

Long-lived Assets

15.501/516 **Accounting**
Spring 2004

Professor S. Roychowdhury
Sloan School of Management
Massachusetts Institute of Technology



March 15, 2004

1

Some Important Matters

- Problem sets 5&6
 - Due April 5
- Final exam
 - May 17, 1.30-4.30
- Date and time inflexible – set by Sloan School
- Please let me know by the end of this week if there is any conflict
- **NO GUARANTEES ON FINDING YOU A ROOM AND TIME THAT WILL SUIT YOU – SO PLAN TO ATTEND EXAM AT SCHEDULED TIME**

2

Agenda

- Understand how the matching principle influences
 - the capitalization of long-lived assets
 - the expensing of capitalized costs to match revenues generated in the use of long-lived assets
- Understand how differences in “book” vs. tax accounting for depreciation lead to deferred taxes

3

Review of Matching Principle

- Capitalize versus Expense
 - Capitalized Costs means show it as an Asset on the Balance Sheet
 - Assets have future benefits
 - Expense (i.e., not capitalize) when
 - benefits are immediate
 - OR future benefits are too uncertain or immaterial (e.g., R&D)
- Assets are consumed (in future) to generate future revenues
 - Current Assets like Inventory, Prepaid Rent, and Insurance
 - Non-current assets like Plant, buildings, machinery
 - NC Intangible assets like Patents, acquired goodwill

4

The case of non-current assets: PP&E

- Accounting for Non-Current assets:
 - What is the acquisition cost?
 - What is the expected useful service life?
 - What is the salvage value?
 - What pattern of depreciation should be used to allocate expense over the useful life?
- **Note:** Land is the only non-current asset that is never depreciated / amortized

5

Determining Acquisition Cost

- What is given up to obtain the asset?
 - Include all costs required to bring the asset into serviceable or usable condition and location.
- Purchased Assets: Purchase price plus cost to prepare the asset for use (installation, transport)
 - Case 1: Cash
 - Case 2: Financing (down payment plus loan/note)
- Self-Constructed Assets
 - Direct costs of construction
 - Financing costs (interest on funds borrowed to finance construction)

6

Determining the Acquisition Cost

- Purchased Assets: Example 1
- Lowery, Inc. purchases new equipment on 1/1/02. The firm
 - pays \$920,000 to the vendor of the machine
 - pays \$62,000 to transport the equipment
 - pays \$10,000 for insurance during transportation
 - estimates that maintenance will cost \$4,000 in the first year, and will rise by about 20% annually for 10 years
- What is the balance sheet effect on 1/1/02?
 - Asset, Equipment = \$992,000 (= 920 + 62 + 10)

7

Determining the Acquisition Cost

- Purchased Assets: Example 2
- Portland Products acquires a work-station on 1/1/02. The firm
 - pays a \$20,000 down payment to the vendor
 - signs a 3-year note payable for \$180,000 at an annual interest rate of 10%
 - pays employees \$5,500 to configure the work-station for daily operations and run appropriate tests
 - spends \$12,000 to train the employees who will operate the work-station
- What is the balance sheet effect on 1/1/02?
 - Asset, Work station = \$205,500 (= 20 + 180 + 5.5)

8

Determining the Acquisition Cost

Self-constructed Assets: Example

- Myers Manufacturing is constructing a new production facility. Expected completion date is 6/1/2002.
- During 2001, the company
 - spends \$1.2 million for materials
 - pays \$1.6 million to architects and laborers
 - accrues interest payable equal to 10% of a \$1.5 million construction loan
 - incurs fees related to zoning, inspection, etc. of \$65,000
- What is the balance sheet effect as of 12/31/01?
 - Asset, Factory building construction in progress = \$3,015,000 (= 1,200 + 1,600 + 150 + 65)

9

Salvage Value and Useful Life

- Determining Salvage Value
 - Requires managerial judgment
 - $SV = \text{estimated proceeds at disposal, net of selling costs}$
 - What factors can affect this estimate?
 - **Depreciable basis** = Acquisition cost - SV
- Determining Useful life
 - Requires managerial judgment
 - The time period over which the asset will be used
 - What factors can affect the estimate?
- Choose depreciation method
 - What does GAAP allow?

