

Long-lived Assets

15.501/516 Accounting
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Changes in Depreciation Estimates

- Caused by change in asset life or Salvage Value
- Apply the change prospectively, i.e., to future years (no restatement of past years' results)
- Example: Cost = \$100K, SV = 0, Initial UL estimate of 5 years. After 2nd year, spend \$30K on improvement that extends UL by 3 years (i.e., to total of 8).
 - What is annual depreciation expense for each of the first two years?
 - What is book value at the end of 2nd year?
 - How do we account for the improvement?
 - What is annual depreciation expense for years 3 and beyond?

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Changes in Depreciation Estimates

- Example: Cost = \$100K, SV = 0, Initial UL estimate of 5 years. After 2nd year, spend \$30K on improvement that extends UL by 3 years (i.e., to total of 8).
- What is annual depreciation expense for each of the first two years?
 - $\$(100 - 0)/5 = \$20K$
- What is book value at the end of 2nd year?
 - $\$[100 - (20 \times 2)] K = \$60k$
- How do we account for the improvement?
 - Capitalize the improvement costs. BV increases to $\$(60+30) = 90K$
- What is annual depreciation expense for years 3 and beyond?
 - Years left = $(5-2) + 3 = 6$
 - Therefore, depreciation expense = $\$90K/6 = \15

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Changes in Depreciation Estimates

	Cash	PP&E	- Acc. Depr	= L	Ret. Earn
Acquire PP&E					
Yr 1 Depr.					
Yr 2 Depr					
Improve ment					
Year 3 Depr.					

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Changes in Depreciation Estimates

	Cash	PP&E	- Acc. Depr	= L	Ret. Earn
Acquire PP&E	-100	100			
Yr 1 Depr.					
Yr 2 Depr					
Improve ment					
Year 3 Depr.					

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Changes in Depreciation Estimates

	Cash	PP&E	- Acc. Depr	= L	Ret. Earn
Acquire PP&E	-100	100			
Yr 1 Depr.			20		-20
Yr 2 Depr			20		-20
Improve ment					
Year 3 Depr.					

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Disposal (retirement): Gain or Loss

- **Computation:**
 - Gain (Loss) = Proceeds from selling the asset - book value,
 - where $BV = \text{Acquisition cost} - \text{Accumulated Depreciation}$ associated with the asset
- **Bookkeeping:** Remove asset's historical cost and accumulated depreciation from the balance sheet and record Gain (Loss).
- Example: At end of 7th year, when BV is \$15K, sell Asset from last example for scrap value of \$2K.

	<u>Cash</u>	+ <u>PP&E</u>	- <u>Acc. Dep.</u>	+ <u>OA</u>	=	<u>L</u>	+ <u>CC</u>	+ <u>RE</u>	
BB		130K	115K						
Sale	2K	(130K)	(115K)					(13)	
EB		0	0						

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Disposal

	<u>Gross PP&E</u>	<u>Acc. Deprecn.</u>	
	130 130	115 115	
			Book value at time of sale = 15
			Sale value = 2
			Book value after sale = 0
<u>Cash</u>		<u>Loss on sale (RE)</u>	
2k		13k	

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Gain/loss on sale of asset – book keeping

Dr Cash		002k
Dr Loss on sale of asset		013k
Dr Acc. Deprecn.		115k
Cr PP&E		130k

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A brief review of the SCF

- **Cash From (Used by) Investing Activities:**
 - Report Cash Used to Purchase PP&E
 - Report Cash Rec'd (if any) from Disposing off PP&E

- **Cash From (Used by) Financing Activities:**
 - What if PP&E is purchased using borrowed funds?

- **Cash From (Used by) Operating Activities:**
 - Under the Indirect Method, firms start with Reported Net Income and remove non-cash effects
 - What non-cash effects of PP&E bookkeeping are embedded in Net Income?

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An Application: Inferring PP&E Events

Following are excerpts from Nike's financial statements

Balance Sheet		<u>1998</u>	<u>1997</u>
Property, plant and equipment, net (Note 3)		1,153.1	922.4
Identifiable intangible assets (Notes 1 and 6)		435.8	464.2
Statement of Cash Flows -- Operations			<u>1998</u>
Net Income			\$399.6
Depreciation			184.5
Amortization and other			49.0
Statement of Cash Flows -- Investing			
Additions to property, plant and equipment			(505.9)
Disposals of property			16.8

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An Application: Inferring PP&E Events

Note 3 - PROPERTY, PLANT AND EQUIPMENT
Property, plant and equipment includes the following:

	<u>1998</u>	<u>1997</u>
Land	\$ 93.0	\$ 90.8
Buildings	337.3	241.1
Machinery and equipment	887.4	735.7
Construction in process	<u>248.2</u>	<u>151.6</u>
	1,819.6	1,425.8
Less accumulated depreciation	<u>666.5</u>	<u>503.4</u>
	\$1,153.1	\$ 922.4

Capitalized interest expense was \$6.5 MM, \$2.8 MM, and \$0.9 MM for the fiscal years ended May 31, 1998, 1997 and 1996 respectively.

