

MBA Finance Part-Time Financial Statement Analysis and Cash Flows

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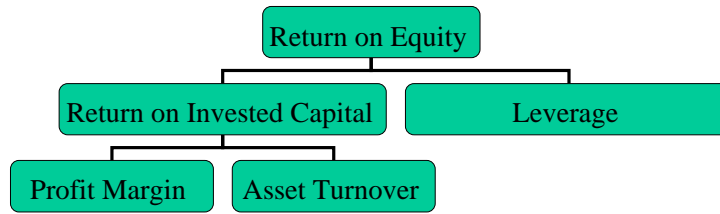
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MBA Finance – 02 Financial Statement Analysis

1

Levers of Performance



Summarized (managerial) balance sheet

Assets	Liabilities
Fixed assets (FA)	Stockholders' equity (SE)
Working capital requirement (WCR)	Interest-bearing debt (D)
Cash (Cash)	

$$\text{FA} + \text{WCR} + \text{Cash} = \text{SE} + \text{D}$$

Working capital requirement : definition

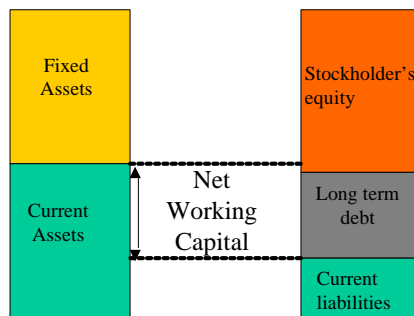
- + Accounts receivable
- + Inventories
- + Prepaid expenses
- Account payable
- Accrued payroll and other expenses
- (Sometimes named operating working capital")

Interest-bearing debt: definition

- + Long-term debt
- + Current maturities of long term debt
- + Notes payable to banks

Net Working Capital

- Net working capital can be understood in two ways:
 - *as an investment to be funded*
= Current Assets - Current Liabilities
 - *as a source of financing*
= Stockholders' equity + LT debt - Fixed Assets



Current ratio: a measure of NWC
 Current ratio = Current assets / Current liabilities
 Net working capital
 = Current assets - Current liabilities
 Current ratio > 1 \Leftrightarrow NWC > 0

Net Working Capital vs Working Capital Requirement

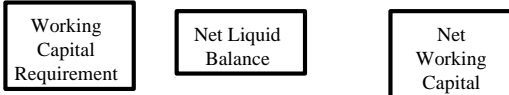
(is $NWC > 0$ a sufficient condition for liquidity?)

- Summarized balance sheet identity:

$$FA + WCR + CASH = SE + LTD + STD$$

- can be written as:

$$WCR + (CASH - STD) = (SE + LTD - FA)$$



$$WCR + NLB = NWC$$

Return on invested capital

- Return on assets (net) = Net income / Total assets
 - Advantage: fits with Du Pont system
 - $ROE = ROA \times \text{Equity multiplier}$
 - Limitation: Net income = EBIT - Interest expense - Taxes
 - Depends on capital structure:
 1. Interest expense: function of interest-bearing debt
 2. Interest expense : tax deductible
- Preferred measure: Return on Invested Capital (ROIC)

$$ROIC = \frac{EBIT(1 - \text{TaxRate})}{\text{Stockholders' equity} + \text{Interest bearing debt}}$$

- NB: $ROIC = ROA \text{ (gross)} (1 - \text{Tax rate})$
 $= ROE \text{ of an all-equity financed firm}$



