Depreciation Methods-II: MACRS!

Modified Accelerated Cost Recovery System

MACRS Method

An outcome of the 1986 Tax Reform Act

Modified Accelerated Cost Recovery System

Because depreciation and amortization affect income taxes, the Internal Revenue Service (IRS) is very specific on how to calculate it.

See IRS Publication 946!

https://www.irs.gov/publications/p946

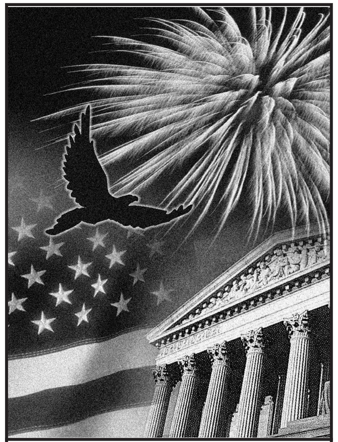
Department of the Treasury
Internal Revenue Service

Publication 946
Cat. No. 13081F

How To Depreciate Property

- **Section 179 Deduction**
- **Special Depreciation Allowance**
- **MACRS**
- **Listed Property**

For use in preparing
2020 Returns



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Mar 17, 2021

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MACRS Method of Depreciation

The 1986 US Tax Reform Act created MACRS – a prescriptive but simplified method to calculate depreciation.

- “Asset Classes” are defined for all sorts of equipment and activities.
- Recovery Periods are specified for each Asset Class, replacing somewhat more arbitrary estimates of “Useful Life”.
- Salvage Values are assumed to be zero
- Schedules were created for each year of depreciation
- ½-Year conventions are adopted

With MACRS, the IRS tells us exactly how to depreciate an asset.

MACRS Asset Class Definitions - Examples

Asset Class	Description	Recovery Period (Years)
00.11	Office Furniture and Fixture	7
00.12	Information Systems:	5
00.22	Automobiles and Taxis	5
00.23	Buses	5
00.24	Light Trucks	5
10.00	Mining Equipment	7
13.3	Petroleum Refining	10
15.0	Construction Equipment	5
26.1	Manufacture of Pulp and Paper	7
30.2	Manufacture of Plastics	7
32.1	Manufacture of Glass	7
37.2	Manufacture of Aerospace Products	7
49.11	Electric Utility Combustion Turbine Plant	15

MACRS Asset Recovery Periods

Recovery Period	Examples of Asset Type
3 years	Special Tools used in Manufacturing
5 years	Computers, Automobiles, Trucks, R&D Equipment
7 years	Manufacturing Equipment, Office Furniture
10 years	Petroleum Refining, Grain Milling, Certain Marine Vessels
15 years	Electric Utilities, Wastewater Treatment Plants
20 years	Telephone Communications, Electricity Distribution Systems
27.5 years	Residential Rental Property
39 years	Non-Residential Rental Property

The MACRS Depreciation Process

Calculating the depreciation expense under MACRS…

1. Determine the Asset Class (which then determines the recovery period)
2. Determine the Cost Basis (initial cost plus costs to get it operational)
3. Use the IRS' tables to determine the depreciation rate for each year of the recovery period

MACRS begins with a Declining Balance (DB, 150%) or Double Declining Balance (200%) approach, then switches to the Straight-Line method to ensure the Book Value is $0 at the end of the Recovery Period.

MACRS Depreciation Rate Schedules

Year	Depreciation rate for recovery period					
	3-year	5-year	7-year	10-year	15-year	20-year
1	33.33%	20.00%	14.29%	10.00%	5.00%	3.750%
2	44.45	32.00	24.49	18.00	9.50	7.219
3	14.81	19.20	17.49	14.40	8.55	6.677
4	7.41	11.52	12.49	11.52	7.70	6.177
5		11.52	8.93	9.22	6.93	5.713
6		5.76	8.92	7.37	6.23	5.285
7			8.93	6.55	5.90	4.888
8			4.46	6.55	5.90	4.522
9				6.56	5.91	4.462
10				6.55	5.90	4.461
11				3.28	5.91	4.462
12					5.90	4.461
13					5.91	4.462
14					5.90	4.461
15					5.91	4.462
16					2.95	4.461
17						4.462
18						4.461
19						4.462
20						4.461
21						2.231

These values are multiplied by the Cost Basis to determine the annual depreciation expense.

Note: there is 1 more year than the recovery period. This has to do with the ½-year convention!

