest coverage and leverage (two ratios calculated with book values) have the most pronounced effect on credit ratings. These ratios have also been identified by the rating agencies themselves (e.g., Standard and Poor's, 2006) as key determinants of a company's credit rating.

We also provide empirical evidence about the capital structure of companies and find that the constant book-value leverage ratio assumption fits the market data much better than the constant market-value leverage ratio assumption.

Many authors consider that debt policy may only be framed in terms of maintaining a fixed market-value debt ratio or a fixed dollar amount of debt. We develop valuation formulae for companies that maintain a fixed book-value leverage ratio and argue that, for most companies, and especially when calculating residual values, this assumption is more realistic than the two previous ones.

In section 1, we derive the general formula for the value of tax shields. In section 2, we apply this formula to a company that maintains a constant book-value leverage ratio. In section 3, we compare the valuation with that of other financing strategies. In section 4, we calculate the required return to equity and the WACC. Section 5 is a numerical example. In section 6, the correlation between the tax shields and the free cash flow is discussed. Section 7 concludes.

* I would like to thank my parents, as they have been my living example of virtues; especially hope and fortitude. I also thank an anonymous referee, Enrique Arzac, José Manuel Campa, Ian Cooper, Javier Estrada, Mark Flannery, John Graham, Yilmaz Guney, Stephen Penman, Scott Richardson, Michael Roberts and Zhaoxia Xu for very helpful comments to earlier manuscripts of this paper, and Rafael Termes for the sharp questioning that encouraged me to explore valuation problems. José M. Carabias did wonderful work as research assistant.

1. General expression of the value of tax shields

The value of the debt today (D_0) is the present value of the future stream of interest minus the present value of the future stream of the increases of debt (ΔD_t):

$$D_0 = \sum_1^{\infty} PV_0[Interest_t] - \sum_1^{\infty} PV_0[\Delta D_t] \quad (1)$$

The value of tax shields (VTS) defines the increase in the company's value as a result of the tax saving obtained by the payment of interest, and is the present value of the interest times the tax rate,

$$VTS_0 = T \sum_1^{\infty} PV_0[Interest_t] = T \cdot D_0 + T \sum_1^{\infty} PV_0[\Delta D_t] \quad (2)$$

Equation (2), valid for perpetuities and for companies with any pattern of growth, shows that, if the tax shields are always deductible and T applies to all states, the value of tax shields depends only upon the nature of the stochastic process of the net increase of debt, the existing debt (D_0) and the tax rate (T).¹ We will see that the nature of the stochastic process of the net increase of debt is very different if the debt is proportional to the book-value of equity than if the debt is proportional to the market-value of equity. The riskiness of the increases of debt is smaller in the first case than in the second case and, consequently, the value today of the future stream of the increases of debt is higher.

2. Valuation of a company whose debt policy is determined by a book-value ratio

Suppose a company's debt policy is determined by a book-value ratio. In this situation, $D_t = K \cdot E_{bv,t}$, being D the debt, E_{bv} the book-value of equity, and A is the book-value of assets. $A_t = E_{bv,t} + D_t$.

The Free Cash Flow (FCF) is the difference between the Profit After Tax of the unlevered company (PAT_u), and the increase of the book-value of the assets (ΔA): $FCF_t = PAT_{u,t} - \Delta A_t$. For a company in a constant risk class we assume that K_u is the common appropriate discount rate for the expected values of FCF_t , $PAT_{u,t}$ and ΔA_t .

Then, in a perpetuity growing at a constant rate g , the value of the unlevered company (V_u) may be written as:

$$V_{u_0} = \frac{FCF_0(1+g)}{K_u - g} = \frac{PAT_{u_0}(1+g) - gA_0}{K_u - g} \quad (3)$$

The present value of the expected increases of assets is:

$$\sum_1^{\infty} PV_0[\Delta A_t] = gA_0 / (K_u - g) \quad (4)$$

¹ Booth (2007) discusses situations in which the tax shields are not always deductible and uses a parameter γ (a decreasing function of debt) instead of T .

