CHAPTER NINE

The Analysis of the Balance Sheet and Income Statement

Concept Questions

C9.1. Without the reformulation, operating profitability is confused with financing profitability, and the return on financial assets (and borrowing cost for financial obligations) is typically different from operating profitability. Operations add value whereas financing typically does not, so financing activities need to be separated out to uncover the operating profitability.

C9.2.

(a) operating

(b) operating

(c) operating

(d) financing

(e) financing

(f) financing

(g) operating (these are investments in the operations of another company)

(h) operating

(i) operating

(j) operating

C9.3.

(a) operating

(b) operating

(c) financing

(d) operating

(e) financing

(f) financing – if interest is at market rates.

C9.4. Not correct. In a sense, minority interest is an obligation for common shareholders to give the minority in a subsidiary a share of profits. But it is not, like debt, an obligation that is satisfied by free cash flow from operations. Rather, it is equity that shares in a portion of profits after net financing costs.

C9.5. Interest is deductible for taxes so issuing debt shields the firm from taxes.

C9.6 A firm losses the tax benefit of debt when it cannot reduce taxable income with interest on debt. This can happen if a firm has losses in operations (and thus has no income to reduce with the interest deduction). In the U. S. this situation is unlikely because firms can carry losses forward or backward against future or past income.

C9.7. The operating profit margin is the profitability of sales, the percentage of a dollar of sales that ends up in operating income after operating expenses.

C9.8. Operating liability is the degree to which operations are financed by operating liabilities. It levers up the return on net operating assets: creditors effectively reduce the investment required in operating assets.

Exercises

E9.1 A Reformulation: Intel Corporation

INTEL CORPORATION

Intel Corporation

Reformulated Income Statement

Net revenue		$26,273
Cost of sales	$12,144	
Research and development	2,509	
Marketing, general and administrative	3,076	
Purchased in-process R & D	165	17,894
Operating income before tax		8,379
Tax as reported	3,069	
Tax on financing income	288	2,781
Operating income after tax		5,598
Interest income	792	
Interest expense	(34)	
Net financing income before tax	758	
Tax on financing income (.38)	(288)	
Unrealized gain on investments	545	1,015
Comprehensive income		6,613

Notes: 1. The "other" included with interest income could be operating income.

2. Comprehensive income is reported net income (6,068) + unrealized gain on securities (545).

Reformulated Balance Sheet

Operating Assets		
Cash		$ 163
Accounts receivable		3,527
Inventories		1,582
Deferred tax assets		618
Other current assets		122
Property, plant and equipment, net		11,609
Other assets		1,022
		18,643
Operating Liabilities		
Accounts payable	1,244	
Deferred income	606	
Accrued compensation	1,285	
Accrued advertising	458	
Other accrued liabilities	1,094	
Income taxes payable	958	
Deferred tax liabilities	1,387	7,032
Net Operating Assets		11,611
Financial Assets		
Cash equivalents		1,875
Short-term investments		5,272
Trading assets		316
Long-term investments		5,365
		12,828
Financial Liabilities		
Short-term debt	159	
Long-term debt	702	
Put warrant obligation	201	1,062
Net Financial Assets		11,766
Common Stockholders' Equity		23,377

Notes: 1. The operating cash component of cash and cash equivalents was deemed to be $163 million. The remainder is a financial asset.

2. Trading assets are deemed part of financing activities.

3. Footnotes reveal that long-term investments are investments in debt securities.

(a) % in net financial assets = $\frac{11{,}766}{23{,}377}$ = 50.3%

(b) % of income in net financing income = $\frac{1{,}015}{6{,}613}$ = 15.3%

E9.2 Testing Relationships in Reformulated Income Statements

The solution has to be worked in the following order:

A = Operating revenues – operating expenses

= 5,523 – 4,550

= 973

E = Interest expense after tax/ (1 – tax rate)

= 42/0.65

= 64.6

F = E – 42

= 22.6

D = 610 + 42

= 652

C = F

= 22.6

B = A – C – D

= 973 – 22.6 – 652

= 298.4

Effective tax rate on operating income

= Tax on operating income/ Operating income before tax

= (B + C)/A

= 33.0%

E9.3 Where Did the Profits Come From? Hewlett-Packard

(a) Net earnings and eps were indeed flat. But a breakdown of income into operating and financing income will reveal that operating income (after tax) declined by 4% while income from net financial assets—that had grown to $5.3 billion by July 1998 compared to 3.1 billion in July 1997—increased by 77%, or from 5.6 % of income to 10.0% of income.

