

CONSTRUCTION OF FREE CASHFLOWS
A PEDAGOGICAL NOTE. PART II

Ignacio Vélez-Pareja
ivelez@javeriana.edu.co
Department of Management
Universidad Javeriana
Bogotá, Colombia
Working Paper N 6
First version: 5-Nov-99
This version: 8-Dec-99

CONSTRUCTION OF FREE CASHFLOWS A PEDAGOGICAL NOTE. PART II

Ignacio Vélez-Pareja
ivelez@javeriana.edu.co

ABSTRACT

This is the second part of a paper where the construction of the free cash flow is studied. Usually a great deal of effort is given in typical financial textbooks to the mechanics of the calculations of time value of money equivalencies: payments, future values, present values, etc. This is necessary. However less or no effort is devoted to how to arrive at the figures required to calculate the Net Present Value NPV or the Internal Rate of Return, IRR. In Part I, a procedure for projecting pro forma financial statements (Balance Sheet (BS), Profit and Loses Statement (P&L) and Cash Budget (CB) is presented. From the CB, the Free Cash Flow FCF, the Cash Flow to Equity CFE and the Cash Flow to Debt CFD, are derived. Emphasis is done to the reasons why some items found in the P&L and CB are no included in the FCF. Also, the FCF and the CFD are calculated with the typical approach found in the literature: from the P&L and it is specified how to construct them. In doing this, working capital is redefined: the result is that it has to include and exclude some items that are not taken into account in the traditional methods. In Part II a comparison between the proposed method to construct the above-mentioned cash flows and the ones found in the current and typical textbooks is presented. Textbooks studied include Blank and Tarquin, 1998, Brealey, Myers and Marcus 1995, Copeland et.al. 1995, Damodaran, 1996, Gallaher and Andrew, 2000, and Weston and Copeland, 1992.

KEYWORDS

Free cash flow, cash flow to equity, cash flow to debt, project evaluation, firm valuation, investment valuation, Net Present Value NPV assumptions.

INTRODUCTION

This is the second part of a paper where the construction of the free cash flow is studied. Usually a great deal of effort is given in typical financial textbooks to the mechanics of the calculations of time value of money equivalencies: payments, future values, present values, etc. This is necessary. However less or no effort is devoted to how to arrive at the figures necessary to calculate the discounted cash flow DCF methods. In Part I, a procedure for projecting pro forma financial statements (Balance Sheet (BS), Profit and Loses Statement (P&L) and Cash Budget (CB) is presented. From the CB, the Free Cash Flow FCF, the Cash Flow to Equity CFE and the Cash Flow to Debt CFD, are derived. Also, the FCF and the CFD are calculated with the typical approach found in the literature: from the P&L and it is specified how to construct them. In doing this, working capital is redefined: the result is that it has to include and exclude some items that are not taken into account in the traditional methods. In Part II a comparison between the proposed method to construct the above-mentioned cash flows and the ones found in the current and typical textbooks is presented.

In Part I an example was presented to illustrate the procedure to calculate the cash flows. That same example will be worked out in Part II.

EXAMPLE

Assume a new commercial business is planned. Based on forecasts, the financial statements are projected, as follows¹:

¹ A detailed version including the parameters to reach these figures is available from the author on request.

Table 1

Pro forma Balance sheet	Year 0	Year 1	Year 2	Year 3	Year 4
Assets					
Cash	110.0	110.0	121.0	150.0	65,758.9
Accounts receivable	-	2,525.9	3,358.3	4,311.0	5,408.4
Inventory	-	2,052.3	2,735.3	3,370.6	4,140.1
Investment	-	-	8,486.0	32,969.9	-
Interest accrued	-	-	-	-	-
Fixed assets	40,000.0	40,000.0	40,000.0	40,000.0	40,000.0
Cumulative depreciation	-	8,000.0	16,000.0	24,000.0	32,000.0
Net fixed assets	40,000.0	32,000.0	24,000.0	16,000.0	8,000.0
Total assets	40,110.0	36,688.2	38,700.7	56,801.6	83,307.4
<i>Liabilities and equity</i>					
Accounts payable suppliers	-	2.668,0	3.298,8	4.058,9	4.982,8
Accounts payable overhead		214.0	265.4	326.4	401.5
Accounts payable fringe benefits		376,3	475,4	587,6	720,6
Accrued taxes	-	505.7	3,731.3	8,582.0	14,342.6
Long term debt	16,110.0	8,081.2	121.0	-	-
Total liabilities	16,110.0	11,845.3	7,891.8	13,554.9	20,447.5
Equity	24,000.0	24,000.0	24,000.0	24,000.0	24,000.0
Retained earnings	-	-	590.0	4,943.2	14,955.6
Earnings for the period	-	842.9	6,218.8	14,303.4	23,904.3
Total	40,110.0	36,688.2	38,700.7	56,801.6	83,307.4

