

Chapter 2

Financial Statements and Cash Flow

财务报表与现金流量

Key Concepts and Skills

- Understand the information provided by financial statements
- Differentiate between book and market values
- Know the difference between average and marginal tax rates
- Know the difference between accounting income and cash flow
- Calculate a firm's cash flow

2.1 The Balance Sheet （资产负债表）

- ❑ An accountant's snapshot of the firm's accounting value at a specific point in time
- ❑ The Balance Sheet Identity is:
$$\text{Assets} \equiv \text{Liabilities} + \text{Stockholder's Equity}$$

U.S. Composite Corporation Balance Sheet

U.S. CORPORATION 2011 and 2012 Balance Sheets (\$ in millions)					
Assets			Liabilities and Owners' Equity		
	2011	2012		2011	2012
Current assets			Current liabilities		
Cash	\$ 104	\$ 160	Accounts payable	\$ 232	\$ 266
Accounts receivable	455	688	Notes payable	196	123
Inventory	553	555	Total	\$ 428	\$ 389
Total	<u>\$1,112</u>	<u>\$1,403</u>			
Fixed assets					
Net plant and equipment	<u>\$1,644</u>	<u>\$1,709</u>	Long-term debt	\$ 408	\$ 454
			Owners' equity		
			Common stock and paid-in surplus	600	640
			Retained earnings	1,320	1,629
			Total	<u>\$1,920</u>	<u>\$2,269</u>
Total assets	<u>\$2,756</u>	<u>\$3,112</u>	Total liabilities and owners' equity	<u>\$2,756</u>	<u>\$3,112</u>

- **Accounts receivable** is a legally enforceable claim for payment held by a business for goods supplied and/or services rendered that customers/clients have ordered but not paid for. These are generally in the form of invoices raised by a business and delivered to the customer for payment within an agreed time frame.
- **Accounts payable** is money owed by a business to its suppliers
- **Notes payable** is a legal instrument (more particularly, a financial instrument and a debt instrument), in which one party (the *maker* or *issuer*) promises in writing to pay a determinate sum of money to the other (the *payee*), either at a fixed or determinable future time or on demand of the payee, under specific terms.

Alphabet Inc. - Assets

Assets	As of December 31, 2014	As of December 31, 2015
Current assets:		
Cash and cash equivalents	\$ 18,347	\$ 16,549
Marketable securities	46,048	56,517
Total cash, cash equivalents, and marketable securities	64,395	73,066
Accounts receivable	9,383	11,556
Receivable under reverse repurchase agreements	875	450
Income taxes receivable, net	591	1,903
Prepaid revenue share, expenses and other assets	3,412	3,139
Total current assets	78,656	90,114
Prepaid revenue share, expenses and other assets, non-current	3,187	3,181
Non-marketable investments	3,079	5,183
Deferred income taxes	176	251
Property and equipment, net	23,883	29,016
Intangible assets, net	4,607	3,847
Goodwill	15,599	15,869
Total assets	\$ 129,187	\$ 147,461

Alphabet Inc. –Liabilities and shareholders' equity

	As of December 31, 2014	As of December 31, 2015
Current liabilities:		
Accounts payable	\$ 1,715	\$ 1,931
Short-term debt	2,009	3,225
Accrued compensation and benefits	3,069	3,539
Accrued expenses and other current liabilities	4,408	4,768
Accrued revenue share	1,952	2,329
Securities lending payable	2,778	2,428
Deferred revenue	752	788
Income taxes payable, net	96	302
Total current liabilities	16,779	19,310
Long-term debt	3,228	1,995
Deferred revenue, non-current	104	151
Income taxes payable, non-current	3,340	3,663
Deferred income taxes	758	189
Other long-term liabilities	1,118	1,822
Total stockholders' equity	103,860	120,331
Total liabilities and stockholders' equity	\$ 129,187	\$ 147,461