MACRS: 5-Year Depreciation Rate Schedule

½-Year Convention

Year	5-Year Depreciation Rate
1	0.2000
2	0.3200
3	0.1920
4	0.1152
5	0.1152
6	0.0576

Note this is ½ what it should be: the "1/2 – year convention"

Here is the other ½

Rationale for the ½-Year convention: the equipment (asset) is installed at the midpoint of the year, and then taken out of service at the midpoint of the year.

Our Example, Now with MACRS

A new asset costs \$80,000, has a 5-year recovery period, and is estimated to have a salvage value of \$10,000. What is the Depreciation Expense and Book Value over time?

Note: salvage value never enters into the analysis.

Year	5-Year Depreciation Rate	MACRS Depreciation Expense (\$)	Book Value (\$)
0	-	-	\$80,000
1	0.2000	\$16,000	\$64,000
2	0.3200	\$25,600	\$38,400
3	0.1920	\$15,360	\$23,040
4	0.1152	\$9,216	\$13,824
5	0.1152	\$9,216	\$4,608
6	0.0576	\$4,608	\$0

0.2000 x \$80,000 = \$16,000

0.3200 x \$80,000 = \$25,600

0.1920 x \$80,000 = \$15,360

0.1152 x \$80,000 = \$9,216

0.1152 x \$80,000 = \$9,216

0.0576 x \$80,000 = \$4,608

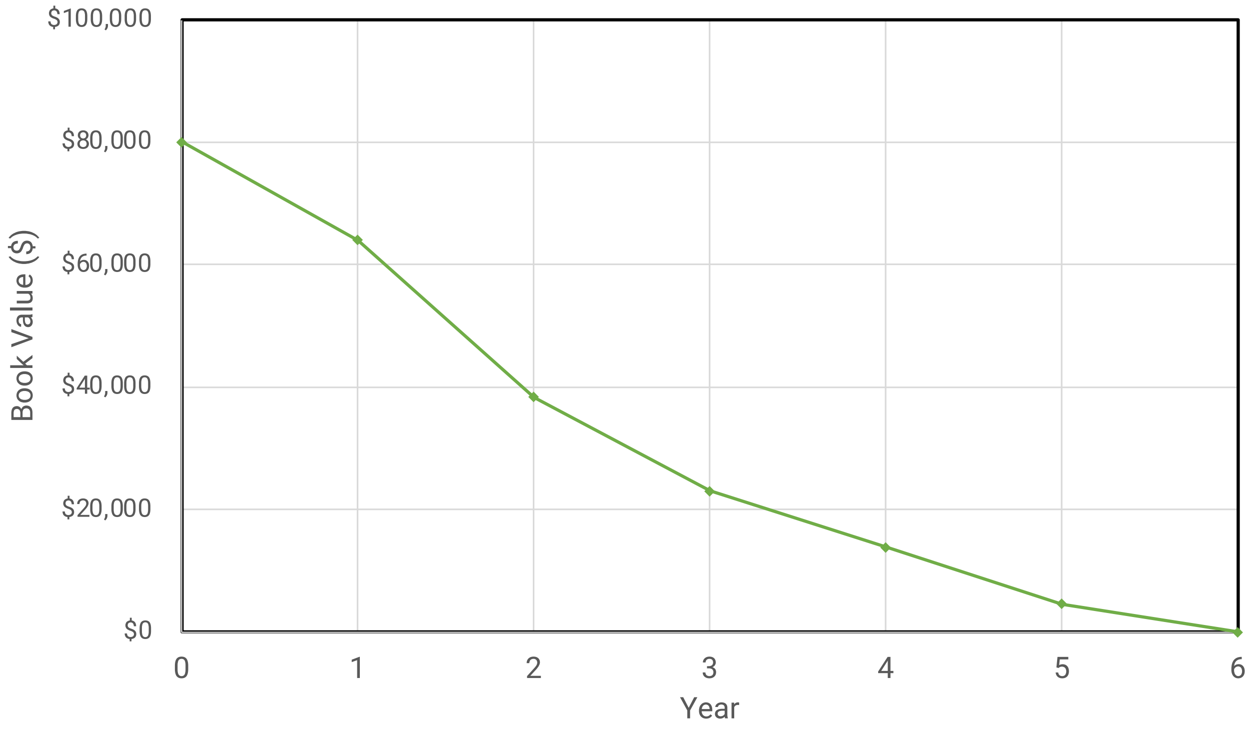
Our Example, Now with MACRS

A new asset costs $80,000, has a 5-year recovery period, and is estimated to have a salvage value of $10,000. What is the Depreciation Expense and Book Value over time?