Table 2

Pro forma Profit and Losses Statement	Year 0	Year 1	Year 2	Year 3	Year 4
Sales		50,518.1	67,165.8	86,219.9	108,168.2
<i>Cost of goods sold</i>		24,628.1	32,304.7	39,953.3	49,058.6
<i>Gross profit</i>		25,890.0	34,861.1	46,266.6	59,109.6
<i>Selling and administrative expenses</i>		19,297.1	22,304.5	25,743.0	29,830.5
Depreciation		8,000.0	8,000.0	8,000.0	8,000.0
<i>Earnings before interest and taxes</i>		6,592.9	12,556.6	20,523.6	29,279.1
Other income (interest received)		-	-	2,398.2	8,967.8
Other expenses (interest expenses)		5,244.2	2,606.6	36.3	-
<i>Earnings before taxes</i>		1,348.7	9,950.1	22,885.5	38,246.9
Taxes		505.7	3,731.3	8,582.0	14,342.6
<i>Net profit</i>		842.9	6,218.8	14,303.4	23,904.3

Table 3

Pro forma cash budget cb					
	0	1	2	3	4
Cash balance at start of year	-	110.00	110.00	121.00	150.00
Cash inflows					
Cash collection of sales		47,992.2	66,333.4	85,267.2	107,070.8
Recovery of short term investments ²	-	-	-	8,486.0	32,969.9
Interest on short term investment	-	-	-	2,398.2	8,967.8
Equity investment	24,000.0	-	-	-	-
Total cash inflows	24,000.0	47,992.2	66,333.4	96,151.4	149,008.5
Cash outflows					
Payments to suppliers	-	24,012.4	32,357.0	39,828.5	48,904.1
Administrative and sales expenses	-	10,706.8	14,154.0	17,569.8	21,622.4
Purchase of fixed assets	40,000.0	-	-	-	-
Interest charges	-	5,244.2	2,606.6	36.3	-
Dividend payments	-	-	252.9	1,865.6	4,291.0
Taxes	-	-	505.7	3,731.3	8,582.0
Total cash outflows	40,000.0	39,963.4	49,876.2	63,031.5	83,399.6
Net cash gain (loss)	-16,000.0	8,028.8	16,457.3	33,119.9	65,608.9
Cash balance at end of year	-16,000.0	8,138.8	16,567.3	33,240.9	65,758.9
Proceeds from loans	16,110.0	-	-	-	-
Principal payments	-	8,028.8	7,960.2	121.0	-
Investment of surplus	-	-	8,486.0	32,969.9	-
Net cash gain (loss) after financing and reinvestment	110.0	-	11.0	29.0	65,608.9
Cumulative cash balance at end of year after financing and reinvestment	110.0	110.0	121.0	150.0	65,758.9

Notice that taxes are paid the following year after accrued. This is important because the tax shield is received only at the time taxes are paid.

In Part I the cash flows were established as³:

Table 4

	Year 0	Year 1	Year 2	Year 3	Year 4
FCF \$	-40,110.0	13,273.0	8,864.1	1,074.5	152,638.8
CFD \$	-16,110.0	13,273.0	8,600.2	-820.1	-13.6
CFE \$	-24,000.0	0.0	263.9	1,894.6	152,652.4
CFD + CFE \$	-40,110.0	13,273.0	8,864.1	1,074.5	152,638.8

Now, other approaches are contrasted with these results.