China Petrochemical Corporation

母公司资产负债表

2015 年 9 月 30 日

编制单位:中国石油化工股份有限公司

单位:百万元 币种:人民币 审计类型:未经审计

项目	期末余额	年初余额
流动资产:		
货币资金	31,080	1,805
应收票据	879	176
应收账款	25,041	25,031
预付款项	2,073	1,962
其他应收款	72,480	201,234
存货	45,794	74,654
其他流动资产	12,420	19,186
流动资产合计	189,767	324,048
非流动资产:		
可供出售金融资产	297	91
长期股权投资	222,421	189,631
固定资产	417,977	452,361
在建工程	76,234	100,543
无形资产	8,353	8,834
长期待摊费用	2,145	2,547
其他非流动资产	11,934	2,767
非流动资产合计	739,361	756,774
资产总计	929,128	1,080,822

流动负债：		
短期借款	27,548	57,749
短期应付债券	30,000	-
应付票据	1,783	2,933
应付账款	73,974	102,399
预收款项	3,358	3,926
应付职工薪酬	1,978	310
应交税费	18,498	19,883
其他应付款	94,270	198,144
一年内到期的非流动负债	3,320	11,084
流动负债合计	254,729	396,428
非流动负债：		
长期借款	55,271	55,202
应付债券	45,500	62,221
预计负债	27,250	25,830
递延所得税负债	1,635	600
其他非流动负债	3,153	1,892
非流动负债合计	132,809	145,745
负债合计	387,538	542,173
股东权益：		
股本	121,071	118,280
资本公积	68,716	54,690
其他综合收益	431	(206)
专项储备	826	232
盈余公积	193,552	193,552
未分配利润	156,994	172,101
股东权益合计	541,590	538,649
负债和股东权益总计	929,128	1,080,822

Balance Sheet Analysis

When analyzing a balance sheet, the Finance Manager should be aware of three concerns:

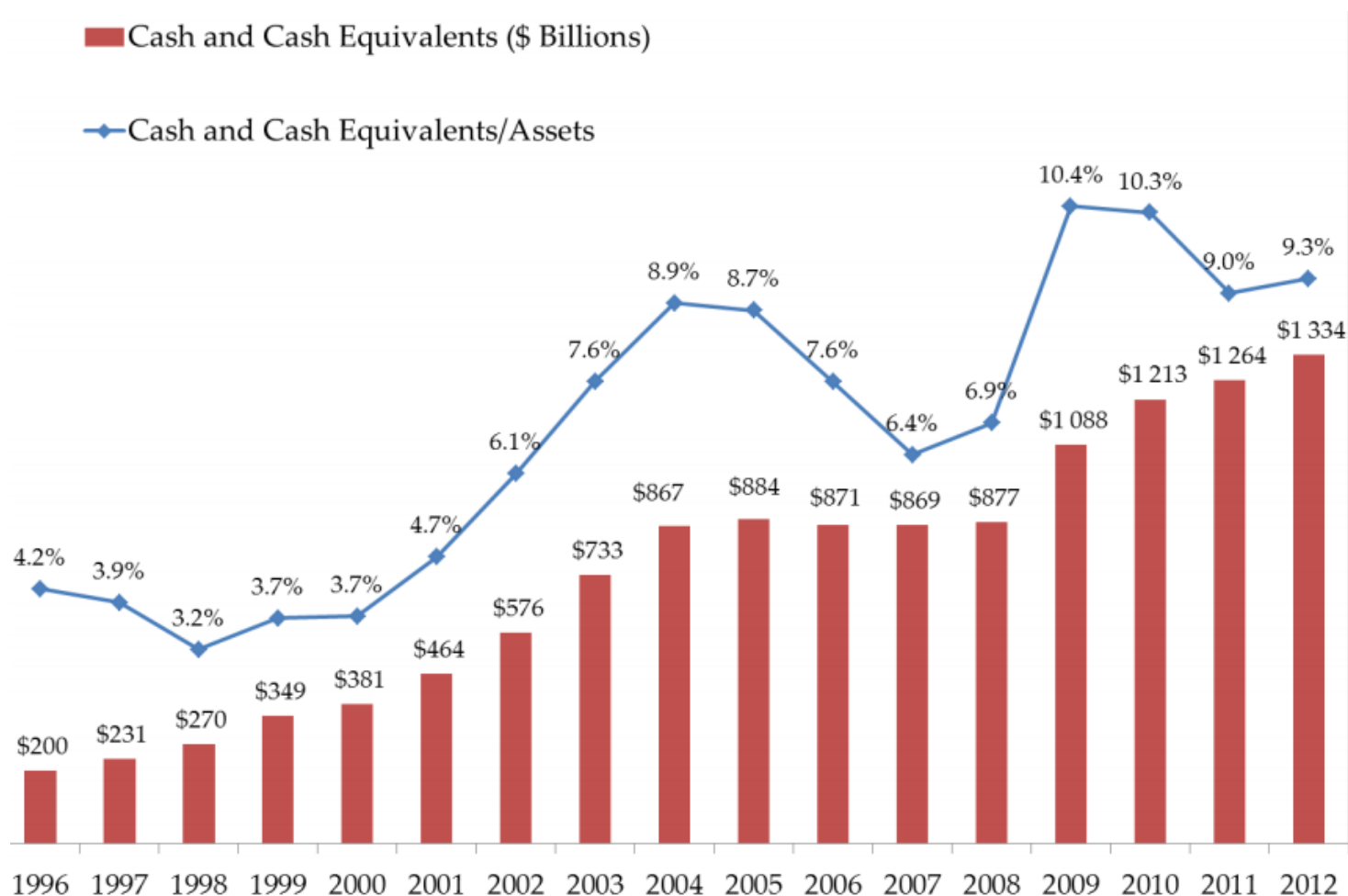
1. Liquidity
2. Debt versus equity
3. Value versus cost

