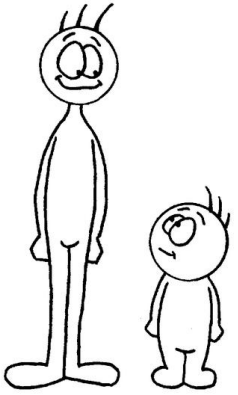

How managers can make a decision in risk – and uncertainty environment? (continuation)



	Expected value	root-mean-squ are deviation
1 project	500000$	5000$
2 project	100000$	2000$

What project is more risky?

If taking into account root-mean-squire deviation, the first (bigger) project is more risky

But if taking into account project's dimension, than relative risk will be lower for this project (1 pr.)

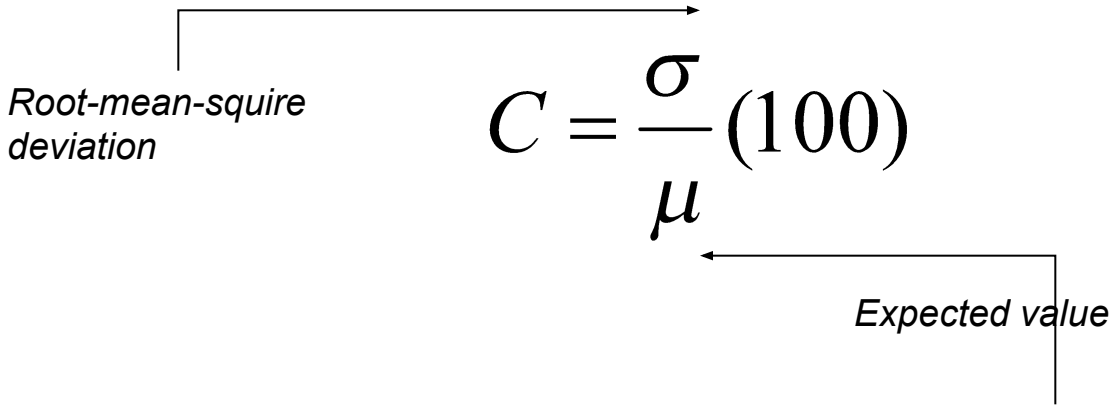
In order to compare the risk of projects with very different values of investments, outcomes and expected value, you need to use relative index rather than absolute measurements

Relative risk measurement:

constant of variation

Relative root-mean-squire deviation or <u>constant deviaton</u> – an index for projects with very different values of investments, outcomes and expected value.

Constant deviation – ratio of root-mean-squire deviation to expected value



Decision matrix				
Alternative strategies	**The state of the external environment**			
	N1 P=0,25	N2 P=0,50	N3 P=0,25	Expected value E(S)
S1 (σ = 5)	20	10	20	15
S2 (σ = 15)	40	10	0	15

S1 – 33, для S2 – 100.

Expected values, root-mean-squire deviation, constant of variety

Risk analysis for 2 projects

Проект	N_1 ($P = 0{,}20$)	N_2 ($P = 0{,}70$)	N_3 ($P = 0{,}10$)
S_4	20	10	5
S_5	150	100	75

A higher root-mean-squire deviation means a higher absolute risk

A higher constant of variety indicates a higher relative risk (risk per dollar of expected value).

What index I'm taking into account and what decision I make?