As $A_t = E_{bv_t} + D_t$, and $D_t = K \cdot E_{bv_t}$, then $D_t = A_t \cdot K / (1 + K)$, and:

$$\sum_1^{\infty} PV_0[\Delta D_t] = gD_0 / (Ku - g) \quad (5)$$

Substituting (5) in (2) we get the VTS of a company that maintains a fixed book-value leverage ratio:

$$VTS_0^{D=KEbv} = \frac{D_0 Ku T}{Ku - g} \quad (6)$$

Although equation (6) may be read as the present value of D_0KuT growing at g , it does not represent it. Rather, equation (6) is the present value of the tax shields ($D_0 R_F T$) growing at a rate g and discounted at a growing rate, being that rate R_F for $t = 1$.²

3. Valuation of companies under alternative financing strategies

If the company has a preset amount of debt, ΔD_t is known with certainty today and MM applies: the appropriate discount rate for the expected value of ΔD_t is R_F , the risk-free rate, and

$$\sum_1^{\infty} PV_0[\Delta D_t] = gD_0 / (R_F - g) \quad (7)$$

Substituting (7) in (2), we get:

$$VTS_0^{MM} = \frac{D_0 R_F T}{R_F - g} \quad (8)$$

Equation (7) provides a higher value than equation (5) and, consequently, the VTS according to MM is higher than the VTS according to equation (6).

If the company's debt policy is determined by a market-value ratio (instead of a book-value one), then the amount of debt is proportional to the market-value of equity³ (E) and the present value of the expected increase of debt in period t (as D_{t-1} is known in period $t-1$) is:

$$PV_0[\Delta D_t] = \frac{D_0(1+g)^t}{(1+Ku)^t} - \frac{D_0(1+g)^{t-1}}{(1+R_F)(1+Ku)^{t-1}} \quad (9)$$

The sum of all the present values of the expected increases of debt is a geometric progression with growth rate $= (1+g)/(1+Ku)$. Therefore:

$$\sum_{t=1}^{\infty} PV_0[\Delta D_t] = \frac{D_0}{Ku - g} \left(g - \frac{Ku - R_F}{1 + R_F} \right) \quad (10)$$

² Equation (6) is equal to equation (28) in Fernández (2004), to equation (4) in Booth (2007), and to equation (11) in Massari, Roncaglio and Zanetti (2007).

³ This is the assumption made by Miles and Ezzell (1985), and Arzac and Glostén (2005).

Equation (10) tells us that investors would require money to hold a security with payoff equal to ΔD_t if the expected growth rate (g) is smaller than $(K_u - R_F) / (1 + R_F)$. Obviously, this is not a sensible result for most companies.

Substituting (10) in (2), we get the well-known Miles-Ezzell (ME) formula:⁴

$$VTS_0^{ME} = \frac{D_0 R_F T (1 + K_u)}{(K_u - g) (1 + R_F)} \quad (11)$$

ME provides a computationally elegant solution (as shown in Arzac-Glosten, 2005), but it is not a realistic one. $D_t = L \cdot E_t$ implies that if a company has only two possible states of nature in the following period, under the worst state (low share price) the company will have to raise new equity and repay debt. Under the good state, the company will have to issue debt and pay big dividends. This is not a good description of the debt policy of most companies.⁵

We claim that it makes more sense to characterize the debt policy of a growing company with expected constant leverage ratio as a fixed book-value leverage ratio instead of as a fixed market-value leverage ratio for the following reasons:

- the company is more valuable: (11) is smaller than (6);
- rating agencies focus on book-value leverage ratios;
- the amount of debt does not depend on the movements of the stock market;
- it is easier to follow for non-quoted companies; and,
- the empirical evidence provides more support to the fixed book-value leverage ratio hypothesis.

Table 1 contains statistics about the financial leverage of 271 US companies: line 1 measures the leverage in book-value terms and line 2 in market-value terms. The average of the standard deviation/average of the book leverage ratio $[D / (D + E_{bv})]$ for each company was 0.34, smaller than 0.49, the same coefficient of the market-value leverage ratio $[D / (D + E)]$. The coefficient of the book ratio was smaller than the coefficient of the market ratio for 258 of the 271 US companies analyzed.⁶

⁴ Equation (11) is identical to equations (21) in ME (1985), (13) in Arzac and Glosten (2005) and (6) in Lewellen and Emery (1986). However, Harris and Pringle (1985), Ruback (2002) and Cooper and Nyborg (2006, equation 29) propose $VTS = D K_d T / (K_u - g)$. This expression does not correspond to ME assumption: it is correct only in continuous time, but then K_u , K_d and g should be expressed also in continuous time.

⁵ Grinblatt and Titman (2002) argue that firms often pay down debt when things are going well, and do not alter debt when returns are low.