Liquidity

- Refers to the ease and quickness with which assets can be converted to cash—without a significant loss in value
- Current assets are the most liquid.
- The more liquid a firm's assets, the less likely the firm is to experience problems meeting short-term obligations.
- Liquid assets frequently have lower rates of return than fixed assets.

Historical Cash Balances of Large Corporations (Non-financial S&P500 firms), Almeida et al (2013)

- Many U.S. firms hold substantial quantities of cash in other countries, and face substantial repatriation taxes should they return their cash to the U.S.



Debt versus Equity

- Creditors generally receive the first claim on the firm's cash flow.
- Shareholder's equity is the residual difference between assets and liabilities.
- Financial Leverage

Value versus Cost

- Market value is the price at which the assets, liabilities, and equity could actually be bought or sold, which is a completely different concept from historical cost.
- Book value （账目价值） vs. Market value （市场价值）

2.2 The Income Statement

- Measures financial performance over a specific period of time
- The accounting definition of income is:

$$\text{Revenue} - \text{Expenses} \equiv \text{Income}$$

Income Statement

U.S. CORPORATION 2012 Income Statement (\$ in millions)		
Net sales		\$1,509
Cost of goods sold		750
Depreciation		<u>65</u>
Earnings before interest and taxes		\$ 694
Interest paid		<u>70</u>
Taxable income		\$ 624
Taxes (34%)		<u>212</u>
Net income		<u><u>\$ 412</u></u>
Dividends	\$103	
Addition to retained earnings	309	

Depreciation (折旧)

- Depreciation is an income tax deduction that allows a taxpayer to recover the cost or other basis of certain property. It is an annual allowance for the wear and tear, deterioration, or obsolescence of the property. (IRS)
- The gradual reduction of an asset's value. Amount allocated during the period to amortize the cost of acquiring long-term assets over the useful life of the assets.
- To be clear, this is an accounting expense not a real expense that demands cash. It is often effectively a tax write-off; that is, a person or company usually may reduce his/her/its taxable income by the amount of the depreciation on the asset.