Depends on the attitude to risk in connection with the return

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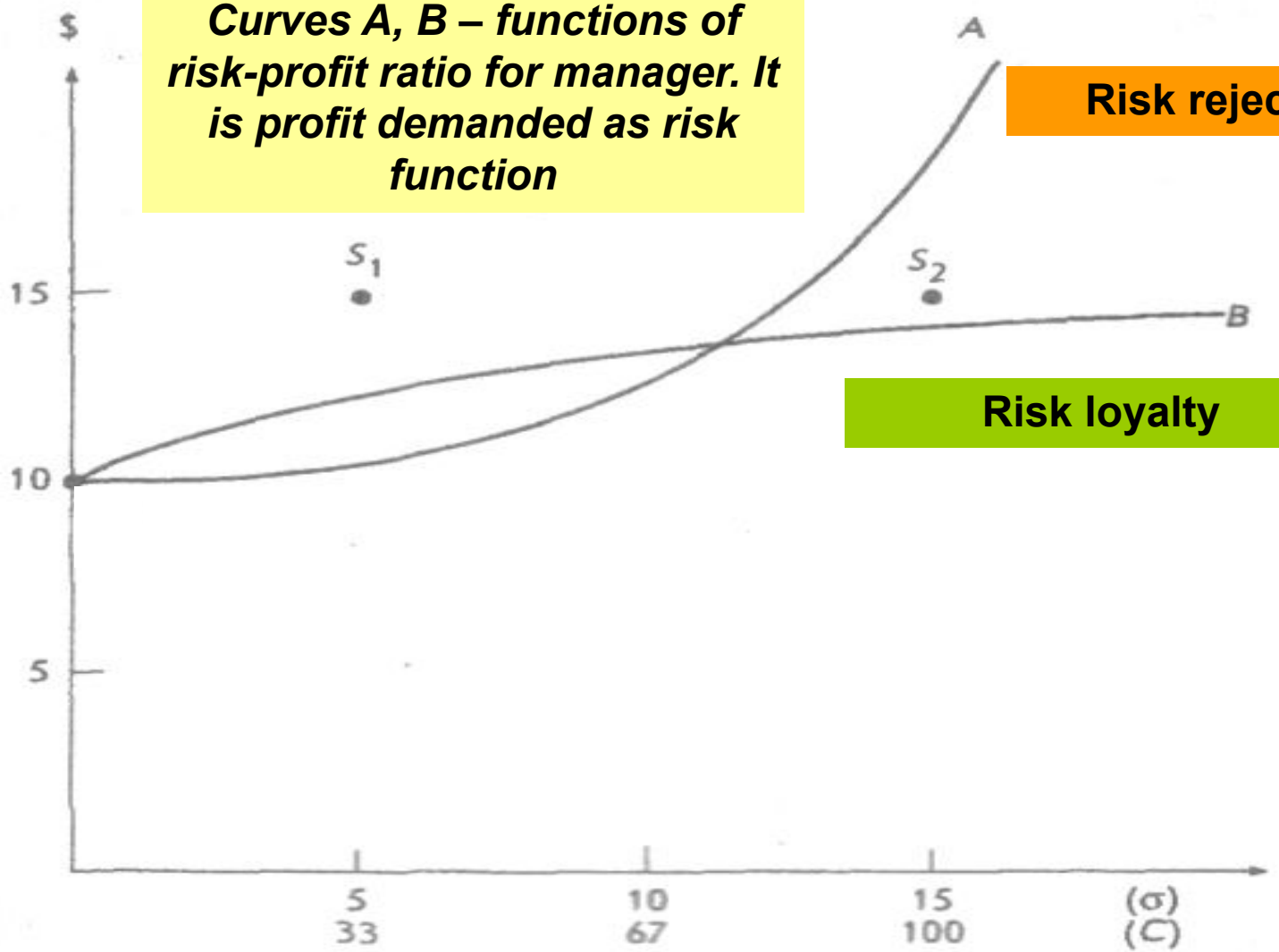
General financial situation

Curves A, B – functions of risk-profit ratio for manager. It is profit demanded as risk function