MACRS Depreciation

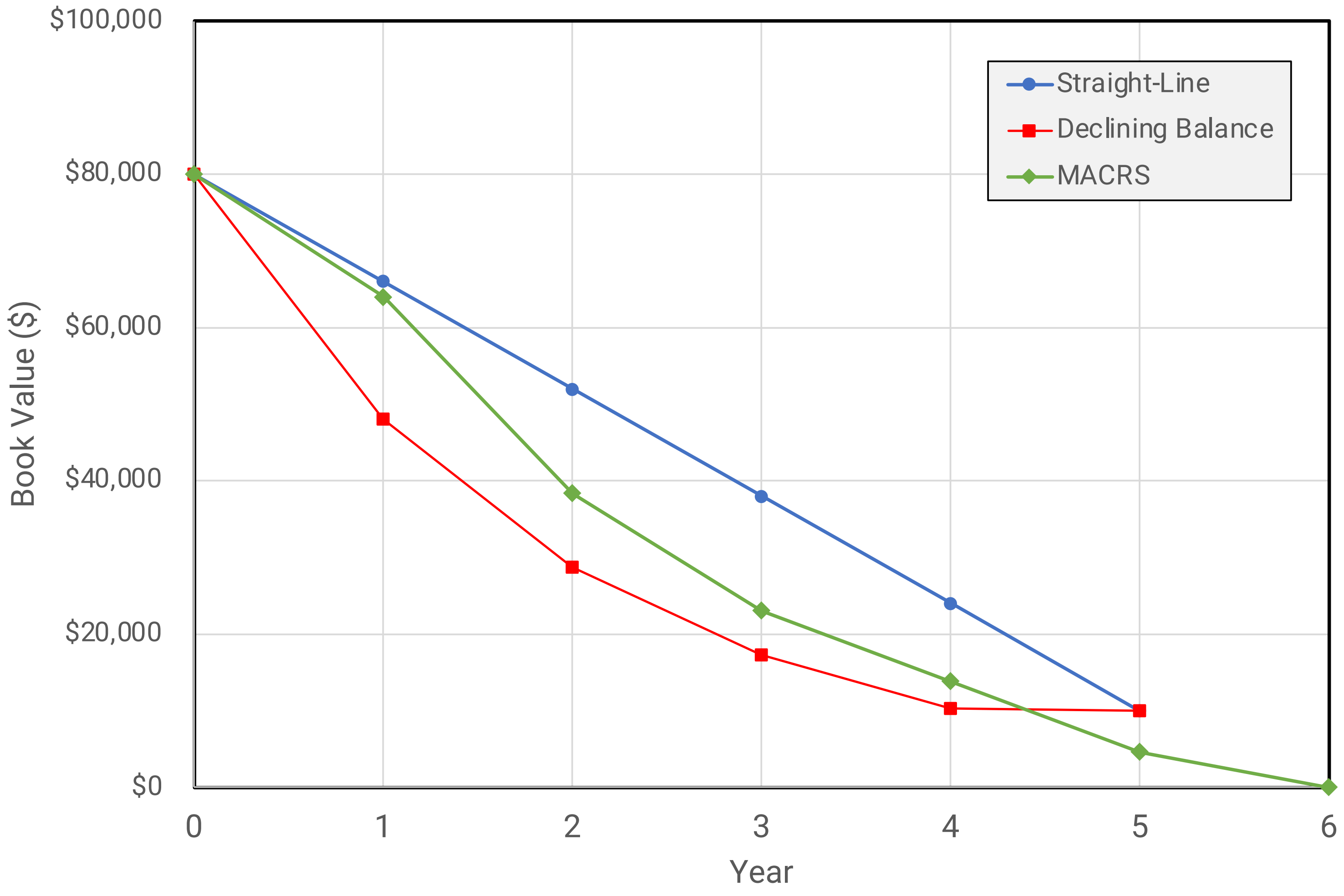
Cost Basis:	$80,000
Recovery Period:	5
Salvage Value:	$10,000

Year	MACRS Depreciation Rate	Depreciation Expense ($)	Book Value ($)
0			$80,000
1	0.2	$16,000	$64,000
2	0.32	$25,600	$38,400
3	0.192	$15,360	$23,040
4	0.1152	$9,216	$13,824
5	0.1152	$9,216	$4,608
6	0.0576	$4,608	$0