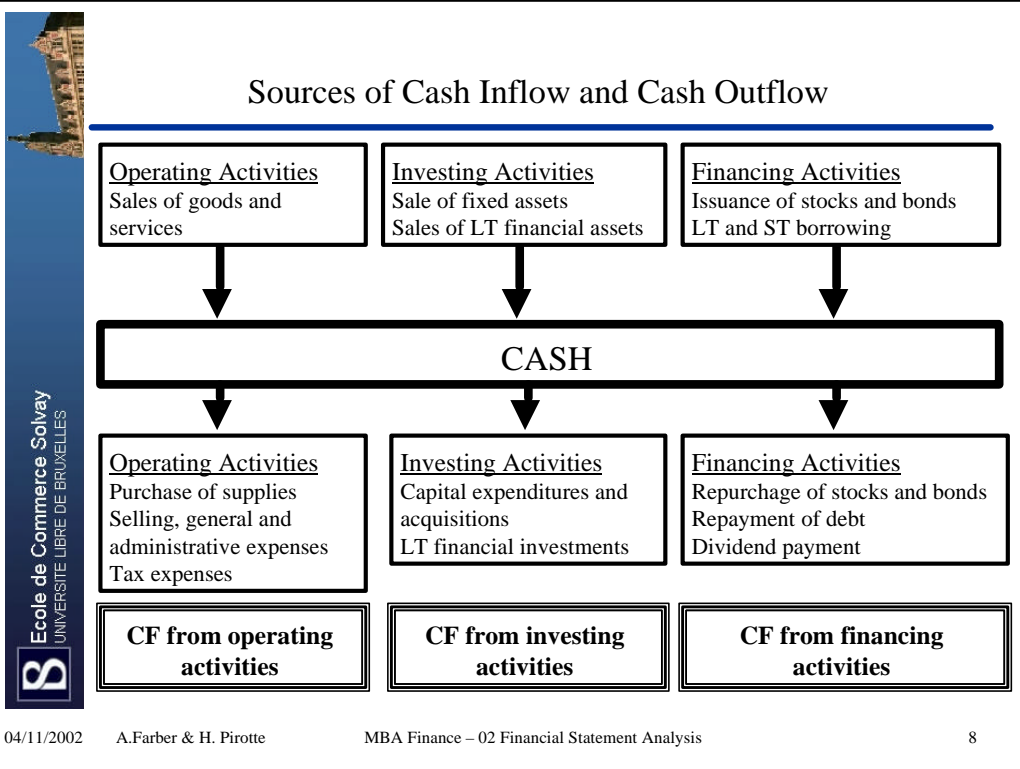
Financial leverage

- *Financial leverage magnifies ROE only when ROA (gross) is greater than the interest rate on debt.*
 - Balance sheet: $TA = SE + D$
 - Income statement: $NI = EBIT - INT - TAX$
 - Interest expense $INT = r D$ (= Interest rate x Interest-bearing debt)
 - Taxes $TAX = (EBIT - r D)T_c$ (= Taxable inc. x Tax rate)

$$ROE = \frac{NI}{SE} = \frac{EBIT \times (1 - T_c)}{TA} \times \frac{TA}{SE} - r(1 - T_c) \times \frac{D}{SE}$$

$$ROE = ROIC + (ROIC - r(1 - T_c)) \times \frac{D}{SE}$$

- Remember : $ROIC = ROA_{gross} (1 - T_c)$
- $ROE = ROIC + (ROA_{gross} - r) (1 - T_c) (D/SE)$



Farber.com: a fable

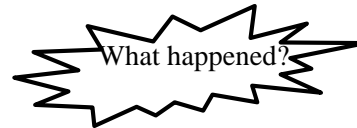
- Starting a local version of Amazon.com
- Initial balance sheet $t = 0$

Cash	100		Book Equity	100
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- Operations year 1:
 - ✓ Sell 2 books @ €100 each
 - ✓ Buy 2 books @ €50 each
- Income statement year 1:

Revenue	200
Expenses	100
Net Income	100

- But....cash account = 0



Farber.com: what happened....