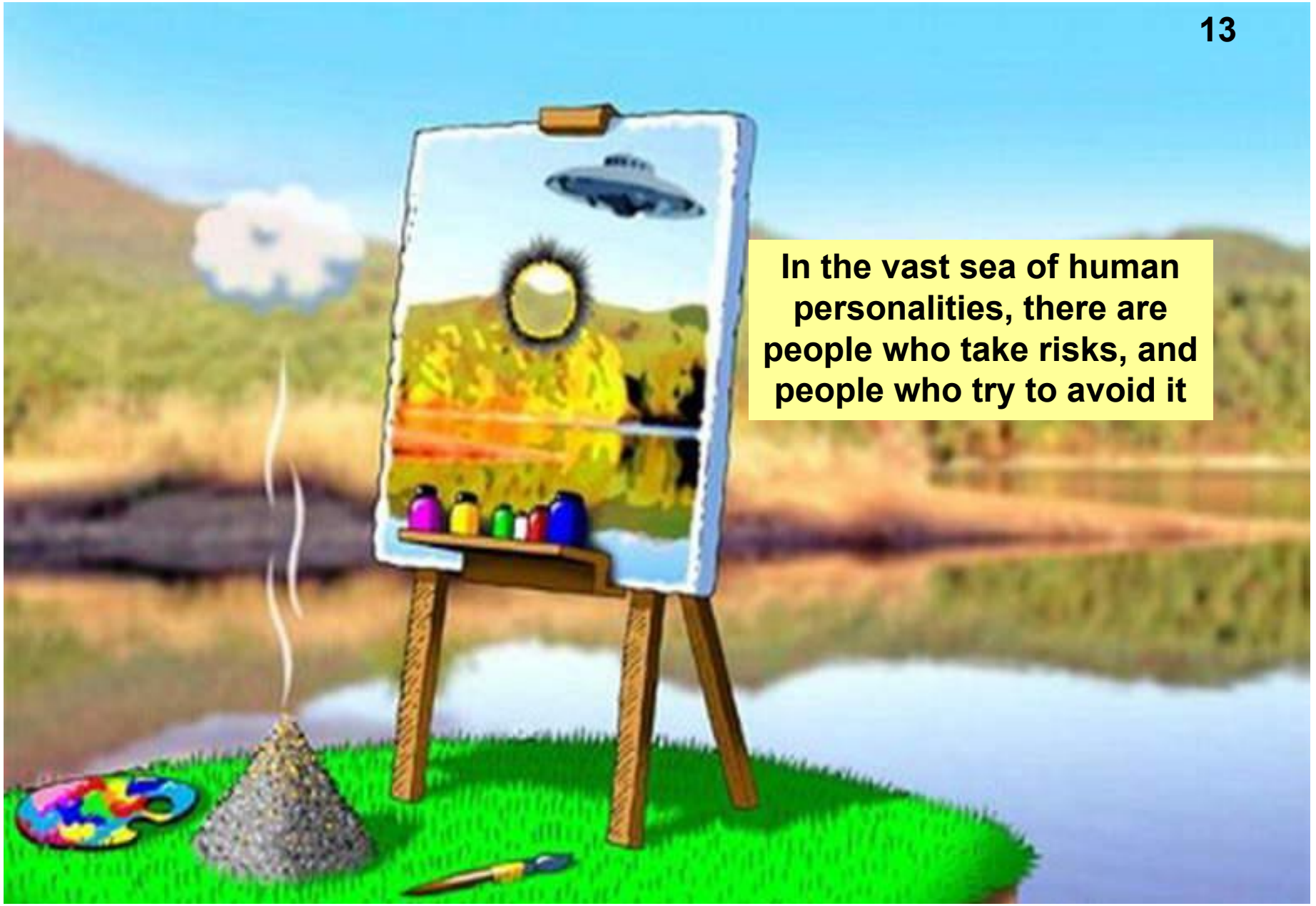
Profit



Risk rejection

Risk loyalty

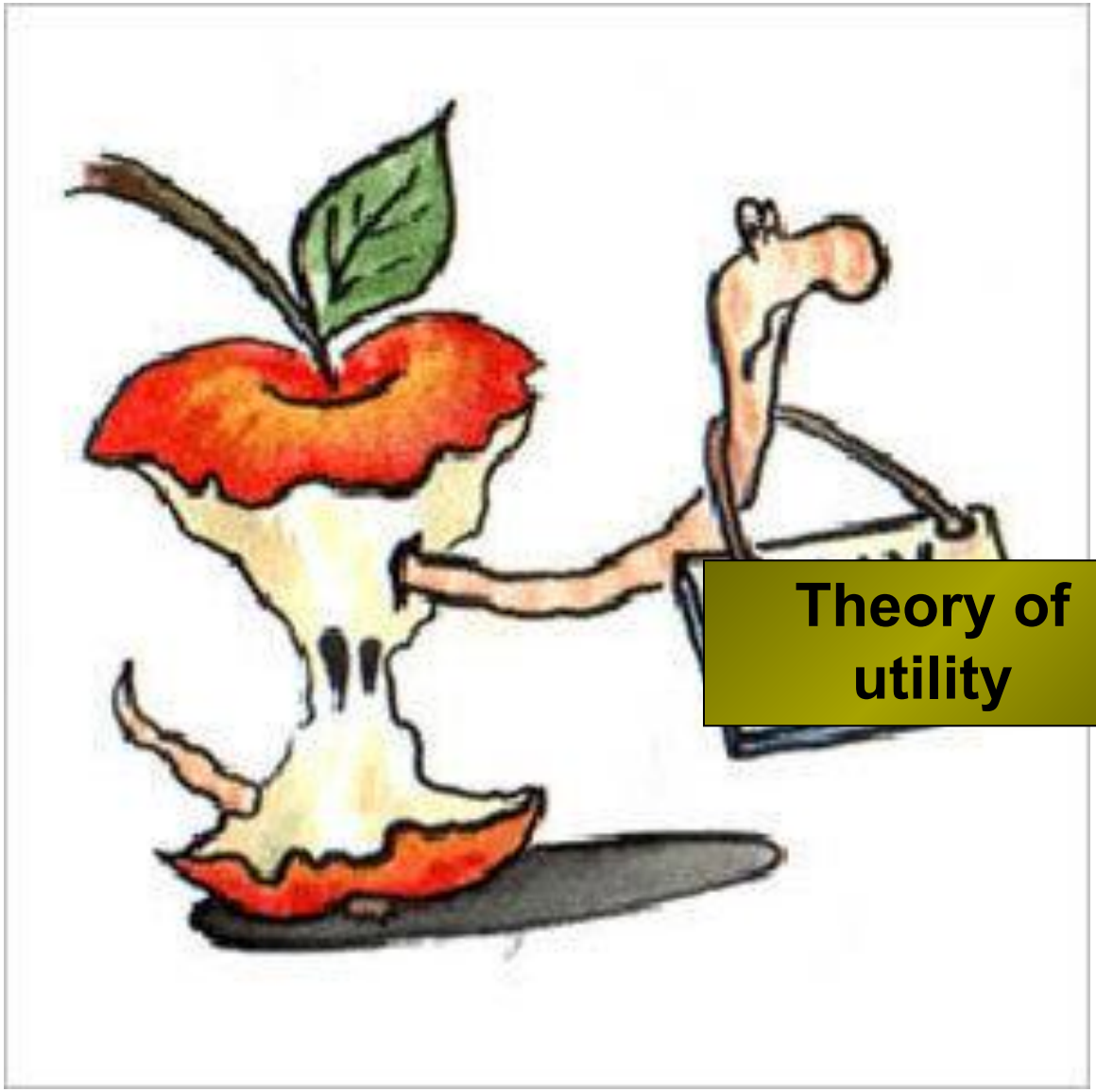
Absolute and relative risk


In the vast sea of human personalities, there are people who take risks, and people who try to avoid it

To risk or not to risk?

Most investors and managers try to avoid risk

Why?


Theory of utility

Contest

for the best designed specification

Company 1

Assets – 50 m $