² Rigorously, the cash flows associated to the investment of cash surplus and its returns must be discounted at a different discount rate. For a complete discussion of this issue see Copeland et.al. (1995) and Weston and Copeland (1992).

³ In Part I the terminal value was determined as EBIT plus depreciation charges (after taxes) and growth at $n+1 = 30\%$, afterwards 0% . The amount is \$ 82,752.5.

OTHER APPROACHES TO FCF CONSTRUCTION

Damodaran, (Damodaran, 1996, p 107 and p 237) proposes to calculate the FCF from the P&L statement, as follows:

$$\begin{aligned}
 & \text{Earnings before interest and taxes EBIT} \\
 & \text{minus taxes on EBIT TXEBIT} \\
 & \text{plus depreciation charges DC} \\
 & \text{minus change in working capital (CWC)} \\
 & \text{minus investment in project IP}
 \end{aligned}$$

For period n add the present value of future EBIT after taxes. This is the terminal value. Damodaran (1996, p.244). Although it is not made explicit in this procedure, Damodaran devotes some effort to treat the terminal value. For this reason it is assumed that in year n , it should be included.

The adjustment for working capital takes into account sales revenues on credit and accrued expenses. However, working capital is defined as "the difference between its current assets and its current liabilities." "The working capital is the difference between its current assets and its current liabilities. [...] The accounting definition of working capital includes cash in current assets. This is appropriate as long as the cash is necessary for the day-to-day operations of the firm. Increases in cash beyond this requirement should not be considered in calculating working capital for purposes of cash flow calculation, since an increase in working capital as a consequence of cash accumulating in the firm is not a cash outflow to the firm." (Damodaran, 1996, pp. 99-100).

In the example,

Table 5

	Year 1	Year 2	Year 3	Year 4
EBIT	6,592.9	12,556.6	20,523.6	29,279.1
TXEBIT	2,472.3	4,708.7	7,696.4	10,979.7
DC	8,000.0	8,000.0	8,000.0	8,000.0
Current assets	4,688.2	14,700.7	40,801.6	75,307.4
Current liabilities	3,764.1	7,770.8	13,554.9	20,447.5
Working capital	924.1	6,929.8	27,246.6	54,859.9
Change in working capital	924.1	6,005.7	20,316.8	27,613.3
For period n , terminal or market value based on EBIT plus depreciation charges (after taxes) and growth at $n+1 = 30\%$, afterwards 0% , NSV				82,752.5
FCF = EBIT- TXEBIT +DC-CWC + NSV	11,196.4	9,842.2	510.5	81,438.6
Results in Part I	13,273.0	8,864.1	1,074.5	152,638.8
Difference with results in Part I	2,076.6	-978.1	564.0	71,200.2

Implicit in this approach is the assumption of reinvestment at the same rate of discount and that reinvestment is not made explicit in the CB. However, if the CB takes into account reinvestment of cash surpluses, and if the returns are not included as part of the FCF, the results would not be consistent. As was suggested by Velez-Pareja (Velez-Pareja, 1999), not including the reinvestment explicitly in the CB, implies that the NPV of those surpluses would be 0. In reality, the NPV will be 0 only if reinvestment rate $-i_r-$ is equal to the discount rate $-WACC-$. Usually, the reinvestment rate is different

from WACC. Hence, the NPV of the investment of surpluses will be negative if $i_r < WACC$, and positive if $i_r > WACC$, when discounted at WACC.

Calculated from net profits (combining FCE at p 103 and the addition to FCE at p 237 in Damodaran, 1996)

$$\begin{aligned}
 & \text{Net income (net profit NP)} \\
 & \text{Plus depreciation and amortization DC} \\
 & \text{Minus investment in project} \\
 & \text{Minus change in working capital CWC} \\
 & \text{plus interest expense I} \\
 & \text{minus tax shield from interest payments IXT}
 \end{aligned}$$

For period n add the present value of future EBIT after taxes. This is the terminal value. Damodaran (1996, p.244). Although it is not made explicit, Damodaran devotes some effort to treat the terminal value. For this reason it is assumed that in year n , it should be included. In the example

