Review

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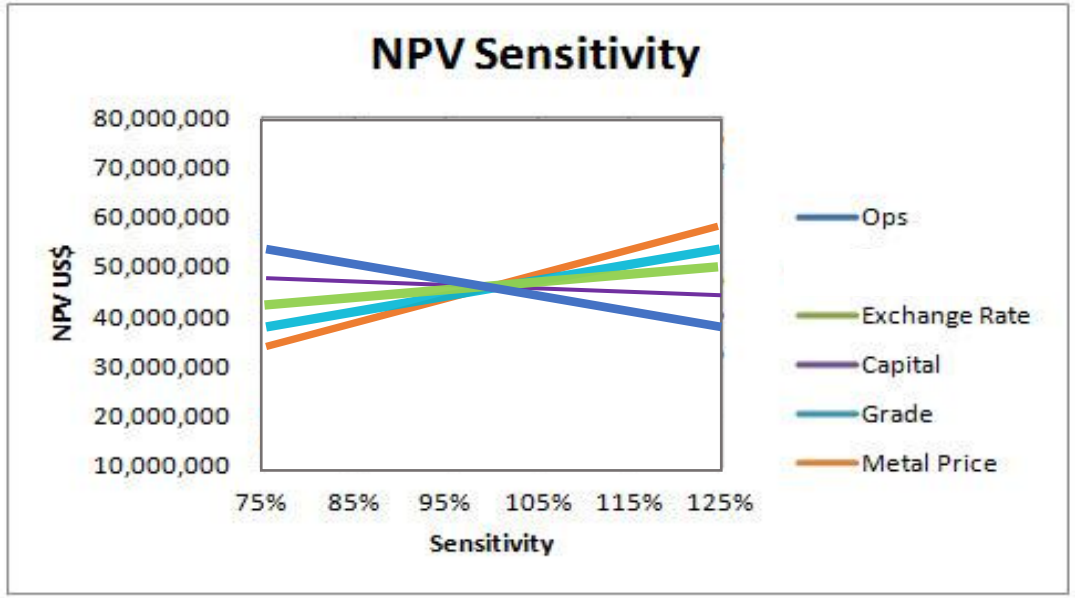
What is the most common used tool in doing sensitivity analysis?

- 1-What is a sensitivity analysis?
- Sensitivity analysis is used to help understand how our decision might be affected if our original estimates are incorrect. Sensitivity analysis determines different values of an independent variable affect a particular dependent variable under a given set of assumptions. It is also known as a what-if analysis.

- What is the most common used tool in doing sensitivity analysis?
- Spider chart



2-What are the limitations of sensitivity analysis in making investment decisions?

- 2-What are the limitations of sensitivity analysis in making investment decisions?
- Only shows the impact of changes on one variable at a time
- It does not show how far the variable might change
- It does not address the probability of different values of variable’s change
- It does not address the impact of correlation between variable on the result

- 3-How we describe an uncertain input to the economic analysis?

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- Random variable that is presented by probability distribution
- We construct the probability distribution by using the historical data, by presenting the frequency of occurrence of various values as a percentage or relative frequency.

- Example: Zinc-Lead-Silver mining project
  - Estimated capital cost: 26 US$

Event	Number of occurrence	Frequency of occurrence	Probability
23	1	1/18	0.05
24	2	2/18	0.11
25	2	2/18	0.11
26	3	3/18	0.17
27	5	5/18	0.28
28	3	3/18	0.17
29	2	2/18	0.11

5-Apply the expected value and variance concepts to a small premixed-concrete plant project. Suppose that the estimated probabilities of attaining various capacity utilizations are as follows:

Capacity (%)	Probability	Annual Revenue
50	0.10	$405,000
65	0.30	526,500
75	0.50	607,500
90	0.10	729,000

- Expected value of annual revenue:
- (A× B) = $575,100.
- Variance of annual revenue:
- (A×C) – (575,100)^2 = 6495390000
- Standard Deviation: 80593.98241

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i	Capacity (%)	(A) Probability $p(x_i)$	(B) Revenue x_i	$(A) \times (B)$ Expected Revenue	$(C) = (B)^2$ x_i^2	$(A) \times (C)$
1	50	0.10	$405,000	$40,500	1.64×10^{11}	0.164×10^{11}
2	65	0.30	526,500	157,950	2.77×10^{11}	0.831×10^{11}
3	75	0.50	607,500	303,750	3.69×10^{11}	1.845×10^{11}
4	90	0.10	729,000	72,900	5.31×10^{11}	0.531×10^{11}
				$575,100		$3.371 \times 10^{11}(\$)^2$