A reformulated statement distinguishes the two sources of income (in millions of dollars):

	1998		1997	
Operating revenue	10,979		10,471	
Operating expenses	10,205		9,646	
Operating income before tax		774		825
Tax on reported	253		264	
Tax on net financial income	38	215	21	243
Operating income after tax		559		582
Interest income	154		109	
Interest expense	54		53	
Net interest income before tax	100		56	
Tax (38%)	38		21	
Net interest income after tax		62		35
Net earnings		621		617

(b) Increases in net financial income arise from increases in net financial assets. And net financial assets increase from two sources:

1. Fee cash flow from operations.
2. New external financing (which is invested in net financial assets).

The increase in net financial assets probably came from an increase in free cost flow (and indeed it did).

E9.4 "Cash" Position: Chrysler Corporation

"Cash" position is the holding of financial assets:

	1995	1994
Cash and cost equivalents	4,947	4,939
Marketable securities	2,582	3,226
	7,529	8,165

[$596 million has been allocated to working cash in 1995, $206 million in 1994]

Net financial asset position:

Financial assets (above)		7,529		8,165
Financial obligations:				
Short-term debt	2,674		4,645	
Current maturities	1,661		811	
Long-term debt	9,858	14,193	7,650	13,106
		(6,664)		(4,941)

Chrysler had a negative net financial position in 1994 and 1995.

Note that financing receivables (for financing automobile purchases) are part of operations.

E9.5 Operating or Financial Liabilities? Nike, Inc.

Financial liabilities

Current portion of long-term debt	$ 1.0 million
Notes payable	419.1
Accounts payable	98.0
	$ 518.1 million

Operating liabilities

Accounts payable	$275.2	
Accrued liabilities	653.6	928.8
		$1,446.9 million

Comments:

1. Notes payable are classified as financing liabilities because they are interest-bearing; there is some question as to whether the interest rates on the notes are market rates, however.

2. Accounts payable are divided into the NIAC interest-bearing portion (financial) and the non-interest bearing portion (operating)

3. No detail is given on the accrued liabilities; they are assumed to be operating liabilities.

E9.6 Can Net Operating Assets be Negative? Chubb Corporation

A property-casualty insurer underwrites losses by collecting cash from premiums and paying out cash for insurance claims. There is a float between cash in and cash out, and in the reformulated balance sheet, this produces negative operating assets. Effectively the policyholders provide cash that is invested in investment assets. So the reformulated balance sheet depicts the two aspects of the business – the negative net operating assets in underwriting and the positive investment in securities. The investment assets also serve as reserves against claims in the underwriting business.

Here is Chubb's reformulated statement. It follows the reported statement closely as that statement clearly separates investment assets from operating assets used in underwriting and real estate.

Chubb Corp.
Reformulated Balance Sheet, June 30 1999
(in $ millions)

Operating Assets (underwriting and real estate operations):		
Cash		25.4
Accrued investment income		225.9
Premiums receivable		1,253.6
Reinsurance recoverable on unpaid claims		1,239.2
Prepaid reinsurance premiums		126.3
Funds held for asbestos-related settlement		607.2
Deferred policy acquisition costs		746.3
Real estate assets		720.1
Deferred income tax		476.1
Other assets		958.9
		6,379.0
Operating liabilities (underwriting and real estate operations):		
Unpaid claims	10,584.7	

Unearned premiums	2,989.8	
Accrued expenses and other liabilities	1,244.1	14,818.6
Net operating assets (underwriting and real estate)		(8,439.6)
Financial assets (investment operations):		
Short-term investment	586.1	
Fixed maturity investment—held to maturity	1,900.8	
Fixed maturity investment—available for sale	11,549.8	
Equity investments	649.7	14,686.4
Financial liabilities		
Long-term debt		602.0
Net financial assets (investment operations)		14,084.4
Common shareholders' equity		
As reported		5,593.0
Dividends payable		51.8
		5,644.8

Proof: CSE = NOA + NFA

= -8,439.6 + 14,084.4

= 5,644.8

Note that dividends payable has been reclassified as shareholders' equity.