Table 6

	Year 1	Year 2	Year 3	Year 4
Net income (net profit NP)	842.9	6,218.8	14,303.4	23,904.3
Depreciation and amortization DC	8,000.0	8,000.0	8,000.0	8,000.0
Investment in project IP				
Change in working capital CWC	924.1	6,005.7	20,316.8	27,613.3
Interest expense I	5,244.2	2,606.6	36.3	-
Tax shield from interest payments I x T	1,966.6	977.5	13.6	-
FCF = NP + DC -IP -CWC + I - IXT	11,196.4	9,842.2	2,009.3	87,043.5
Results in Part I	13,273.0	8,864.1	1,074.5	152,638.8
Difference with results in Part I	2,076.6	-978.1	-934.8	65,595.3
FCF = EBIT- TXEBIT +DC-CWC + NSV	11,196.4	9,842.2	510.5	81,438.6
Difference with results from EBIT, above	-	-	1,498.8	5,604.9

There are differences between the cash flow calculated from EBIT and the calculated from net profits (for years 3 and 4). This difference is due to the net return from reinvestment of surplus ($RI \times (1-T)$) that is included in the net profit approach and not in the EBIT approach. This means that the EBIT model proposed by Damodaran assumes that the reinvestment of cash surplus is not done explicitly.

Others, Gallagher and Andrews (2000, p. 283) propose (not levered firm):

For year 0, investment in project plus working capital invested. For years 1 to n :

$$\begin{aligned}
 & \text{Net profits NP} \\
 & \text{Plus depreciation charges DC}
 \end{aligned}$$

For year n , add net salvage value and recapture of working capital. This case is not illustrated with the example because does not apply (the example is for a levered firm). However, it is obvious that the implicit assumption in this approach is that all sales and expenses are on a non credit basis. This is a typical approach: to include the working capital as a fixed amount at year 0 (usually a magical percentage of the initial investment). This procedure was good enough when computational facilities were scarce.

Weston and Copeland and Copeland et.al. (Weston and Copeland, 1992, (p. 822 in the Spanish version) Copeland et.al. 1995), propose:

Earnings before interest and taxes EBIT
minus taxes on EBIT TEBIT
plus depreciation charges DC
minus change in working capital (CWC)
minus investment in project IP
plus net return on investment of cash surplus x (1-T) RI

For period n add the present value of future EBIT after taxes. This is the terminal value or continuing value. Although it is not made explicit, the authors devote a good deal of effort to treat the terminal value. For this reason it is assumed that in year n , it should be included.

For them, working capital is defined as operating current assets (including cash) minus non-interest bearing current liabilities.

In the example,

Table 7

	Year 1	Year 2	Year 3	Year 4
Earnings before interest and taxes EBIT	6,592.9	12,556.6	20,523.6	29,279.1
Taxes on EBIT TEBIT	2,472.3	4,708.7	7,696.4	10,979.7
Depreciation charges DC	8,000.0	8,000.0	8,000.0	8,000.0
Change in working capital (CWC)	924.1	6,005.7	20,316.8	27,613.3
Investment in project IP				
Return on investment of cash surplus x (1-T) RI	0.0	0.0	1,498.8	5,604.9
For period n add the present value of future EBIT after taxes	0.0	0.0	0.00	82,752.5
FCF	11,196.4	9,842.2	2,009.3	87,043.5
Results in Part I	13,273.0	8,864.1	1,074.5	152,638.8
Difference with results in Part I	2,076.6	-978.1	-934.8	65,595.3

Observe that this coincides with the Damodaran approach when calculated from net profit.

Brealey, Myers and Marcus (1995) define the FCF as

Earnings before interest and taxes EBIT
minus taxes on EBIT TEBIT
plus depreciation charges DC
minus change in working capital (CWC)
minus investment in project IP

For period n add the present value of future EBIT after taxes. This is the terminal value or continuing value.