Alphabet Inc. - Income Statement (In millions)

	Year Ended December 31,		
	2013	2014	2015
Revenues	\$ 55,519	\$ 66,001	\$ 74,989
Costs and expenses:			
Cost of revenues	21,993	25,691	28,164
Research and development	7,137	9,832	12,282
Sales and marketing	6,554	8,131	9,047
General and administrative	4,432	5,851	6,136
Total costs and expenses	40,116	49,505	55,629
Income from operations	15,403	16,496	19,360
Other income (expense), net	496	763	291
Income from continuing operations before income taxes	15,899	17,259	19,651
Provision for income taxes	2,739	3,639	3,303
Net income from continuing operations	\$ 13,160	\$ 13,620	\$ 16,348
Net income (loss) from discontinued operations	(427)	516	0
Net income	\$ 12,733	\$ 14,136	\$ 16,348
Less: Adjustment Payment to Class C capital stockholders	0	0	522
Net income available to all stockholders	\$ 12,733	\$ 14,136	\$ 15,826

合并利润表

2015 年 1—9 月

编制单位:中国石油化工股份有限公司

单位:百万元 币种:人民币 审计类型:未经审计

项目	本期金额 (7-9 月)	上期金额 (7-9 月)	年初至报告期 期末金额 (1-9 月)	上年年初至报 告期期末金额 (1-9 月)
一、营业总收入	496,475	759,476	1,536,837	2,115,648
二、营业总成本	492,486	737,141	1,498,136	2,048,659
其中:营业成本	397,323	655,680	1,217,056	1,803,729
营业税金及附加	59,374	48,183	179,260	141,950
销售费用	11,771	11,672	34,150	33,732
管理费用	17,831	16,852	52,102	51,291
财务费用	4,585	2,000	7,730	8,539
勘探费用(包括干井成本)	1,480	2,736	7,511	8,288
资产减值损失	122	18	327	1,130
加:公允价值变动损益	(136)	42	(25)	(2,032)
投资收益	189	4,000	4,650	6,252
三、营业利润	4,042	26,377	43,326	71,209
加:营业外收入	1,417	836	3,282	2,207
减:营业外支出	662	588	1,595	2,189
四、利润总额	4,797	26,625	45,013	71,227
减:所得税费用	790	5,716	10,464	17,624
五、净利润	4,007	20,909	34,549	53,603

2.3 Taxes

- The one thing we can rely on with taxes is that they are always changing
- Marginal vs. average tax rates
 - Marginal – the percentage paid on the next dollar earned
 - Average – the tax bill / taxable income

Marginal versus Average Rates

- Suppose your firm earns \$11 million in taxable income.
 - What is the firm's tax liability?
 - What is the average tax rate?
 - What is the marginal tax rate?
- If you are considering a project that will increase the firm's taxable income by \$1 million, what tax rate should you use in your analysis?

Taxable Income		Tax Rate
\$	0– 50,000	15%
	50,001– 75,000	25
	75,001– 100,000	34
	100,001– 335,000	39
	335,001–10,000,000	34
	10,000,001–15,000,000	35
	15,000,001–18,333,333	38
	18,333,334+	35

- Tax liability: $15(50,000) + .25(75,000 - 50,000) + .34(100,000 - 75,000) + .39(335,000 - 100,000) + .34(10,000,000 - 335,000) + 0.35 (11,000,000 - 10,000,000) = 3,750,000$
- Average rate: $3,750,000 / 11,000,000 = .3409$ or 34%
- Marginal rate comes from the table, and it is 35%

2.4 Net Working Capital

□ $\text{Net Working Capital} = \text{Current Assets} - \text{Current Liabilities}$

- Net working capital is positive when current assets are greater than current liabilities. This means the cash that will become available over the next 12 months will be greater than the cash that must be paid out.
- In addition to investing in fixed assets (i.e., capital spending), a firm can invest in net working capital. This is called the change in net working capital

2.5 Financial Cash Flow

- **Cash flow from assets (CF(A))** involves three components: operating cash flow, capital spending, and change in net working capital
- **CFFA = Free Cash Flow**, refers to cash that the firm is free to distribute to creditors and stockholders because it is not needed for working capital or fixed asset investments
- Since there is no magic in finance, it must be the case that the cash flow received from the firm's assets must equal the cash flows to the firm's creditors and stockholders

$$CF(A) \equiv CF(B) + CF(S)$$

Operating cash flow (OCF)

- OCF refers to the cash flow that results from the firm's day-to-day activities of producing and selling.
- Expenses associated with the firm's financing of its assets are not included because they are not operating expenses.