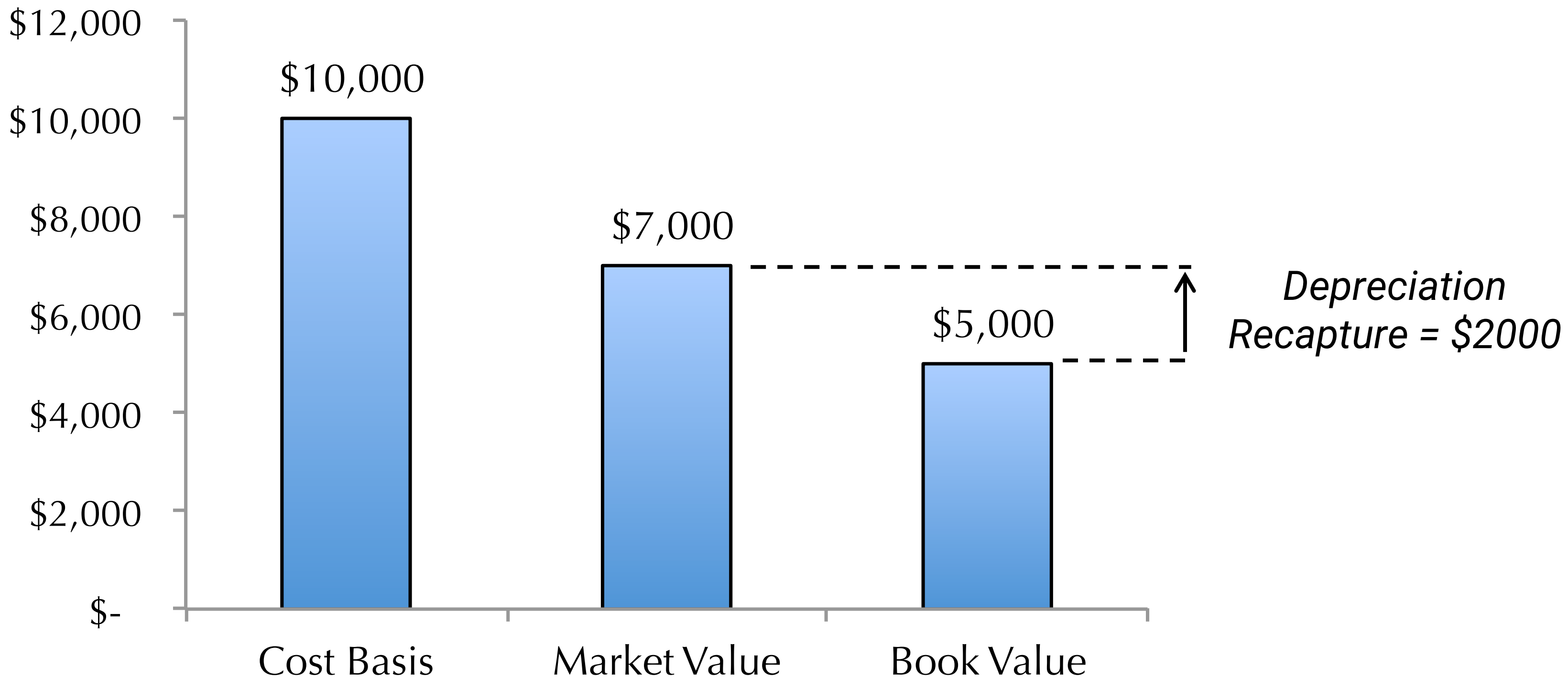
Comparing SL, DB & MACRS

Cost Basis = $80,00 Salvage Value = $10,000 N = 5 years



Selling the Asset – Dealing with Gains & Losses

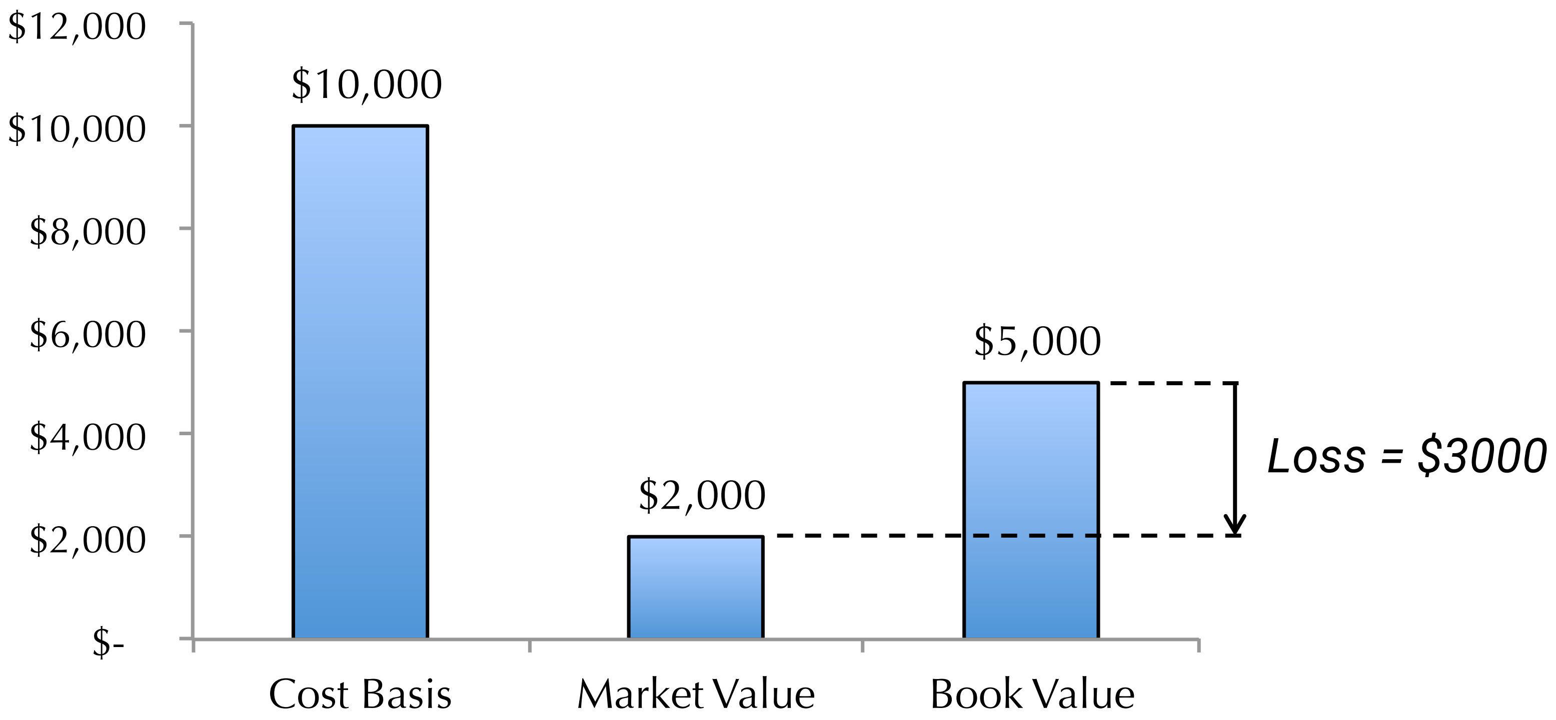
Depreciation Recapture: if the asset is sold at a Market Value that exceeds the Book Value, it generates a capital gain, which are like profits.



Depreciation Recapture (a capital gain) is taxed like any other income.

Selling the Asset – Dealing with Gains & Losses

Losses: a loss occurs when the asset is sold at a Market Value that is below Book Value.



Losses are tax deductible.

Main Takeaways…

Depreciation is the process of calculating the value of an asset over its Recovery Period, where the recovery period is determined by its Asset Class.

The process involves calculating the "loss in value" each year:

- ✓ Straight-Line Method (SL)
- ✓ Declining Balance Method (DB and DDB)
- ✓ MACRS Method
- ✓ Bonus Depreciation

The <u>annual</u> loss in value shows up on the Income Statement as the "Depreciation Expense".

The <u>total</u> loss in value shows up on the Balance Sheet as "Accumulated Depreciation".

The Asset's Book Value is obtained from the Cost Basis - Accumulated Depreciation.

Depreciation is a "non-cash" expense and impacts a project's cash flows.
Therefore, we need to account for it in any project valuation analysis.

Main Takeaways…

Another reason to appreciate your accountant!

Next Time...

All about Corporate Taxes

Credits & References

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Slide 3: United States Capitol Building, on Capitol Hill in Washington DC, USA by 3000ad, Adobe Stock (190125904.jpeg).

Slide 4: Image Source, IRS Publication 946, 2021.

Slide 9: Table from IRS Publication 946, Table A-1, page 71.

Slide 17: Business handshake in lofty office with city view by Kzenon, Adobe Stock (

Slide 18: Tax payment concept by vectorhot, Adobe Stock (208067609.jpeg).