

The background features a silhouette of a person wearing a hat, positioned on the right side. The background is a sunset or sunrise scene with a grid overlay. The top and bottom edges of the image have a dark, textured blue-green border.

Managerial Finance

Hussain A. Al Awami, B.Sc. Pharm., M.Sc., MBA

The image features a central silhouette of a detective wearing a hat and holding a magnifying glass, set against a background of a sunset over water. The scene is framed by a grid pattern, and the top and bottom edges have a dark, textured teal border. The text 'Chapter X problem solving' is centered over the detective's silhouette.

Chapter X problem solving

Problem 10-1

- Cost is \$52,125
- Net cash inflow \$12,000/year for 8 years
- Cost of capital is 12%
- What is PB, Discounted PB, NPV, IRR, and MIRR?

Payback Period

$$= \frac{\$52,125}{\$12,000}$$

= 4.3 years

Developing annual cash flow

Period	Annual cash flow
0 Now	-52,125
1	12000
2	12000
3	12000
4	12000
5	12000
6	12000
7	12000
8	12000

Negative sign indicates outflow

Positive sign indicates inflow

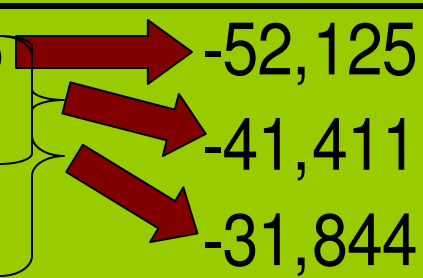
Discounted cash flow

Period	Annual cash flow	Discounted cash flow
0	-52,125	-52,125
1	12000	10714.28571
2	12000	9566.326531
3	12000	8541.362974
4	12000	7626.216941
5	12000	6809.122269
6	12000	6079.573454
7	12000	5428.190584
8	12000	4846.598736

$$= \frac{CF_t}{(1+r)^t}$$

Cumulative cash flow

Period	Annual cash flow	Discounted cash flow	Cumulative
0	-52,125	-52,125	-52,125
1	12000	10714.28571	-41,411
2	12000	9566.326531	-31,844
3	12000	8541.362974	-23,303
4	12000	7626.216941	-15,677
5	12000	6809.122269	-8,868
6	12000	6079.573454	-2,788
7	12000	5428.190584	2,640
8	12000	4846.598736	7,487



Calculating discounted payback period

Period	Annual cash flow	Discounted cash flow	Cumulative
0	-52,125	-52,125	-52,125
1	12000	10714.28571	-41,411
2	12000	9566.326531	-31,844
3	12000	8541.362974	-23,303
4	12000	7626.216941	-15,677
5	12000	6809.122269	-8,868
6	12000	6079.573454	-2,788
6 ⁺	\$2,788		
7	12000	5428.190584	2,640
7	(\$2,788 + \$2,640)		
8	12000	4846.598736	7,487

6.51 years

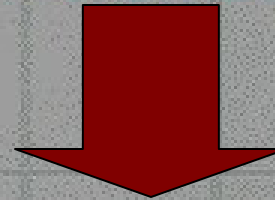
NPV

Period	Annual cash flow	Discounted cash flow	Cumulative
0	-52,125	-52,125	-52,125
1	12000	10714.28571	-41,411
2	12000	9566.326531	-31,844
3	12000	8541.362974	-23,303
4	12000	7626.216941	-15,677
5	12000	6809.122269	-8,868
6	12000	6079.573454	-2,788
7	12000	5428.190584	2,640
8	12000	4846.598736	7,487