- Final balance sheet $t = 1$

<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding: 5px;">Cash</td> <td style="text-align: right; padding: 5px;">0</td> </tr> <tr> <td style="padding: 5px;">Account Receivable</td> <td style="text-align: right; padding: 5px;">200</td> </tr> </table>	Cash	0	Account Receivable	200	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding: 5px;">Book Equity</td> <td style="text-align: right; padding: 5px;">200</td> </tr> </table>	Book Equity	200
Cash	0						
Account Receivable	200						
Book Equity	200						

No payment from clients

Initial Capital + Retained Earnings

- Statement of cash flows: reconciles the two views

<i>Direct method:</i>	+ Cash collected from customers	0
	- Cash payment to suppliers	+ 100
	= Cash flow from operations	- 100
<i>Indirect method:</i>	Net Income	+100
	-ΔWorking Capital Requirement	+ 200
	= Cash flow from operations	-100

Farber.com: additional complications

- Initial balance sheet $t = 0$

Cash	100	Book Equity	100
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- Operations year 1:

- ✓ Borrow and buy 2d hand computer @ €200
 - ✓ Sell 1 books @ €100 each
 - ✓ Buy 2 books @ €50 each
- } Straight-line depreciation
2 years

- Income statement year 1:

Revenue	100
Cost of goods sold	50
Depreciation	100
Interest	10
Net Income	-60

- Final cash account
- | | |
|--|-----|
| | -10 |
|--|-----|

Farber.com: details

- Final balance sheet $t = 1$

<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding: 2px 5px;">▪ Cash</td> <td style="text-align: right; padding: 2px 5px;">-10</td> </tr> <tr> <td style="padding: 2px 5px;">▪ Account Payable</td> <td style="text-align: right; padding: 2px 5px;">100</td> </tr> <tr> <td style="padding: 2px 5px;">▪ Inventories</td> <td style="text-align: right; padding: 2px 5px;">50</td> </tr> <tr> <td style="padding: 2px 5px;">▪ Fixed Assets</td> <td style="text-align: right; padding: 2px 5px;">100</td> </tr> <tr> <td style="padding: 2px 5px;">▪ Total</td> <td style="text-align: right; padding: 2px 5px; border-top: 1px solid black;">240</td> </tr> </table>	▪ Cash	-10	▪ Account Payable	100	▪ Inventories	50	▪ Fixed Assets	100	▪ Total	240	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding: 2px 5px;">Book Equity</td> <td style="text-align: right; padding: 2px 5px;">40</td> </tr> <tr> <td style="padding: 2px 5px;">Debt</td> <td style="text-align: right; padding: 2px 5px;">200</td> </tr> <tr> <td style="padding: 2px 5px;">Total</td> <td style="text-align: right; padding: 2px 5px; border-top: 1px solid black;">240</td> </tr> </table>	Book Equity	40	Debt	200	Total	240
▪ Cash	-10																
▪ Account Payable	100																
▪ Inventories	50																
▪ Fixed Assets	100																
▪ Total	240																
Book Equity	40																
Debt	200																
Total	240																

- Statement of cash flows: direct method

Cash collection from customers	0	(=REV - Δ AR)
-Cash payment to suppliers	100	(=CGS+ Δ INV)
-Cash paid for interest	10	
<i>Cash flow from operating activities</i>	<i>-110</i>	
<i>Cash flow from investing activities</i>	<i>-200</i>	(= Δ FA+Dep)
<i>Cash flow from financing activities</i>	<i>+200</i>	
<i>Change in cash</i>	<i>-110</i>	

Farber.com: statement of cash flows - indirect method

- Statement of cash flows

Net Income	-60
+Depreciation	+100
- Δ Working Capital Requirement	+ 150
= Cash flow from operations	-110
Cash flow from investing activities	-200
Δ Debt	+200
Cash flow from financing activities	+200
Change in cash	-110

Notations

- **Income statement**

- REV Revenue
- CGS Cost of goods sold
- SGA Selling, general and administrative expenses
- Dep Depreciation
- EBIT Earnings before interest and taxes
- Int Interest expenses
- TAX Taxes
- T_c Tax rate
- NI Net income

- **Balance sheet**

- FA Fixed assets, net
- AR Accounts receivable
- INV Inventories
- CASH Cash & cash equivalents
- SE Equity capital
- LTD Long term debt
- AP Accounts payable
- STD Short-term borrowing