The investment assets, though they look like financial assets, are operating assets because a firm cannot run a risk underwriting business without the reserves in the assets. Indeed, insurers typically make their money from investing the float in these assets. The separation identifies two aspects of the business, one where value is created (or lost) through underwriting and one where value is created (or lost) in investment operations. Go to Exercise E9.8 for more elaboration.

E9.7 Effective Tax Rates: Home Depot, Inc.

First establish the firm's marginal tax rate. This is the statutory rate (federal plus state) at which interest income is taxed (or interest expense gets a tax saving). The footnote gives the effective rate of 39.2% for 1999, which is the effective rate from the income statement (1,040/2,654 = 39.2%).

The federal statutory rate is 35%. We could find the state rate, but Home Depot operates in many states. So, without considerably more information, the statutory rate is somewhat of a guess. Home Depot reports a ratio of state-to-federal taxes of 149/869 = 17.1%. Applied to the federal rate of 35%, this implies a state a state rate of 6.0%, or a total rate of 41%. The effective rate of 39.2% is after offsets for tax credits, so this rate is a floor to the marginal rate.

In the reformulation below, a 41% rate is used for the tax allocation.

Reformulated Income Statement, June 30, 1999
($ millions)

Net sales		30,219
Cost of sales		21,614
Gross profit		8,605
Selling and store operating costs	5,341	
Pre-opening costs	88	
General and administrative	515	5,944
Operating income before tax		2,661
Tax as reported	1,040	
Tax benefit of net debt	3	1,043
Operating income after tax		1,618
Interest expense	37	
Interest income	30	
Net interest expense	7	
Tax on net interest (41%)	3	4
Net income		1,614

Effective tax rate on operating income = $\frac{1,043}{2,661}$ = 39.2%

This effective rate is almost the same as the reported rate because the net interest is almost zero (and the net debt position is almost zero).

E9.8 Separating Sources of Income: Chubb Corporation

The reformulated statement combines the two statements and separates the two types of operations. Like the reformulated balance sheet (in Exercise E9.6), it separates the earnings of investing in financial assets from earnings from insurance underwriting. With the reformulation,

On gets a better insight into the business. Note the following:

1. Placing the income statement on a comprehensive basis gives a more complete picture. The net income is $193.3 million is misleading because it omits the $206.1 million unrealized loss from available-for-sale securities. Indeed, the $193.3 million in reported income is supported by $45.9 in realized investment gains. A firm can "cherry pick" realized gains by selling the securities in its portfolio that have appreciated. Comprehensive income includes the income from (available-for-sale) securities that have dropped in value.
2. There is a loss of $25.2 million from underwriting and real estate operations, coming mainly from underwriting. This is typical of these insurers. They may lose on underwriting activities, but make it up on investment activities that the underwriting activities fund through the float. Note that the loss is generated on negative net operating assets. Indeed, the residual earnings on underwriting is positive: $(25.2) – (0.10 x –8,439.6) = $818.7 million (for a 10% required return). So, value is added, despite losses.