In the example,

Table 8

	Year 1	Year 2	Year 3	Year 4
Earnings before interest and taxes EBIT	6,592.9	12,556.6	20,523.6	29,279.1
Taxes on EBIT TEBIT	2,472.3	4,708.7	7,696.4	10,979.7
Depreciation charges DC	8,000.0	8,000.0	8,000.0	8,000.0
Change in working capital (CWC)	924.1	6,005.7	20,316.8	27,613.3
Investment in project IP	0.0	0.0	0.0	0.0
For period n add the present value of future EBIT after taxes	0.0	0.0	0.0	82,752.5
FCF	11,196.4	9,842.2	510.5	81,438.6
Results in Part I	13,273.0	8,864.1	1,074.5	152,638.8
Difference with results in Part I	2,076.6	-978.1	564.0	71,200.2

Notice that this result coincides with the Damodaran EBIT approach shown above.

OTHER APPROACHES TO CASH FLOW TO EQUITY

Damodaran (Damodaran, 1996, p 101, 103 and 219), proposes to calculate the CFE as:

Net profit NP
Plus depreciation and amortization DC
Minus investment from stockholders IS
Minus change in working capital CWC
Minus principal payments PP
Plus proceeds from new debt LR

In the example:

Table 9

<i>Net profit NP</i>	842.9	6,218.8	14,303.4	23,904.3
<i>Depreciation and amortization DC</i>	8,000.0	8,000.0	8,000.0	8,000.0
<i>Investment IS</i>	0.0	0.0	0.0	0.0
<i>Change in working capital CWC</i>	924.1	6,005.7	20,316.8	27,613.3
<i>Principal payments PP</i>	8,028.8	7,960.2	121.0	0.0
<i>Proceeds from new debt LR</i>	0.0	0.0	0.0	0.0
<i>Terminal value at year 4</i>				
CFE	-110.0	252.9	1,865.6	4,291.0
Results in Part I	0.0	263.9	1,894.6	152,652.4
Difference with results in Part I	110.0	11.0	29.0	148,361.4

Although it is not explicitly indicated, it can be assumed that Damodaran would include the terminal value in the cash flow for the year 4. With this *caveat*, the CFE would be:

Table 10

<i>Net profit NP</i>	842.9	6,218.8	14,303.4	23,904.3
<i>Plus depreciation and amortization DC</i>	8,000.0	8,000.0	8,000.0	8,000.0
<i>Minus investment IS</i>	0.0	0.0	0.0	0.0
<i>Minus working capital change CWC</i>	-924.1	-6,005.7	-20,316.8	-27,613.3
<i>Minus principal payments PP</i>	-8,028.8	-7,960.2	-121.0	0.0
<i>Plus proceeds from new debt LR</i>	0.0	0.0	0.0	0.0
<i>Plus terminal value</i>				82,752.5
CFE	-110.0	252.9	1,865.6	87,043.5
Results in Part I	0.0	263.9	1,894.6	152,652.4
Difference with results in Part I	110.0	11.0	29.0	65,609.0

Blank and Tarquin (1998, chapter 15, example 15.2), (p 460-463 in Spanish) propose as net cash flow

Minus capital invested by stockholder IS
Plus EBIT
Plus depreciation
Minus taxes on earnings before taxes EBT T
Minus interest charges I
Minus principal payments PP
Plus salvage or terminal value

These authors calculate the NPV of the project with this net cash flow and with the WACC. Notice that this is not the FCF, but an approach to the CFE. The authors assume implicitly that income and expenses are on a non-credit basis as well.

In the example:

Table 11

		Year 1	Year 2	Year 3	Year 4
IS	24,000.0	0.0	0.0	0.0	0.0
EBIT	0.0	6,592.9	12,556.6	20,523.6	29,279.1
Depreciation charges DC		8,000.0	8,000.0	8,000.0	8,000.0
Interest expense I		5,244.2	2,606.6	36.3	0.0
Taxes TX(EBIT - I)	0.0	505.8	3,731.3	7,682.7	10,979.7
Principal payments PP	0.0	8,028.8	7,960.2	121.0	0.0
Salvage value SV ⁴					82,752.5
CFE	-24,000.0	814.1	6,258.6	20,683.6	109,051.9
Results in Part I	-24,000.0	0.0	263.9	1,894.6	152,652.4
Difference with results in Part I	0.0	-814.1	-5,994.7	-18,789.0	43,600.5

A COMPARISON OF THE METHODS

With the alternate methods FCF and/or CFE have been calculated. The numerical difference with the method proposed in Velez-Pareja, (Velez-Pareja, 1999) is presented. A summary and comparison of the above - presented methods, follow:

⁴ The authors define salvage value as a percentage of the initial value. However, for comparison purposes, the salvage value is assimilated to the terminal value.