10

GAAP Depreciation Methods

- Production (Use) Method
 - Depreciation cost per machine-hour = depreciable basis/service life (in machine-hours)
 - $\text{Depr. Expense} = \text{Actual hours used} * \text{hourly rate}$
- Example:
 - A machine with depreciable basis of \$50,000 is expected to provide 20,000 hours of service. During Year 1, the machine is used for 2,500 hours.
 - What is the depreciation expense for Year 1?
 - $\$2,500 * [50,000 / 20,000] = \$6,250$
 - What is the machine's book value at the end of Year 1?
 - $\$50,000 - \$6,250 = \$43,750$

11

GAAP Depreciation Methods

- Straight-line Depreciation
 - Annual Depreciation Expense = depreciable basis/service life (in years) = $(AC - SV) / \text{Years}$
 - Used by an overwhelming majority of US firms
- Example:
 - Hertz acquires cars for its rental fleet for \$30,000 each. It expects to rent each car for 2 years, then sell them for \$15,000 each.
 - What is the depreciation expense per car for Year 1?
 - $(\$30,000 - \$15,000) / 2 = \$7,500$
 - What is each car's book value at the end of Year 1?
 - \$22,500

12

Depreciation Bookkeeping

- At the time of acquisition of the asset:

Dr PP&E	30,000
Cr Cash	30,000
- Say SV = 15,000
- Depreciable basis = (30,000 – 15,000)
- Depreciation = (Depreciable basis)/(useful life)

$$= 15,000/2 = 7,500$$

Dr Depreciation Expense	7,500
Cr Accumulated Depreciation	7,500

13

Depreciation Bookkeeping

<p>At the beginning of first year</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center;">PP&E</td> </tr> <tr> <td style="border-top: 1px solid black; border-bottom: 1px solid black; text-align: center;">30,000</td> </tr> </table>	PP&E	30,000	<p>At the end of first year</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding-right: 20px;">Gross PP&E</td> <td style="text-align: right;">30,000</td> </tr> <tr> <td style="padding-right: 20px;">Less: Acc Deprecn.</td> <td style="text-align: right;">07,500</td> </tr> <tr> <td style="padding-right: 20px;"><i>Net PP&E</i></td> <td style="text-align: right;"><i>22,500</i></td> </tr> <tr> <td style="padding-right: 20px;"><i>Income effect</i></td> <td style="text-align: right;"><i>-07,500</i></td> </tr> </table>	Gross PP&E	30,000	Less: Acc Deprecn.	07,500	<i>Net PP&E</i>	<i>22,500</i>	<i>Income effect</i>	<i>-07,500</i>
PP&E											
30,000											
Gross PP&E	30,000										
Less: Acc Deprecn.	07,500										
<i>Net PP&E</i>	<i>22,500</i>										
<i>Income effect</i>	<i>-07,500</i>										
<p>At the end of first year</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center; width: 33%;">PP&E</td> <td style="text-align: center; width: 33%;">Acc. Deprecn.</td> <td style="text-align: center; width: 33%;">Deprecn. Expense (RE)</td> </tr> <tr> <td style="border-top: 1px solid black; border-bottom: 1px solid black; text-align: center;">30,000</td> <td style="border-top: 1px solid black; border-bottom: 1px solid black; text-align: center;">7,500</td> <td style="border-top: 1px solid black; border-bottom: 1px solid black; text-align: center;">7,500</td> </tr> </table>	PP&E	Acc. Deprecn.	Deprecn. Expense (RE)	30,000	7,500	7,500					
PP&E	Acc. Deprecn.	Deprecn. Expense (RE)									
30,000	7,500	7,500									

14

GAAP Depreciation Methods

- **Accelerated Depreciation**
 - Mostly confined to tax reporting
 - Higher depreciation expense is recognized in the earlier years of an asset's useful life
- Differences between Tax *depreciation deductions* and Financial Reporting *depreciation expense* give rise to **Deferred Tax accounts**
 - More on this at end of lecture

15

Depreciation Bookkeeping

- What accounts does depreciation affect?
 - Accumulated depreciation account, contra-asset account
 - Retained earnings account, depreciation expense

Which financial statements are affected?

- Balance sheet and income statement

Does depreciation affect cash?

- No