⁶ Antoniou, Guney and Paudyal (2006, Table 2) also calculate the standard deviation and the mean of the leverage ratio measured in market-value terms and in book-value terms of companies in France, Germany and the UK. For all three countries, the average ratio of the standard deviation to the mean of the leverage ratio measured in market-value terms is higher than the same average in book-value terms. Xu (2006, Table 1) and Flannery and Rangan (2006, Table 1), also show the standard deviation and the mean of the leverage ratio measured in market-value terms and in book-value terms (although not detailed by company): again, the ratio of standard deviation to the mean of the leverage ratio measured in market-value terms is higher than in book-value terms.

Table 1

Statistics of financial leverage variables for 271 US companies of the S&P 500, 1992-2005.

Financial companies (90), zero debt companies (27), companies with no data in 1991 (101) and companies with negative book-value of equity (11) were eliminated. *Source of the data: Datastream.*
 0.09 is the average of the 271 Standard Deviations (one for each company) of $D_t / (D_t + E_{bv})$
 E_{bv} = book-value of equity. E = market-value of equity. D = book-value of debt

Line		Average of the statistics for each company			
		Average (Av)	Standard Deviation (SD)	SD/Av.	median
1	$D / (D+E_{bv})$	0.38	0.09	0.34	0.38
2	$D / (D+E)$	0.22	0.07	0.49	0.21

SD /Av. of $D/(D+E) > SD /Av.$ of $D / (D + E_{bv})$ for 258 companies

Table 2 compares correlation coefficients of the increases of debt with the increases of assets measured in book-value (line 1) and in market-value terms (lines 2): the average and the median of the book-value correlation coefficients are higher (and the SD smaller) in book-value terms than in market-value terms. According to ME, the correlation between ΔD and $\Delta(D+E)$ should be 1, but it is only 0.23 on average.

Table 2

Statistics of the correlations between the increases of debt and the increases of assets for 271 US companies of the S&P 500, 1992-2005.

Average, median, standard deviation (SD), maximum and minimum of the 271 correlation coefficients (one for each company)

Line	Correlations between:	Statistics of the 271 correlation coefficients					Number of companies with	
		Average	Median	SD	MAX	Min	Correl < 0	Correl > 0
1	ΔD_t and ΔA_t	0.71	0.81	0.28	1.00	-0.45	8	263
2	ΔD_t and $\Delta(D+E)_t$	0.23	0.21	0.38	0.95	-0.57	89	182

A = book-value of assets = $E_{bv} + D$ = book-value of equity + book-value of debt.

Tables 1 and 2 permit us to conclude that debt is more correlated to the book-value of the assets than to their market-value. When managers have a target capital structure, it is usually in book-value terms (as opposed to market-value terms), in large part because this is what credit rating agencies pay attention to. Stonehill et al. (1973) provide evidence that managers do think in terms of book values. Myers (1984) argued that “*companies set target book debt ratios... because book asset values are proxies for the values of assets in place*”. Graham and Harvey (2001) show that 81% of the CFOs in their sample had a target range for their debt-equity ratio and that 39% of the companies did not have publicly-traded common stock.⁷ Penman, Richardson and Tuna (2005) point out that measuring leverage with market values leads to perverse results.

⁷ 77% of the private companies had a target range for their debt-equity ratio. It may be calculated using the survey data provided by the authors in Graham and Harvey (2003).

4. Required return to equity and WACC

For perpetuities with a constant growth rate (g), the relationship between expected values in t=1 of the free cash flow (FCF) and the equity cash flow (ECF) is:

$$ECF_0(1+g) = FCF_0(1+g) - D_0 R_F (1-T) + g D_0 \quad (12)$$

The value of the equity today (E_0) is equal to the present value of the expected equity cash flows. If K_e is the average appropriate discount rate for the expected equity cash flows, then $E_0 = ECF_0(1+g) / (K_e - g)$, and equation (12) is equivalent to:

$$E_0(K_e - g) = V_{u_0}(K_u - g) - D_0(R_F - g) + D_0 R_F T \quad (13)$$

As, $E_0 = V_{u_0} - D_0 + VTS_0$, the general equation for the average K_e is:

$$K_e = K_u + (D_0 / E_0)[K_u - R_F(1 - T)] - (VTS_0 / E_0)(K_u - g) \quad (14)$$