Cost of preparation– 1 m. $ (will not compensated)

Profit – 25 m. $

Company 2

Assets – 10 m. $

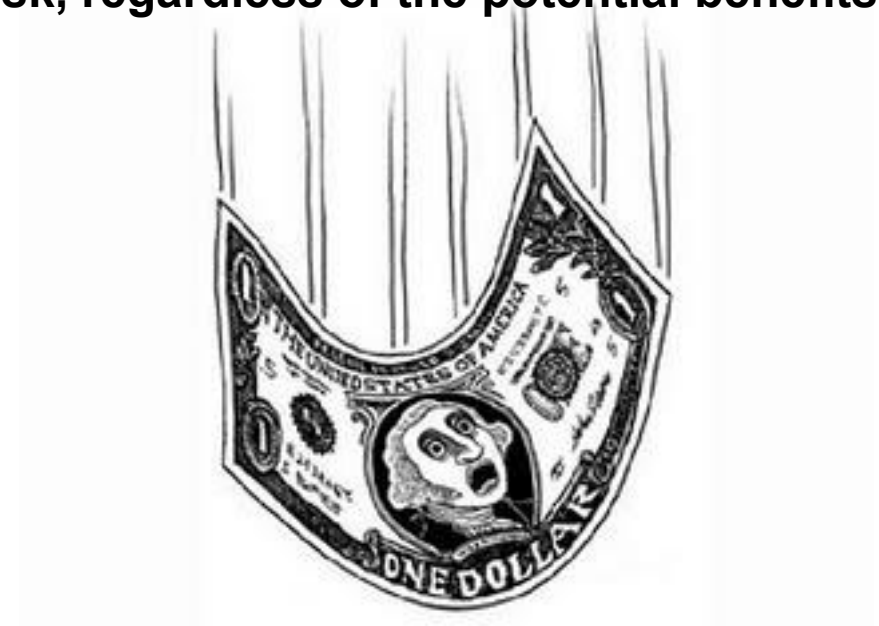
If both companies are involved:

E (profit) = 0,5 (-1) +0,5 (25) = 12

Despite 12 million $ a smaller firm may prefer not to take part in the contest

Real life = 1 experiment

If the loss of 1 million $ will lead the firm into bankruptcy, it may take risk, regardless of the potential benefits!



