

# Construction Accounting and Financial Management

## Chapter 5 Depreciation

### Purpose

- Financial statements
- Cost allocation of equipment
- Taxes

### Variables

- $P$  = Purchase price
- $F$  = Salvage Value
  - Zero for tax purposes
- $N$  = Recovery period (years)
  - Set by code for tax purposes

### Variables

- $R_m$  = Percentage of depreciation taken in year  $m$
- $D_m$  = Depreciation for year  $m$
- $BV_m$  = Book value at the end of year  $m$ 
  - Book value equals the purchase price less the depreciation recorded to date

### Straight-Line

- Depreciates uniformly over the life of the asset
- Annual depreciation
  - $D_m = (P - F)/N$
- Book Value
  - $BV_m = P - m(D_m)$
  - or-
  - $BV_m = BV_{m-1} - D_m$

### Straight-Line

$m$	$R_m$	$D_m$ (\$)	$BV_m$ (\$)
0			110,000
1	1/5	20,000	90,000
2	1/5	20,000	70,000
3	1/5	20,000	50,000
4	1/5	20,000	30,000
5	1/5	20,000	10,000

## Sum-of-the-Years

- Accelerates depreciation

- Annual depreciation

$$D_m = (P - F)R_m$$

$$R_m = (N - m + 1)/SOY$$

$$SOY = N(N + 1)/2$$

- Book Value

$$BV_m = BV_{m-1} - D_m$$

## Sum-of-the-Years

$m$	$R_m$	$D_m$ (\$)	$BV_m$ (\$)
0		0	110,000
1	5/15	33,333	76,667
2	4/15	26,667	50,000
3	3/15	20,000	30,000
4	2/15	13,333	16,667
5	1/15	6,667	10,000

## Declining-Balance Method

- Accelerates depreciation

- Annual depreciation

$$D_m = (BV_{m-1})R_m$$

- $R_m = 2.00/N$  for 200% declining-balance
- $R_m = 1.50/N$  for 150% declining-balance

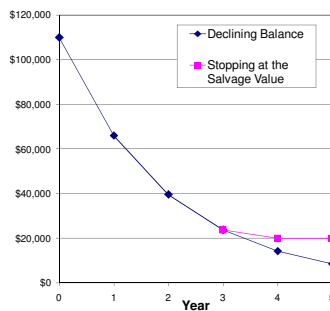
- Book Value

$$BV_m = BV_{m-1} - D_m$$

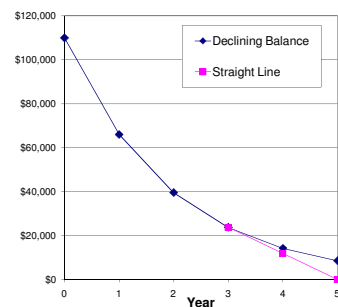
## Declining-Balance Method

- Does not automatically reach salvage value
- Must stop depreciation at salvage value when book value goes below salvage value
  - or -
- Must switch to straight-line depreciation when the straight-line depreciation for the remaining years is greater than declining-balance depreciation

## Stopping at Salvage Value (\$20,000)



## Switching to Straight Line (SV = 0)



## MACRS

- Modified accelerated cost recovery system
- The IRS's rules for depreciation
- Depreciation methods used:
  - Double declining balance
  - 150 declining balance
  - Straight line
- Includes rules for placing and removing assets from service

## Placing in Service

- Half-year
  - General rule
- Mid-quarter
  - Must use when placing 40% or more of assets in service during the last quarter
- Mid-month
  - For real estate

## IRS Recovery Periods

- **Three-year:** Rent-to-own property and tractors
- **Five-year:** Automobiles, light general purpose trucks, calculators, copiers, computer equipment, concrete trucks, heavy general purpose trucks, trailers, and other construction assets
- **Seven-year:** Office furniture, office equipment, and railroad tracks
- **Ten-year:** Vessels, barges, tugs, and other water transportation equipment
- **Fifteen-year:** Retail motor fuel outlets

## IRS Recovery Periods

- **Twenty-year:** Farm buildings
- **Twenty-five-year:** Municipal sewers, water treatment plants, and water distribution lines
- **Twenty-seven-and-a-half-year:** Residential real estate where more than 80% of the rent is derived from the dwelling units
- **Thirty-nine-year:** Non-residential real estate
- **Fifty-year:** Railroad roadbeds, right-of-ways, and tunnels

## Use of Depreciation Tables

- Find correct table
- Find correct recovery period for asset across top of table
- Percentages are percentage of asset value depreciated during the year
  - not the percent of the previous year's book value

## Use of Depreciation Tables

Table S-6  
Depreciation Rates for 200% Declining-Balance Using the Half-Year Convention

Year	3 years (%)	5 years (%)	7 years (%)	10 years (%)
1	33.33	20.00	14.29	10.00
2	44.45	32.00	24.49	18.00
3	14.81	19.20	17.49	14.40
4	7.41	11.52	12.49	11.52
5	NA	11.52	8.93	9.22
6	NA	5.76	8.92	7.37
7	NA	NA	8.93	6.55
8	NA	NA	4.46	6.55
9	NA	NA	NA	6.56
10	NA	NA	NA	6.55
11	NA	NA	NA	3.28

IRS, Instructions for Form 4562, 2008, p. 13

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## Section 179

- Can expense up to \$250,000 (for 2009) of equipment without depreciation
  - Deduction is reduced if you place more than \$800,000 of Section 179 property in services during the year
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