Substituting (6), (8) and (11) in (14), we get K_e according to the different theories:

$$K_e^{D=KEbv} = K_u + \frac{D_0}{E_0}(K_u - R_F)(1 - T) \quad (15)$$

$$K_e^{MM} = K_u + \frac{D_0}{E_0}(K_u - R_F) \frac{R_F(1 - T) - g}{R_F - g} \quad (16)$$

$$K_e^{ME} = K_u + \frac{D_0}{E_0}(K_u - R_F) \frac{1 + R_F(1 - T)}{1 + R_F} \quad (17)$$

Equations (15) and (16) are equal for $g=0$. However, equation (16) provides a K_e smaller than K_u if $g > R_F(1-T)$.

The WACC is the appropriate discount rate for the expected free cash flows, such that $D_0 + E_0 = FCF_0(1+g) / (WACC - g)$. The equation that relates the WACC and the VTS is:

$$WACC = K_u - VTS_0(K_u - g) / (D_0 + E_0) \quad (18)$$

Substituting (6), (8) and (11) in (18), we get the WACC according to the different theories:⁸

$$WACC^{D=KEbv} = K_u - \frac{D_0 T}{(D_0 + E_0)} K_u \quad (19)$$

$$WACC^{MM} = K_u - \frac{D_0 T}{(D_0 + E_0)} \frac{R_F(K_u - g)}{(R_F - g)} \quad (20)$$

$$WACC^{ME} = K_u - \frac{D_0 T}{(D_0 + E_0)} \frac{R_F(1 + K_u)}{(1 + R_F)} \quad (21)$$

⁸ (19) is equal to formulae (20) of ME (1980), (2) of Lewellen and Emery (1986), and (18) of Stanton and Seasholes (2005).

5. A numerical example

Table 3 contains the main valuation results for a constant company growing at a constant rate (3%). One of the results has no economic sense: according to MM, K_e (7.65%) is smaller than K_u (9%).

Table 3

Example. Valuation of a constant growing company

$$A_0 = 1,000; D_0 = 750; PATu_0 = 100; R_F = 4\%; K_u = 9\%; T = 40\%; g = 3\%; Vu_0 = 1,216.67$$

	Constant book-value leverage	Modigliani-Miller	Miles-Ezzell
VTS_0	450	1,200	209.62
$PV_0[\Delta D_t]$	375	2,250	-225.96
Equity value (E_0)	916.67	1,666.67	676.28
K_e	11.45%	7.65%	14.46%
WACC	7.38%	6.02%	8.12%

Figure 1 shows the Present Value of the expected increases of debt according to the three theories as a function of growth. According to ME the present value of the increases of debt is negative if the growth rate (g) is lower than 4.8%.

Figure 1

Present value of the expected increases of debt as a function of growth

$$A_0 = 1,000; D_0 = 750; PATu_0 = 100; R_F = 4\%; K_u = 9\%; T = 40\%$$

$PV(\text{incD})_{mm}$ corresponds to equation (7); $PV(\text{incD})_{me}$ corresponds to equation (10); $PV(\text{incD})_{cbvl}$ corresponds to equation (5)