<u>Conclusion</u>: the conversion of dollar returns in some other incentive structure may be necessary before you can conduct analysis

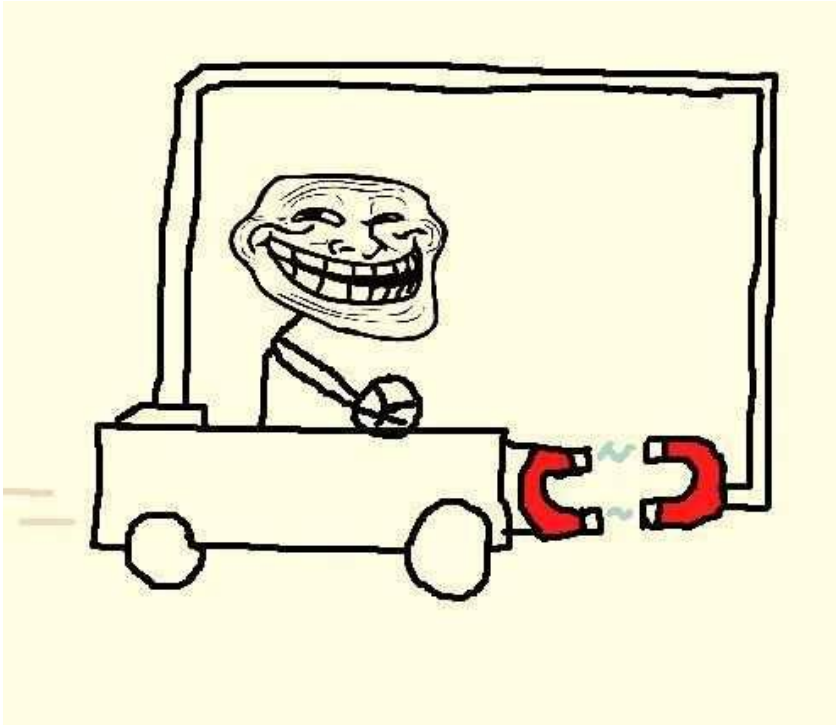
The dollar return does not reflect adequately the feelings of the person making the decision

Conceptual unit

measuring instrument –
utility (units of utility)

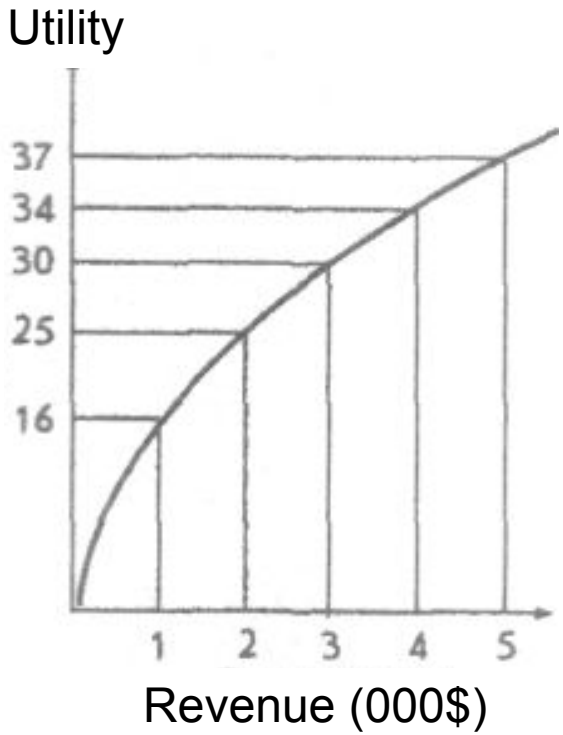
Managers use this concept when choosing from a number of alternatives