Chubb Corp.
Reformulated Income Statement, June 30 Quarter, 1999
(in $ Millions)

Underwriting operations:		
Premiums earned		1,377.5
Foreign currency translation losses[1]		(13.3)
Claims and expenses:		
Insurance claims	924.3	
Authorization of deferred policy acquisition costs	373.7	
Other operating costs	90.1	1,388.1
Operating income before tax—underwriting		(23.9)
Real estate operations:		
Revenues	47.3	
Cost of sales and expenses	48.1	
Operating income before tax—real estate		(0.8)
Corporate expenses		(11.5)
Operating income before tax		(36.2)
Income tax reported	42.6	
Tax on investment income	53.6	11.0
Operating income		(25.2)
Investment operations:		
Before-tax revenues:		
Investment income-taxable[2]	105.9	
Realized investment gains	45.9	
	151.8	
Expenses	3.0	
Income before tax	148.8	
Tax (at 36%)	53.6	
Income after tax	95.2	
Investment income—tax exempt	110.0	
Unrealized investment income after tax	(206.1)	(0.9)
Comprehensive income		(26.1)

Notes:

1. As real estate operations are in the U.S., currency translation is identified with underwriting in other countries.
2. Total investment income minus tax-exempt income.

E9.9 Operating Profitability: Southwest Airlines

The reformulated statements are as follows:

	1991	1992	1993	1994
Operating income:				
Reported[1]	61.9	180.2	289.3	348.9
Tax reported	(16.9)	(55.8)	(105.4)	(129.7)
Tax shield	(6.3)	(11.7)	(10.4)	(7.5)
OI after tax	38.7	112.7	173.5	211.7
Net interest expense:				
Reported	18.0	33.3	29.6	21.4
Tax shield (.35)	6.3	11.7	10.4	7.5
	11.7	21.6	19.2	13.9
Comprehensive Income:	27.0	91.1	154.3	197.8
NOA	1,018	1,238	1,443	1,675
NFO[2]	389	358	389	436
CSE	629	880	1,054	1,239

Notes:

1. Includes "other items" in non-operating expense. What are these?

2. NFO = Long-term debt + CMLTD –(0 .9 x cash). Ten percent of cash is deemed working cash. Deposits on flight equipment purchases are operating and, if interest is earned on these, it should be put in operating income (if identifiable).

a) FCF ≡ C – I = OI – ΔNOA

1991 (112.3)
1992 (107.3)
1993 (31.5)
1994 (20.3)

b) RNOA = OI/ ave. NOA

1991 4.1%
1992 10.0
1993 12.9
1994 13.6

c) NBC = net financial expenses/ ave. NFO

1991	3.6
1992	5.8
1993	5.1
1994	3.4

d) What is the BIG PICTURE? Southwest has become increasingly profitable in its operations. Like many growing companies, it's generating negative free cash flow because of investment in new aircraft (see property, plant and equipment). However, free cash flow is increasing due to the increased profitability and a decline in the rate of investment. The negative free cash flow was satisfied by increased borrowing from 1990-1992, but in 1993-94 debt was actually reduced. How was this done with negative free cash flow? By selling off financial assets (in cash equivalents).

Minicases

M9.1 Asset Leasing, Indebtedness, Profitability and Leverage: UAL Corporation

This case provides a platform for discussing alternative measures of operating profitability and leverage. It also shows how the accounting affects these measures. But the case can also be used to illustrate most of the points raised in this chapter:

- How financial assets "defease" financial liabilities (particularly, in this case, the deposits for capital leases)
- The appropriate identification of financing and operating liabilities
- The concept of operating liability leverage
- Tax allocation
- Reported tax rates versus effective tax rates on operating income
- The GAAP treatment of capitalized interest (as a violation of the separation of financing and operating activities).
- The calculation of net borrowing cost

The case can be extended to bring in material in Chapter 11. For example, the ROCE can be explained by its RNOA, leverage and net borrowing cost drivers. The issue of accounting methods and valuation in Chapter 17 can also be introduced.

Before beginning this case, review the accounting for operating and financing leases. Understand the fine line that defines capital leases as different from operating leases and how the designation of leases as capital or operating leases can affect the amount of debt reported on the balance sheet significantly.

Setting Up the Analysis

Begin by calculating the standard measures of profitability and leverage:

$$\text{Return on Assets} = \frac{\text{Net income} + [\text{interest expense x } (1 - t)]}{\text{Average Total Assets}}$$

$$= \frac{827 + (250 \text{ x } 0.62)}{17{,}012}$$

$$= 5.77\%$$

$$\text{Debt-to-equity ratio} = \frac{\text{Total Debt \& Preferred Obligations}}{\text{Common Equity}}$$

$$= \frac{15{,}278}{3{,}281}$$

$$= 4.66$$

Sometimes preferred stock is included in equity. And the calculation sometimes omits deferred taxes from debt.