U.S. CORPORATION 2012 Operating Cash Flow	
Earnings before interest and taxes	\$694
+ Depreciation	65
– Taxes	<u>212</u>
Operating cash flow	<u><u>\$547</u></u>

Net Capital Spending

- **Net capital spending** is just money spent on fixed assets less money received from the sale of fixed assets

Ending net fixed assets	\$1,709
– Beginning net fixed assets	1,644
+ Depreciation	<u>65</u>
Net capital spending	<u>\$ 130</u>

U.S. CORPORATION 2011 and 2012 Balance Sheets (\$ in millions)					
Assets			Liabilities and Owners' Equity		
	2011	2012		2011	2012
Current assets			Current liabilities		
Cash	\$ 104	\$ 160	Accounts payable	\$ 232	\$ 266
Accounts receivable	455	688	Notes payable	<u>196</u>	<u>123</u>
Inventory	<u>553</u>	<u>555</u>	Total	<u>\$ 428</u>	<u>\$ 389</u>
Total	<u>\$1,112</u>	<u>\$1,403</u>			
Fixed assets					
Net plant and equipment	<u>\$1,644</u>	<u>\$1,709</u>	Long-term debt	\$ 408	\$ 454
			Owners' equity		
			Common stock and paid-in surplus	600	640
			Retained earnings	<u>1,320</u>	<u>1,629</u>
			Total	<u>\$1,920</u>	<u>\$2,269</u>
			Total liabilities and owners' equity	<u>\$2,756</u>	<u>\$3,112</u>
Total assets	<u>\$2,756</u>	<u>\$3,112</u>			

U.S. CORPORATION 2012 Income Statement (\$ in millions)	
Net sales	\$1,509
Cost of goods sold	750
Depreciation	<u>65</u>
Earnings before interest and taxes	\$ 694
Interest paid	<u>70</u>
Taxable income	\$ 624
Taxes (34%)	<u>212</u>
Net income	<u>\$ 412</u>
Dividends	\$103
Addition to retained earnings	309

Change in Net Working Capital

- **Change in net working capital** is measured as the net change in current assets relative to current liabilities for the period being examined and represents the amount spent on net working capital
- Ending NWC = $1403 - 389 = 1014$
- Beginning NWC = $1112 - 428 = 684$

Ending NWC	\$1,014
– Beginning NWC	<u>684</u>
Change in NWC	<u><u>\$ 330</u></u>

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Example: Corporation

Balance Sheet

Assets			Liabilities & Owners' Equity		
	2011	2012		2011	2012
Current Assets			Current Liabilities		
Cash	\$104	\$160	Accounts Payable	\$232	\$266
Accounts Receivable	455	688	Notes Payable	196	123
Inventory	553	555	Total	\$428	\$389
Total	\$1,112	\$1,403			
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			Total	\$1,920	\$2,269
			Total Liabilities & Owners Equity	\$2,756	\$3,112
Total assets	\$2,756	\$3,112			

U.S. Corporation

Income Statement

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Taxes	212
Net Income	\$412
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- **CFFA** = **OCF – NCS - ΔNWC**
- OCF = EBIT + depreciation – taxes
= \$694 + 65 – 212 = **\$547**
- NCS = ending net FA– beginning net FA + depreciation
= \$1709 – 1644 + 65 = **\$130**
- ΔNWC = ending NWC – beginning NWC
= (\$1403 – 389) – (\$1112 – 428) = **\$330**
- **CFFA** = **547 – 130 – 330 = \$87**
- **Cash flow to creditor = Interest payment – Net borrowing = 70 – (454-408) = 24**
- **Cash flow to stock holder = dividend – net new equity = 103 – (640-600) = 63**

Cash Flow

I. The cash flow identity

$$\begin{aligned}\text{Cash flow from assets} &= \text{Cash flow to creditors (bondholders)} \\ &+ \text{Cash flow to stockholders (owners)}\end{aligned}$$

