FOUNDATIONS OF OPERATIONS RESEARCH

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22 settembre 2020

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Solutions will be available next week on beep.

We see two simple and common example of decision making problem with linear optimization.

1.1 Portfolio optimization

The "risk factor" is the fraction of the investement that you can be lost. A risk factor of 1 means that all the investment can be lost.

The term "Programming" in Linear Programming is just a storical term, in real its meaning is "Optimization".

Lets defined the Decision variables:

- $x_i =$ amount of money invested in stock of types i, with $i = 1, 2$;

What do we want to maximize? $max\{0,15 \cdot x_1 + 0,25 \cdot x_2\}$.

Lets now define all the costraints:

- (a) $x_1 + x_2 \leq C$;
- (b) $\frac{1}{3} \cdot x_1 + 1 \cdot x_2 \leq \frac{C}{2}$;
- (c) $x_2 \leq 2 \cdot x_1$;
- (d) $x_1 \geq \frac{1}{6}C$;
- $x_1 \geq 0$ and $x_2 \geq 0$ (obvious).

[immagine: grafico]

bla bla bla non c'ho cazzi.

1.2 Gasoline mixture

bla bla bla non c'ho cazzi.