Table 13
Free cash flow

Key for the table : CFIVP from cash budget CB (Velez-Pareja). EP&LIVP = From P&L (Velez-Pareja) starting from EBIT. NP&LIVP = From P&L (Velez-Pareja) starting from net profit. DAMEB = Damodaran from EBIT DAMNP = Damodaran from net profit. WES COP = Weston and Copeland and Copeland et. al. BMM = Brealey, Myers & Marcus. The plus (+) signs indicate the item is added. The minus signs (-) indicate the item is subtracted.

Item	CFIVP	EP&LIVP	NP&LIVP	DAMEB	DAMNP	WES COP	BMM
<i>Net cash gain (loss) after financing and reinvestment NCG</i>	+						
<i>Investment from stockholders IS</i>	-						
<i>Proceeds from loans received LR</i>	-						
<i>Principal payments PP</i>	+						
<i>Interest charges paid I</i>	+						
<i>Tax shield for interest payments TSI</i>	-						
<i>Dividends or earnings paid D</i>	+						
<i>Working capital = Working capital is defined as receivables plus inventories plus short-term investments minus accounts payable minus tax shield for interest payments. (Cash is not included).</i>		Yes	Yes				
<i>Working capital = "the difference between its current assets and its current liabilities."</i>				Yes	Yes	Yes	Yes
<i>Earnings before interest and taxes EBIT</i>		+		+		+	+
<i>Taxes on EBIT TEBIT</i>		-		-		-	-
<i>Depreciation charges DC</i>		+	+	+	+	+	+
<i>Change in working capital (CWC)</i>		-		-	-	-	-
<i>Returns on short term investment x (1-Tax rate) NRI</i>		+				+	
<i>Investment in the project IP</i>		-	-	-	-	-	-
<i>Year n, add net salvage (or market value or continuing value) x (1-tax rate) NSV</i>		+		+	+	+	+
<i>Net profit NP</i>			+		+		
<i>Interest charges x (1-tax rate) NIC</i>			+		-		

In the next table the different methods presented above are compared using the simplified example. A more detailed version of this example can be obtained from the author on request.

Free cash flow FCF:

Table 13

	Year 1	Year 2	Year 3	Year 4
CFIVP	13,273.0	8,864.1	1,074.5	152,638.8
Damodaran (from EBIT) Table 5	11,196.4	9,842.2	510.5	81,438.6
Difference with CFIVP	2,076.6	-978.1	564.0	71,200.2
Damodaran (from NP) Table 6	11,196.4	9,842.2	2,009.3	87,043.5
Difference with CFIVP	2,076.6	-978.1	-934.8	65,595.3
Weston and Copeland/Copeland et.al. Table 7	11,196.4	9,842.2	2,009.3	87,043.5
Difference with CFIVP	2,076.6	-978.1	-934.8	65,595.3
Brealey, Myers and Marcus Table 8	11,196.4	9,842.2	510.5	81,438.6
Difference with CFIVP	2,076.6	-978.1	564.0	71,200.2

The cash balance (110) plus the tax shield (1,966.6) explain the difference for year 1. For other years, the cash balance, the tax shield and the return from investment of surplus explain the difference, partially. The alternate methods do not take into account the funds in the cash account. On the other hand, although they consider taxes to be paid the year after they are accrued (when calculating the change in working capital), do not make any adjustment for the fact that the tax shield is received in that year.

Table 13
Cash flow to equity CFE

Key for the table : CFIVP from cash budget CB (Velez-Pareja) EBIVP = From P&L (Velez-Pareja) starting from EBIT
NPIVP = From P&L (Velez-Pareja) starting from net profit DAM = Damodaran. BT= Blank and Tarquin. The plus (+) signs indicate the item is added. The minus signs (-) indicate the item is subtracted.