II. Cash flow from assets

$$\begin{aligned}\text{Cash flow from assets} &= \text{Operating cash flow} \\ &- \text{Net capital spending} \\ &- \text{Change in net working capital (NWC)}\end{aligned}$$

where:

$$\begin{aligned}\text{Operating cash flow} &= \text{Earnings before interest and taxes (EBIT)} \\ &+ \text{Depreciation} - \text{Taxes}\end{aligned}$$

$$\begin{aligned}\text{Net capital spending} &= \text{Ending net fixed assets} - \text{Beginning net fixed assets} \\ &+ \text{Depreciation}\end{aligned}$$

$$\text{Change in NWC} = \text{Ending NWC} - \text{Beginning NWC}$$

III. Cash flow to creditors (bondholders)

$$\text{Cash flow to creditors} = \text{Interest paid} - \text{Net new borrowing}$$

IV. Cash flow to stockholders (owners)

$$\text{Cash flow to stockholders} = \text{Dividends paid} - \text{Net new equity raised}$$

2.5 The Statement of Cash Flows (会计现金流量表)

- There is an official accounting statement called the statement of cash flows.
- This helps explain the change in accounting cash, which for U.S. Composite is \$56 million in 2012.
- The three components of the statement of cash flows are:
 - Cash flow from operating activities
 - Cash flow from investing activities
 - Cash flow from financing activities

The Statement of Cash Flows

- **Cash flow from operating activities:** the cash flow that results from the firm's normal activities in producing and selling goods and services
- **Cash flow from investing activities:** the cash flow from investing activities involves changes in capital assets: acquisition of fixed assets and sales of fixed assets
- **Cash flow from financing activities:** the cash flow flows to and from creditors and owners include changes in equity and debt

Cash Flow from Operating Activities

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Current Assets			Current Liabilities		
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Net Income	412
+ Depreciation	65
Changes in Assets and Liabilities	
- Change in Accounts receivable	-233
- Change in Inventories	-2
+ Change in Accounts payable	34
Cash flow from operating activities	276

Cash Flow from Investing Activities

Balance Sheet				
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-Ending net fixed asset	-1709
+beginning net fixed asset	+1644
<u>-Depreciation</u>	<u>-65</u>
Cash flow from investing activities	-130

Cash Flow from Financing Activities

Balance Sheet				
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Net new long-term debt	454-408=46
+ Change in notes payable	+(123-196)= -73
- Dividends	-103
+ Net new stock issuance	+(640-600)=+40
Cash flow from financing activities	-90

The Statement of Cash Flows

Cash flow from operating activities	276
Cash flow from investing activities	-130
<u>+ Cash flow from financing activities</u>	<u>-90</u>
	56

$$\text{Cash (2012)} - \text{Cash (2011)} = 160 - 104 = 56$$

- **Cash flow to creditor + Cash flow to stock holder = OCF – NCS - Δ NWC**
- $(\text{Interest payment} - \text{Net borrowing}) + (\text{dividend} - \text{net new equity}) =$
 $(\text{EBIT} + \text{depreciation} - \text{taxes})$
 $-(\text{ending net FA} - \text{beginning net FA} + \text{depreciation})$
 $-(\Delta\text{Cash} + \Delta\text{AR} + \Delta\text{Inventory} - \Delta\text{AP} - \Delta\text{NP})$
- $\Delta\text{Cash} = (\text{EBIT} + \text{depreciation} - \text{taxes}) - \Delta\text{AR} - \Delta\text{inventory} + \Delta\text{AP}$
 $+ (-\text{ending net FA} + \text{beginning net FA} - \text{depreciation})$
 $+ (-\text{Interest payment} + \text{Net borrowing}) + (-\text{dividend} + \text{net new equity}) + \Delta\text{NP}$
- $\Delta\text{Cash} = (\text{EBIT} + \text{depreciation} - \text{taxes} - \text{Interest payment}) - \Delta\text{AR} - \Delta\text{inventory} + \Delta\text{AP}$
 $+ (-\text{ending net FA} + \text{beginning net FA} - \text{depreciation})$
 $+ (\text{Net borrowing}) + (-\text{dividend} + \text{net new equity}) + \Delta\text{NP}$

Quick Quiz

- What is the difference between book value and market value? Which should we use for decision making purposes?
- What is the difference between accounting income and cash flow? Which do we need to use when making decisions?
- What is the difference between average and marginal tax rates? Which should we use when making financial decisions?