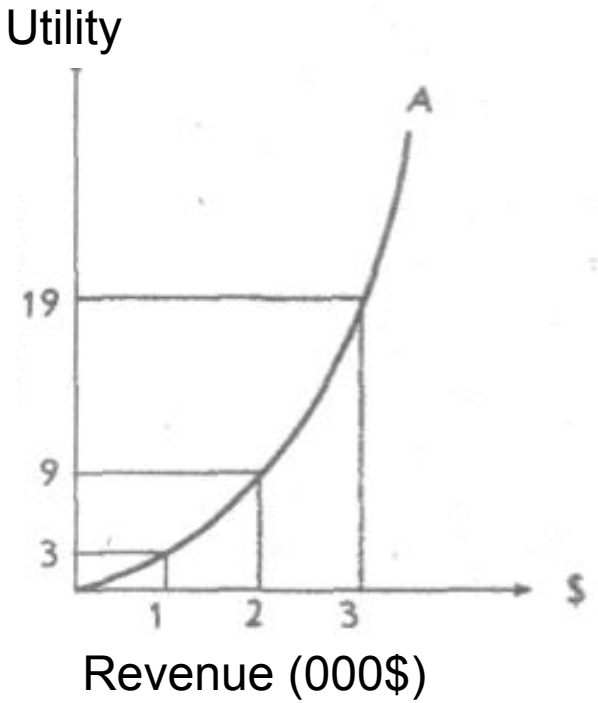
Profits and losses should be measured from the point of view of marginal utility
(not from the point of view of absolute value in dollars)



Marginal utility is defined as the change in the overall utility, which occurs when another monetary unit gaining or losing

The smaller company has appointed a greater marginal utility to the potentially lost dollars, not to the dollars that may gain in case of winning

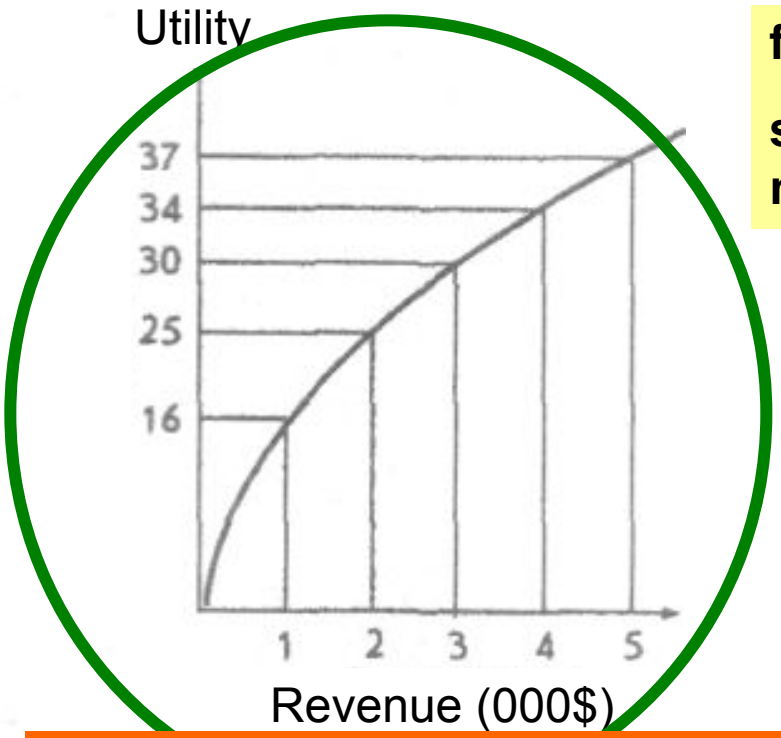




Utility of revenue

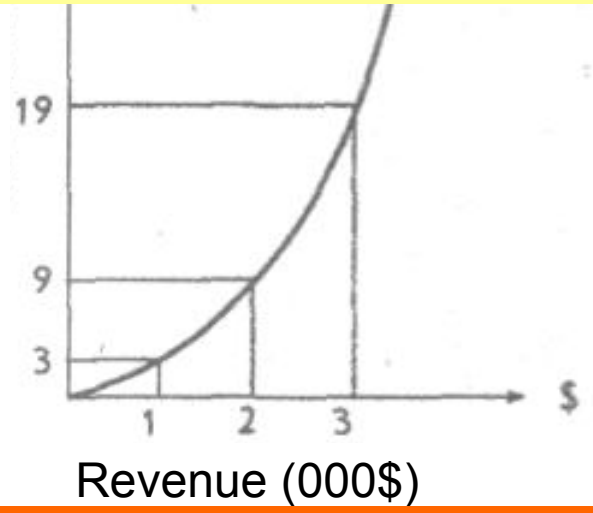
Ordinary investor tries to avoid risk.