Item	CFIVP	NPIVP	EBIVP	DAM	BT
<i>(Years 1 to n-1) Net cash gain (loss) after financing and reinvestment NCG</i>	+				
<i>Investment from stockholders IS</i>	-		-		
<i>Proceeds from loans received LR</i>		+	+	+	
<i>Principal payments PP</i>		-	-	-	-
<i>Interest charges paid I</i>			+		-
<i>Tax shield for interest payments at previous period TSI</i>			+		
<i>Dividends or earnings paid D</i>	+				
<i>Year n, cumulative cash balance at end of year after financing and reinvestment CCB</i>	+				
<i>Working capital = receivables plus inventories plus short term investments minus accounts payable (including the tax shield for interest payments. Cash is not included)</i>		Yes	Yes		
<i>Working capital = "the difference between its current assets and its current liabilities."</i>				Yes	
<i>Earnings before interest and taxes EBIT</i>			+		+
<i>Taxes on EBIT TEBIT</i>			-		-
<i>Depreciation charges DC</i>		+	+	+	+
<i>Change in working capital (CWC)</i>		-	-	-	
<i>Returns on short term investment x (1-Tax rate) NRI</i>			+		
<i>Investment in the project IP</i>		-		-	-
<i>Year n, add net salvage (or market value or continuing value) x (1-tax rate) NSV</i>			+	+	+
<i>Net profit NP</i>		+		+	

In the next table the different methods presented above are compared using the simplified example. A more detailed version of this example can be obtained from the author on request.

Cash flow to equity CFE:

Table 14

	Year 1	Year 2	Year 3	Year 4
CFIVP	0.0	263.9	1,894.6	152,652.4
Damodaran Table 10	-110.0	252.9	1,865.6	87,043.5
Difference with CFIVP	110.0	11.0	29.0	65,609.0
Blank and Tarquin Table 11	814.1	6,258.6	20,683.6	109,051.9
Difference with CFIVP	-814.1	-5,994.7	-18,788.9	43,600.5

The purpose of comparing these methods is not to claim that the proposed method is the correct one and that the others are wrong. This might be true. However, the crux of the point is to suggest that with the instructions presented in the textbooks, the reader will arrive at figures that at first glance are wrong.

SUMMARY

In Velez-Pareja, 1999 (Part I) a method to calculate the FCF from the CB was presented. Methods to calculate the FCF from the P&L statement were presented as well. These methods lead to the same FCF. In this Part II, those results are compared with textbook methods and some differences were found.

BIBLIOGRAPHIC REFERENCES

- BLANK, LELAND T. AND ANTHONY J. TARQUIN, 1998, *Engineering Economy*, 4th edition, McGraw-Hill. Spanish version: *Ingeniería económica*, McGraw-Hill, 1999.
- BREALEY, RICHARD A., STEWART C. MYERS AND ALAN J. MARCUS, 1995, *Fundamentals of Corporate Finance*, McGraw-Hill
- COPELAND, THOMAS E., T. KOLLER AND J. MURRIN, 1995, *Valuation: Measuring and Managing the Value of Companies*, 2nd Edition, John Wiley & Sons.
- DAMODARAN, ASWATH, 1996, *Investment Valuation*, John Wiley.
- GALLAGHER, TIMOTHY J. AND JOSEPH D. ANDREW, JR., 2000, *Financial Management* 2nd ed., Prentice Hall,
- VÉLEZ PAREJA, IGNACIO, 1998, *Decisiones de inversión, Una aproximación al análisis de alternativas*, CEJA. Available on line at http://www.javeriana.edu.co/decisiones/libro_on_line
- _____, 1999, *Construction of free cash flow: a Pedagogical note. Part I*, Social Science Research Network, Corporate Finance Abstracts: Valuation, Capital Budgeting and Investment Policy, http://papers.ssrn.com/paper.taf?ABSTRACT_ID=196588
- WESTON, J. FRED AND T.E. COPELAND, 1992, *Managerial Finance*, 9th ed. The Dryden Press. Spanish version: *Finanzas en administración*, McGraw-Hill, 1995