Are these measures satisfactory? The criticism is that they mix operating and financing elements. To generate better measures, reformulate the income statement and balance sheet.

Reformulated Balance Sheets

		1998		1997
Operating Assets:				
Current operating assets		2,093		2,103
Owned equipment		10,951		9,080
Capital leases		2,103		1,694
Other assets other than lease deposits		2,052		1,424
Operating assets		17,199		14,301
Operating Liabilities:				
Current Operating Liabilities	5,210		4,842	
Long-term operating liabilities	3,816	9,026	3,493	8,335
Net Operating Assets (NOA)		8,173		5,966
Financial obligations:				
Notes payable		184		
Current maturites		98		235
Current lease obligations		176		171
Long-term debt		2,858		2,092
Lease obligations		2,113		1,679
Redeemable preferred stock		100		101
Preferred stock (ESOP)		691		514
Put option liability		32		
		6,252		4,792
Financial Assets:				
Cash and cash equivalents	390		295	
Short-term investments	425		550	
Lease deposits	545	1,360	318	1,163
Net financial obligations (NFO)		4,892		3,629
Common stockholders' equity (CSE)		3,281		2,337

Proof CSE = NOA – NFO = $8,173 - 4,892 = 3,281$ (1998)

= $5,966 - 3,629 = 2,337$ (1997)

Note: 1. All cash and cash equivalents are classified as financing assets

2. Deposits on aircraft leases are against the lease obligations (see lease footnote), so are financial assets.

3. Advances on flight equipment purchases might be classified as a financial asset. However these deposits are part of operations -- they are needed to buy aircraft -- so are operating. The deposits for leases, in contrast, are part of the financial arrangements.

Average balances, 1998:

NOA	7,020
NFO	4,261
CSE	2,809

Reformulated Income Statement

Operating revenue		17,561		17,378
Operating expenses		(16,083)		(16,119)
Equity in earnings of affiliates		72		66
Gain on sale of affiliates' stock				103
Miscellaneous, net		(103)		(49)
Operating income before tax		1,447		1,379
Tax as reported	429		561	
Tax benefit of interest	73	502	49	610
Operating income after tax		945		769
Net financial expenses				
Interest expense	250		182	
Interest income	59		52	
	191		130	
Tax benefit	73		49	
	118		81	
Preferred dividends	6	124	5	86
Net earnings		821		683

Notes:

1. Capitalized interest has been deducted from interest expense, as in the reported statement. If past capitalizations of interest could be unraveled (and depreciation expense adjusted for them) one might reconstruct the statements with no interest capitalized. Typically this cannot be done (as here).

2. Interest on deposits made for capital leases are included in interest income and so offset the interest expense on capital leases.

3. The interest income number could contain interest on advances made to purchase flight equipment which are classified as an operating asset in the reformulated balance sheet.

Question A of Case

$$\text{RNOA} = \frac{\text{OI}}{\text{Ave. NOA}}$$

$$= \frac{945}{7{,}070}$$

$$= 13.37\%$$

Note: There has been a significant growth in NOA over the year (37%). Did it occur evenly over the year? The growth is not due to one particular item.

Compare this RNOA with the return on assets (ROA) of 5.77%

The RNOA looks more "respectable". Why?

- the treatment of financial assets
- the treatment of interest income
- the treatment of operating liabilities

Introduce concept of operating liability leverage.

$$\text{Financial leverage (FLEV)} = \frac{\text{NFO}}{\text{CSE}}$$

$$= \frac{4{,}892}{3{,}281} \quad \text{(end of year)}$$

$$= 1.49$$

This measure is considerably less than the 4.66 debt-to-equity ratio. The financial assets of $1,360 million offset the financial debt of $6,252 million and operating liabilities do not affect FLEV measure. These distinctions lead to better profitability analysis.