- **Statement of retained income**

- DIV Dividendes

Income statement and balance sheet

- Income statement
 - $EBIT = REV - CGS - SGA - Dep$
 - $TAX = T_c (EBIT - Int)$
 - $NI = EBIT - Int - TAX$
 - Balance sheet equation
 - $FA + AR + INV + CASH = SE + LTD + AP + STD$
- Working capital requirement: $WCR \equiv AR + INV - AP$
 $= (Current\ assets - CASH) - (Current\ liabilities - STD)$
- Summarised balance sheet:
- $$FA + WCR + CASH = SE + D \quad (D = LTD + STD)$$

Cash flow statement : indirect method

- From the balance sheet identity and over a period:

$$\Delta FA + \Delta WCR + \Delta CASH = \Delta SE + \Delta D$$

- $\Delta FA = AQ - Dep = \text{investment} - \text{depreciation}$

AQ = Acquisitions - Disposals (investing & divesting)

- $\Delta SE = NI - DIV + \Delta K = \text{stock issue} + \text{retained earnings}$

ΔK = New issuance of capital

$$(NI + Dep - \Delta WCR) - (AQ) + (\Delta K + \Delta D - DIV) = \Delta CASH$$

*Cash flow
from
operating
activities*

+

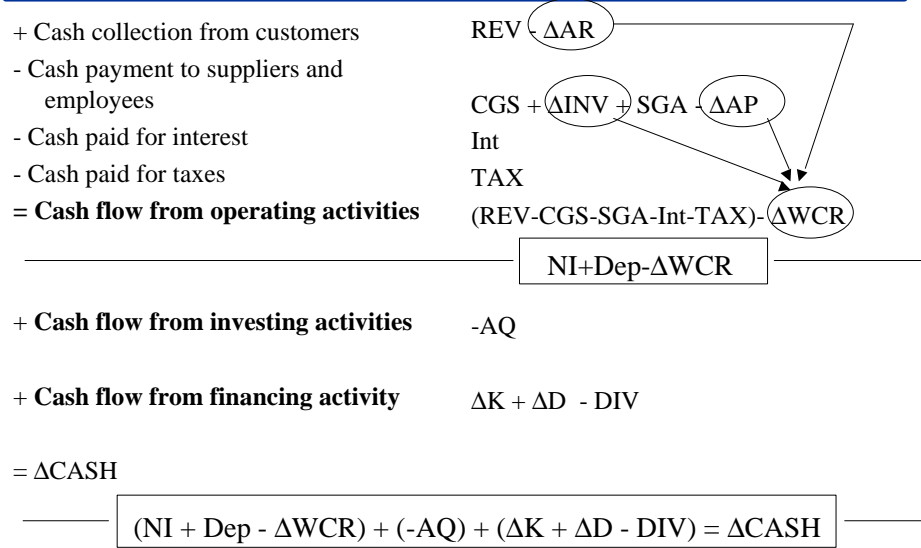
*Cash flow
from
investing
activities*

+

*Cash flow
from
financing
activities*

=

Statement of cash flows: direct method



Free Cash Flow

- Free Cash Flow = Cash flow from operating activities
+ Cash flow from investing activities
- Calculating free cash flows of an all-equity firm:

$$\text{Free Cash Flow} = \text{EBIT}(1-T_c) + \text{Dep} - \Delta\text{WCR} - \text{AQ}$$

- From the statement of cash flows for an all-equity firm:

$$\text{Free Cash Flow} = \text{DIV} - \Delta\text{K} + \Delta\text{Cash}$$

Financial Forecasting

Income Statement



Statement of Cash Flows



Update Balance Sheet

EBITDA
-Depreciation
=EBIT
-Taxes
+Net Income

CF from operating activities
CF from investing activities
CF from financing activities

References

- Suggested text for this course
 - Ross, Stephen A., Randolph W. Westerfield and Jeffrey F. Jaffe, *Corporate Finance*, 6th edition, McGraw-Hill Irwin 2002
- Corporate finance textbooks (MBA level)
 - Copeland, Koller and Murrin, *Valuation: Measuring and Managing the Value of Companies*, 2nd edition, John Wiley, 1994.