Courtesy of U.S. Securities and Exchange Commission. Used with permission.

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An Application: Inferring PP&E Events

The change in Nike's Accumulated Depreciation account is
 $\$666.5 - \$503.4 = \$163.1\text{MM}$.

What 1998 events probably accounted for this change?

The change in Nike's gross PP&E account is
 $\$1,819.6 - \$1,425.8 = \$393.8\text{MM}$.

What 1998 events probably accounted for this change?

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An Application: Inferring PP&E Events

PP&E (A)	
Beg Balance	
Additions	Disposals
Ending balance	

Accumulated depreciation (XA)	
Acc Dep of disposed off assets	Beg Balance Depreciation expense
	Ending balance

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An Application: Inferring PP&E Events

PP&E (A)	
Beg Balance	1425.8
Additions	505.9
	112.1 Disposals
Ending balance	1819.6

Accumulated depreciation (XA)	
Acc Dep of disposed off assets	503.4 Beg Balance 184.5 Depreciation expense
	21.4
	666.5 Ending balance

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An Application: Inferring PP&E Events

Investing CF from disposals of property = \$16.8

But the PP&E account shows disposals = \$112.1 and Acc Dep associated with disposals = \$21.4

Hence, BV of disposals = \$112.1 - \$21.4 = \$90.7

Loss on disposals = \$90.7 - \$16.8 = \$73.9

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Tax and Timing Effects

- Tax Depreciation
 - Accelerated depreciation
 - No judgment in determining depreciation expense
- Tax Reporting ≠ Financial Reporting ==> timing differences in measurement of income
 - Why would a firm prefer accelerated depreciation for tax purposes?
 - Why does government allow this?
 - Why not use the tax method for financial reporting?
- Different depreciation for tax and financial reporting gives rise to *Deferred Taxes*

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Tax and Timing Effects

Cooke Company bought a \$90,000 asset at the beginning of 2000.

	Financial reporting		Tax reporting	
Asset life	3 years		2 years	
Depreciation rate	Straight line		MACRS: 60%, 40%	
Residual value	\$0		\$0	
Year	Financial reporting depreciation	Tax reporting depreciation	Schedule of depreciation Depreciation difference	Accumulated difference, end of the year
2000	30,000	54,000	24,000	24,000
2001	30,000	36,000	6,000	30,000
2002	30,000	-	(30,000)	0

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Accounting for Timing Differences: 2000

- In Year 1, income before depreciation is \$80,000 for both financial and tax reporting. The tax rate is 30% with no anticipated change.

	<u>Financial reporting</u>	<u>Tax reporting</u>
NI before Depr	80,000	80,000
– Depreciation	<u>30,000</u>	<u>–54,000</u>
= NI before taxes	50,000	26,000
	<u>× 30%</u>	<u>× 30%</u>
Tax Payable		7,800
Tax Expense	15,000	

Tax Expense = Tax Payable + ???
 ??? = \$7,200 is "Deferred Tax Expense"

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Deferred Taxes over Time

Deferred taxes caused by timing differences are temporary; they reverse over time.

Year	Financial reporting depreciation	Tax reporting depreciation	Depreciation difference	Deferred Tax Expense	Acc. Depr Difference, (EB)	Def Tax Liability (EB)
2000	30,000	54,000	24,000	7,200	24,000	7,200
2001	30,000	36,000	6,000	1,800	30,000	9,000
2002	30,000	-	(30,000)	(9,000)	0	0

- Timing differences that create / increase deferred taxes are called **originating differences**
- Timing differences that remove / decrease deferred taxes are called **reversing differences**

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Summary

- Depreciation is a systematic allocation of capital expenditures over the revenue-producing period of a long-lived asset (matching principle).
- Depreciation is a function of acquisition cost, economic life, depreciation rate, and salvage value.
- Depreciation does not involve cash. Only the acquisition and disposal of long-lived assets involve cash.
- Deferred taxes arise due to differences in book (GAAP) and tax depreciation.

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