Discuss: for credit evaluation the debt-to-equity ratio may be better (with financial assets subtracted from debt) for it captures all debt to be covered. See chapter on credit risk.

$$\text{Net borrowing cost} = \frac{\text{NFE}}{\text{Ave. NFO}}$$

$$= \frac{124}{4{,}261}$$

$$= 2.91\%$$

This seems low. Why? Well, the part of interest that is capitalized into the cost of assets is missing. Add back capitalized interest to the numerator:

$$\text{Adjusted NBC} = \frac{124 + 105}{4{,}261}$$

$$= 5.37$$

At a tax rate of 38%, this is a before-tax rate of 8.67% (which is within the range of implied interest rates on leases in the lease footnote).

Question B of Case

This question requires us to reconstruct the statements under the alternative accounting for leases. Operating lease accounting removes capital leases from the balance sheet:

		1998		1997
Net operating assets (including capital leases)		8,173		5,966
Less capital lease assets		2,103		1,694
		6,070		4,272
Net financial obligations (including capital leases)	4,892		3,629	
less capital lease obligations	2,289	2,603	1,850	1,779
Common stockholders equity, restated		3,467		2,493

The change in common equity from the reported number is the accumulated effect in past earnings from using capital lease accounting rather than operating lease accounting.

The adjustment to the income statement is a little more complicated:

			1995
	Operating income with lease accounting		945
1)	Add back: depreciation on capital leases	109	
	less tax effect (38%)	41	68
			1,013
2)	Less: minimum lease payment	322	
	less tax effect (38%)	122	200
	Adjusted operating income		813

Note that net financial income will also be revised:

Average capital lease obligations during year (including current portion)	2,070
Estimated borrowing rate	8.7%
Estimated interest expense, before tax	180

(The borrowing rate is a guess, based on the NBC share. See lease footnote for implicit discount rates on lease obligations.)

Notes to the calculation:

1. The depreciation number is difficult to uncover without more information. Here are two ways to get at it:

(i)	Depreciation and amortization in income statement		793
	Estimated amortization of intangibles (gross value of 1,021 of beginning of year)	107	
	Depreciation expense on tangible assets		686
	Proportion of depreciable assets in capital leases (gross values)		0.149
	Amount of depreciation due to leases		102
(ii)	Gross value of leases (beginning of year)		2,319
	Depreciation, straight-line, 20 years		116
	(Twenty years in midpoint of estimated life range given in footnote)		
	Take average of two estimates		109

(The depreciation ignores residual values at end of lease.)

2. The lease payment is given in the cash flow statement, as indicated in the case write-up. See also schedule of lease payments in lease footnote.

$$\text{Adjusted RNOA} = \frac{813}{5{,}171}$$

= 15.72%

This is higher than with capital lease accounting.

Adjusted financial leverage (FLEV) = $\frac{2{,}603}{3{,}467}$

= 0.75

This is lower than with capital lease accounting.

Discussion

Profitability

Accounting always affects the numerator and denominator of RNOA and ROCE. "Conservative accounting" that reports lower asset values usually results in higher RNOA (as here) because the denominator effect dominates the numerator effect (See Chapter 17). Operating lease accounting typically gives lower operating profit (rent expense in higher than depreciation with capital leases) but lower NOA (there is no lease asset).

We will show later in the book how residual earnings valuation accommodates the differing RNOA and ROCE that result from accounting measures. For now note that operating leases make the firm look more profitable.

Leverage

While operating lease accounting makes a firm look more profitable, it also makes a firm look less risky, as measured by the financial leverage ratio. The same observation can be made regarding the debt-to-equity ratio.

If the lease obligations are in fact in-substance debt claims (used to finance the business instead of bank loans or bonds), operating lease accounting understates the leverage.

The case can be extended by preparing statements as if the operating leases were capitalized. The lease footnote gives the schedule of payments for the operating leases from which a rough estimate of the present value of these leases could be calculated. There are claims that some of UAL's leases (like the one at Denver airport) should be treated as capital leases.