



Long-lived Assets

15.511 Corporate Accounting
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Professor SP Kothari
Sloan School of Management
Massachusetts Institute of Technology

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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?

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

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.					

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.					

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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Acquire PP&E	–100	100			
Yr 1 Depr.			20		–20
Yr 2 Depr			20		–20
Improve ment	–30	+30			
Year 3 Depr.					

Changes in Depreciation Estimates

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Acquire PP&E	–100	100			
Yr 1 Depr.			20		–20
Yr 2 Depr			20		–20
Improve ment	–30	+30			
Year 3 Depr.			15		–15

Disposal (retirement): Gain or Loss

Computation:

- Gain (Loss) = Proceeds from selling the asset - book value,
 - *where BV = Acquisition cost - 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													
EB													

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BB	.	130K	115K
Sale	2K	(130K)	(115K)				(13)
EB		0	0				



Disposal

Gross PP&E

130	130
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Acc. Deprecn.

115	115
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Book value at time of sale = 15

Sale value = 2

Book value after sale = 0

Cash

2k	
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Loss on sale (RE)

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



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?

An Application: Inferring PP&E Events

Following are 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

- Data source: Nike, Inc. *Fiscal Year 1998 Annual Report*. 1999.

An Application: Inferring PP&E Events

Property, plant and equipment includes:

	1998	1997
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.”

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?

An Application: Inferring PP&E Events

PP&E (A)

Beg Balance	
Additions	Disposals
Ending balance	

Accumulated depreciation (XA)

	Beg Balance
	Depreciation expense
Acc Dep of disposed off assets	
	Ending balance

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)

		503.4	Beg Balance
		184.5	Depreciation expense
Acc Dep of disposed off assets	21.4		
		666.5	Ending balance



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



Tax and Timing Effects

- Tax Depreciation
 - Accelerated depreciation
 - No judgment in determining depreciation expense
- Tax Reporting \neq Financial Reporting \implies 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*

Tax and Timing Effects

Cambridge Innovations bought a \$90,000 asset at the beginning of 2001.

<i>Financial reporting</i>		<i>Tax reporting</i>		
Asset life	3 years		2 years	
Depreciation rate	Straight line		MACRS: 60%, 40%	
Residual value	\$0		\$0	
<i>Schedule of depreciation</i>				
Year	Financial reporting depreciation	Tax reporting depreciation	Depreciation difference	Accumulated difference, end of the year
2001	30,000	54,000	24,000	24,000
2002	30,000	36,000	6,000	30,000
2003	30,000	-	(30,000)	0

Accounting for Timing Differences: 2001

- 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><i>Financial reporting</i></u>	<u><i>Tax reporting</i></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”

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)
2001	30,000	54,000	24,000	7,200	24,000	7,200
2002	30,000	36,000	6,000	1,800	30,000	9,000
2003	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***



Summary

- Depreciation is the 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.