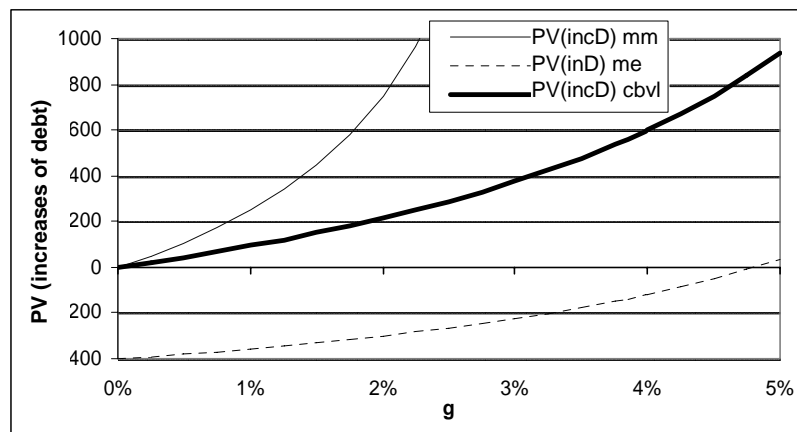


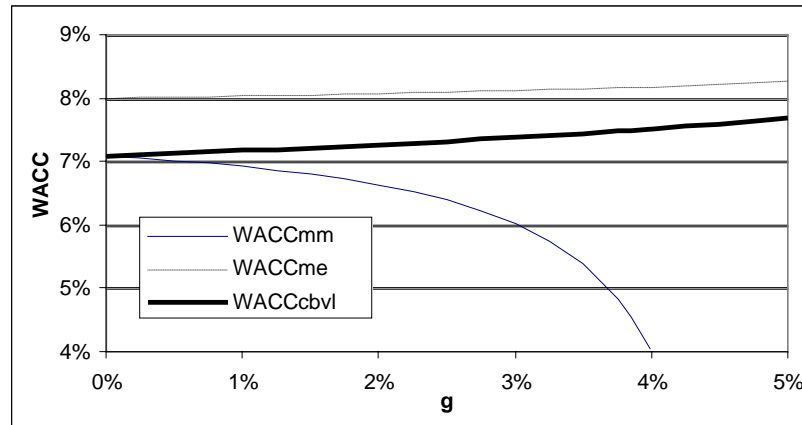
Figure 2 shows the WACC as a function of growth: according to MM WACC is a decreasing function of g . The constant leverage in book-value terms provides results that lie between those of MM and ME.

Figure 2

WACC as a function of growth

$$A_0 = 1,000; D_0 = 750; PATu_0 = 100; R_F = 4\%; K_u = 9\%; T = 40\%$$

WACC_{mm} corresponds to equation (20); WACC_{me} corresponds to equation (21); WACC_{cbvl} corresponds to equation (19)



With the constant growth model the market-to-book ratio is also constant, since all parameters are constant, and so the market and book debt ratios are constant through time. However, the riskiness of the future debt is completely different: under ME (debt is determined by a market-value ratio) debt and tax shields are riskier than if debt is determined by a book-value ratio.

6. The correlation between the tax shields and the free cash flow

The relationship between the dividends (equity cash flows) and the free cash flow is:

$$Div_t = FCF_t - D_{t-1} R_F (1-T) + \Delta D_t \quad (22)$$

As managers do not like to change the dividends much, it is reasonable to expect that most companies will show a negative correlation between the FCF and the ΔD . Table 4 supports that prediction: 265 US companies (out of 271) have a negative correlation between ΔD and FCF in the period 1991-2005, and the negative correlation is very strong. On the other hand, the correlation between ΔD and ΔA (shown in Table 2) is strongly positive. If debt is proportional to the book-value of equity, it is also proportional to the book-value of assets (A): $D = LA$; and $\Delta D_t = L \Delta A_t$. Substituting ΔD_t by $L \Delta A_t$ in (22), we get:

$$\Delta D_t (1 - L)/L = PATu_t - Div_t - D_{t-1} R_F (1 - T) \quad (23)$$

Table 4

Statistics of the correlation between PAT_t, FCF and ΔA and other variables for 271 US companies of the S&P 500, 1992-2005

Average, median, standard deviation (SD), maximum and minimum of the 271 correlation coefficients (one for each company)

Correlations between:	Statistics of the 271 correlation coefficients					Number of companies with	
	Average	Median	SD	MAX	Min	Correl < 0	Correl > 0
ΔD _t and FCF _t	-0,76	-0,86	0,26	0,43	-1,00	265	6
ΔA/A and FCF/A	-0,91	-0,97	0,15	0,43	-1,00	270	1
ΔA/A and PAT _t /A	0,41	0,50	0,33	0,94	-0,74	33	238
FCF/A and PAT _t /A	-0,11	-0,13	0,38	0,89	-0,85	176	95
interest _t and FCF _{t-1}	-0,21	-0,25	0,30	0,74	-0,80	212	59
ΔD _t /A _t and PAT _t /A _t	0,18	0,23	0,34	0,89	-0,83	81	190

Statistics of PAT_t, FCF and ΔA

0.07 is the average of the 271 SD of (PAT_t/A_{t-1}) (one for each company)

	Average of the statistics for each company						Number of companies with average	
	Average (Av)	Standard Deviation (SD)	SD/Av.	Median	MAX	Min	< 0	> 0
PAT _t /A	0.13	0.07	0.64	0.13	0.26	0.00	2	269
FCF/A	-0.02	0.24	1.27	0.04	0.24	-0.64	126	145
ΔA/A	0.15	0.26	2.39	0.09	0.80	-0.14	7	264

Correlation between SD of FCF/A and SD of ΔA/A = 0.98

In $t-1$, $D_{t-1}R_F(1-T)$ is known and Div_t has already been announced. Consequently, ΔD_t and PAT_t are positively correlated. If ΔD_t was a multiple of ΔA_t , then ΔD_t should be also positively correlated with PAT_t . Table 4 tells us that 190 companies present a positive correlation between $\Delta D_t/A_t$ and PAT_t/A_t , although these correlation coefficients are smaller than the ones between ΔA_t and PAT_t .