NPV



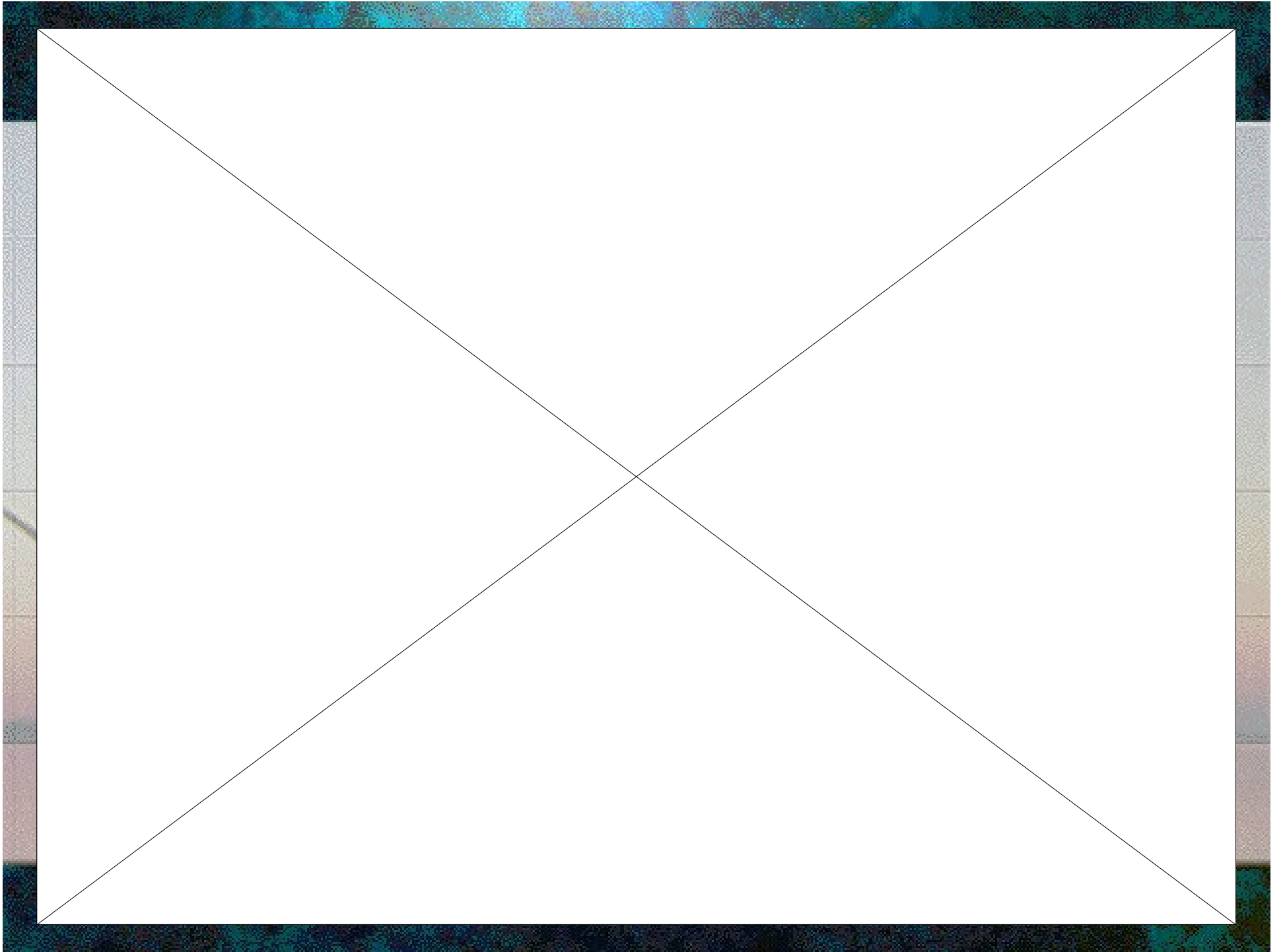
IRR



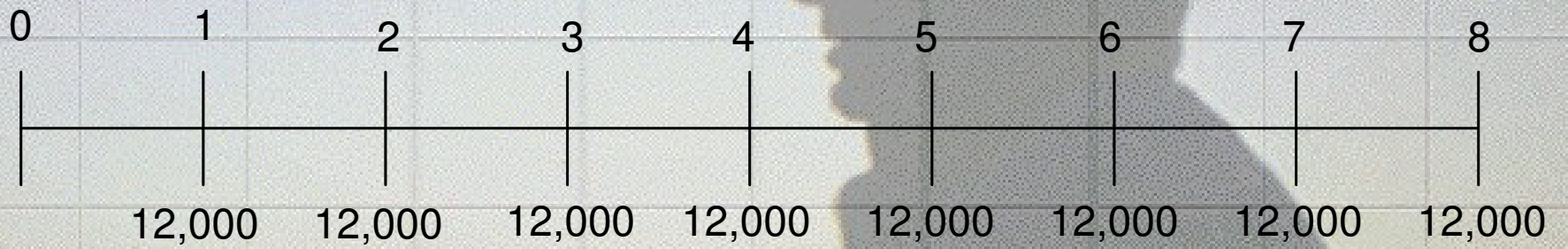
Period	Annual cash flow	Discounted cash flow	Cumulative
0	-52,125	-52,125	-52,125
1	12000	10714.28571	-41,411
2	12000	9566.326531	-31,844
3	12000	8541.362974	-23,303
4	12000	7626.216941	-15,677
5	12000	6809.122269	-8,868
6	12000	6079.573454	-2,788
7	12000	5428.190584	2,640
8	12000	4846.598736	7,487

NPV=0





MIRR



MIRR