The reason is expressed by declining marginal utility



first 1000$ - 16 units (urgent needs)

second 1000$ - 9 units (desired, but not so necessary)

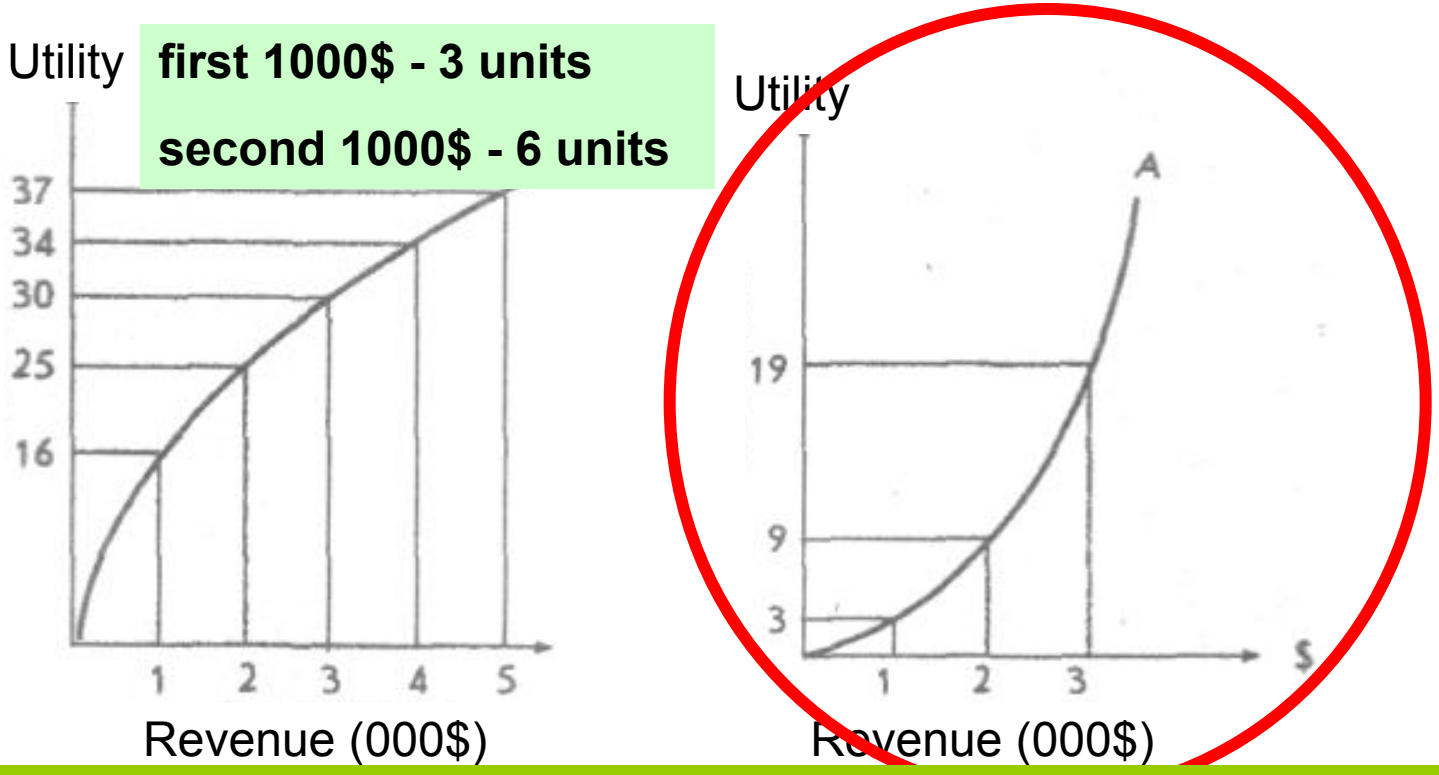


The marginal utility decreases with increasing income, which has a decisive influence on the behaviour of the investor

Investor-player set greater utility to potential incoming dollars, not leaving

first 1000$ - 3 units

second 1000$ - 6 units



The marginal utility becomes higher with increasing income

Leaders may be of different types

Most of the leaders belong to type "a".
They feel the risk business: more suffer from the loss of the dollar than happy to its acquisition

The utility function of most of the leaders demonstrates decreasing marginal utility

This behavior prevails to such an extent that the assumption of diminishing marginal utility is one of the two cornerstones of economic theory

**The decreasing marginal profit in relation to the input factors of production*