7. Conclusions

The value of tax shields (VTS) defines the increase in the company's value as a result of the tax saving obtained by the payment of interest. However, there is no consensus in existing literature regarding the correct way to compute the VTS. Most authors think of calculating the VTS in terms of the appropriate present value of the tax savings due to interest payments on debt, but Modigliani and Miller (1963, MM) propose discounting the tax savings at the risk-free rate (R_F),⁹ and Miles and Ezzell (1980, 1985, ME) propose discounting these tax savings the first

⁹ Myers (1974), Luehrman (1997), and Damodaran (2006, page 212) propose to discount it at the cost of debt (K_d). Brealey and Myers (2000, page 558) propose using the "effective tax shield on interest" (a figure lower than the corporate tax rate that takes account of the years in which the firm does not pay taxes), but they admit that "we were unable to pin down an exact figure for the effective tax shield on interest". Damodaran (2006, page 215) proposes to deduct the present value of the bankruptcy cost.

year at the cost of debt and the following years at Ku. Reflecting this lack of consensus, Copeland et al. (2000, page 482) claim that “*the finance literature does not provide a clear answer about which discount rate for the tax benefit of interest is theoretically correct.*” Many authors [including Taggart (1991), Inselbag and Kaufold (1997), Booth (2002), Cooper and Nyborg (2006), Oded and Michel (2006), Farber et al. (2006)] consider that debt policy may only be framed in terms of maintaining a fixed market-value debt ratio (ME) or a fixed dollar amount of debt (MM).

MM and ME are two extreme cases that are not valid for most companies: MM should be used when the company has a preset amount of debt; ME should be used only when debt will be always a multiple of the equity market-value. We develop valuation formulae for companies that maintain a fixed book-value leverage ratio and argue that, for most companies, and especially when calculating residual values, this assumption is more realistic than those of MM and ME. We obtain an intermediate value between those of MM and ME.

If a company targets its leverage in market-value terms, it has less value than if it targets the leverage in book-value terms. Why, then, would a manager target leverage in market-value terms? Nevertheless, many authors identify constant leverage with a constant *market* leverage ratio.

Flannery and Rangan (2006) point out that “*finance theory tends to downplay the importance of book ratios*”, and we argue that it makes more sense to characterize the debt policy of a company with an expected constant leverage ratio as a fixed book-value leverage ratio (instead of as a fixed market-value leverage ratio). The empirical evidence also provides more support for the fixed book-value leverage ratio hypothesis. It means that when managers have a target capital structure, it is usually in book-value terms (as opposed to market-value terms), in large part because this is what credit rating agencies pay attention to.

References

- Antoniou, A., Y. Guney and K. Paudyal (2006), "The Determinants of Debt Maturity Structure: Evidence from France, Germany and the UK," *European Financial Management* 12/ 2, pp. 161-194.
- Arzac, E.R. and L.R. Glosten (2005), "A Reconsideration of Tax Shield Valuation," *European Financial Management*, 11/4, pp. 453-461.
- Blume, M., F. Lim, and A. MacKinlay (1998), "The Declining Credit Quality of U.S. Corporate Debt: Myth or Reality," *Journal of Finance* 53, pp. 1389-1413.
- Booth, L. (2002), "Finding Value Where None Exists: Pitfalls in Using Adjusted Present Value," *Journal of Applied Corporate Finance*, 15/1, pp. 8-17.
- Booth, L. (2007), "Capital Cash Flows, APV and Valuation," *European Financial Management*, 13/1, forthcoming.
- Brealey, R.A. and S.C. Myers (2000), "Principles of Corporate Finance," 6th edition, McGraw-Hill, New York.
- Cooper, I. A. and K. G. Nyborg (2006), "The Value of Tax Shields IS Equal to the Present Value of Tax Shields," *Journal of Financial Economics*, 81, pp. 215-225.
- Copeland, T. E., T. Koller, and J. Murrin (2000), "Valuation: Measuring and Managing the Value of Companies," 3rd edition, Wiley, New York.
- Damodaran, A. (2006), "Damodaran on Valuation," 2nd edition, John Wiley and Sons, New York, 1st edition: (1994).
- Farber, A., R. L. Gillet, and A. Szafarz (2006), "A General Formula for the WACC," *International Journal of Business*, 11/2, pp. 211-218.
- Fernández, P. (2004), "The Value of Tax Shields is not Equal to the Present Value of Tax Shields," *Journal of Financial Economics*, 73/1, pp.145-165.
- Flannery, M. J. and K. P. Rangan (2006), "Partial Adjustment Toward Target Capital Structures," *Journal of Financial Economics*, 79, pp. 469-506.
- Graham, J.R. and C.R. Harvey (2001), "The Theory and Practice of Corporate Finance: Evidence from the Field," *Journal of Financial Economics*, 60/2, pp.187-243.
- Grinblatt, M. and S. Titman (2002), "Financial Markets and Corporate Strategy," Irwin/McGraw-Hill, 2nd ed. Burr-Ride, Il.
- Harris, R.S. and J.J. Pringle (1985), "Risk-adjusted discount rates extensions from the average-risk case," *Journal of Financial Research*, 8, pp. 237-244.
- Inselbag, I. and H. Kaufold (1997), "Two DCF Approaches for Valuing Companies under Alternative Financing Strategies and How to Choose between Them," *Journal of Applied Corporate Finance*, 10, pp. 114-122.
- Lewellen, W.G. and D.R. Emery (1986), "Corporate Debt Management and the Value of the Firm," *Journal of Financial and Quantitative Analysis*, 21/4, pp. 415-426.

- Luehrman, T. (1997), "Using APV: a Better Tool for Valuing Operations," *Harvard Business Review*, 75, pp. 145-154.
- Massari, M., F. Roncaglio, and L. Zanetti (2007), "On the Equivalence Between the APV and the WACC Approach in a Growing Leveraged Firm," *European Financial Management*, forthcoming.
- Miles, J.A. and J.R. Ezzell (1980), "The Weighted Average Cost of Capital, Perfect Capital Markets and Project Life: A Clarification," *Journal of Financial and Quantitative Analysis*, 15, pp. 719-730.
- Miles, J.A. and J.R. Ezzell (1985), "Reformulating Tax Shield Valuation: A Note," *Journal of Finance*, 40/5, pp. 1485-1492.
- Modigliani, F. and M. Miller (1963), "Corporate Income Taxes and the Cost of Capital: a Correction," *American Economic Review*, 53, pp. 433-443.
- Myers, S.C. (1974), "Interactions of Corporate Financing and Investment Decisions – Implications for Capital Budgeting," *Journal of Finance*, 29, pp. 1-25.
- Myers, S.C. (1984), "The Capital Structure Puzzle," *Journal of Finance*, 39/3, pp. 575-592.
- Oded, J. and A. Michel (2006), "Reconciling Valuation Methodologies: The Importance of a Company's Debt Rebalancing Policy," Boston University, unpublished paper.
- Penman, S. H., S.A. Richardson, and A.I. Tuna (2005), "The Book-to-Price Effect in Stock Returns: Accounting for Leverage," unpublished paper.
- Ruback, R. (2002), "Capital Cash Flows: A Simple Approach to Valuing Risky Cash Flows," *Financial Management*, 31, pp. 85-103.
- Standard and Poor's (2006), "Corporate Ratings Criteria," downloadable in http://www2.standardandpoors.com/spf/pdf/fixedincome/corporateratings_2006.pdf
- Stanton, R. and M.S. Seasholes (2005), "The assumptions and Math Behind WACC and APV Calculations", unpublished paper, U.C. Berkeley.
- Stonehill, A., T. Beekhuisen, R. Wright, L. Remmers, N. Toy, A. Pares, A. Shapiro, D. Egan, and T. Bates (1973), "Determinants of Corporate Financial Structure: A Survey of Practice in Five Countries," unpublished paper.
- Taggart, R.A. Jr. (1991), "Consistent Valuation and Cost of Capital. Expressions with Corporate and Personal Taxes," *Financial Management*, 20, pp. 8-20.
- Xu, Z. (2006), "Do Companies Adjust Toward a Target Leverage Level?," unpublished paper.