Cloud Computing modelling and adoption

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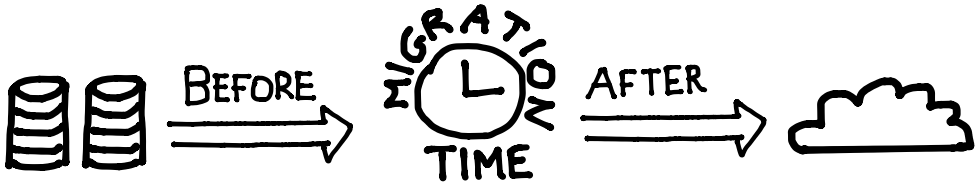
Università di Roma “Tor Vergata”

DATA, DIGITAL BUSINESS MODELS, CLOUD COMPUTING AND ORGANIZATIONAL DESIGN
Paris · 24-25 November 2014

Introduction



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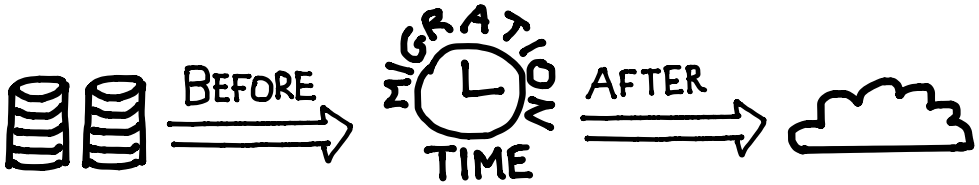

Economics of Migration

BUY vs LEASE

In-house vs Outsourcing

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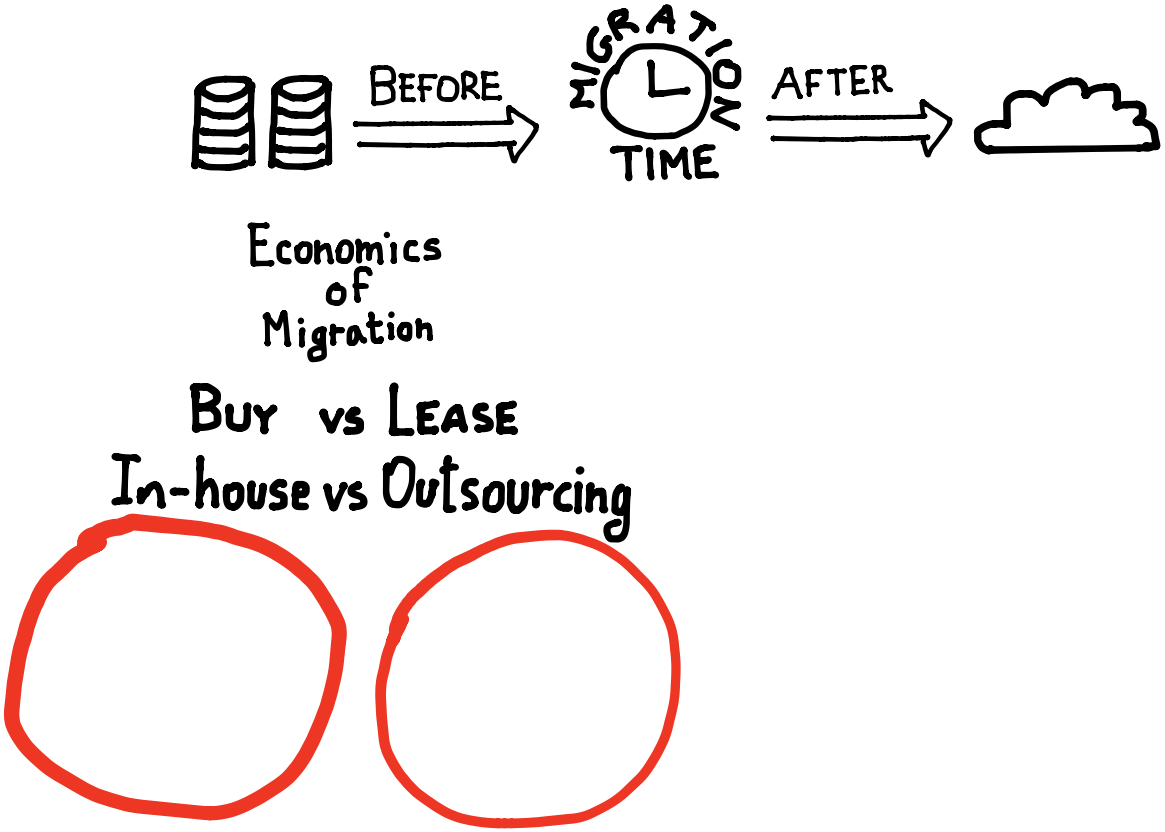

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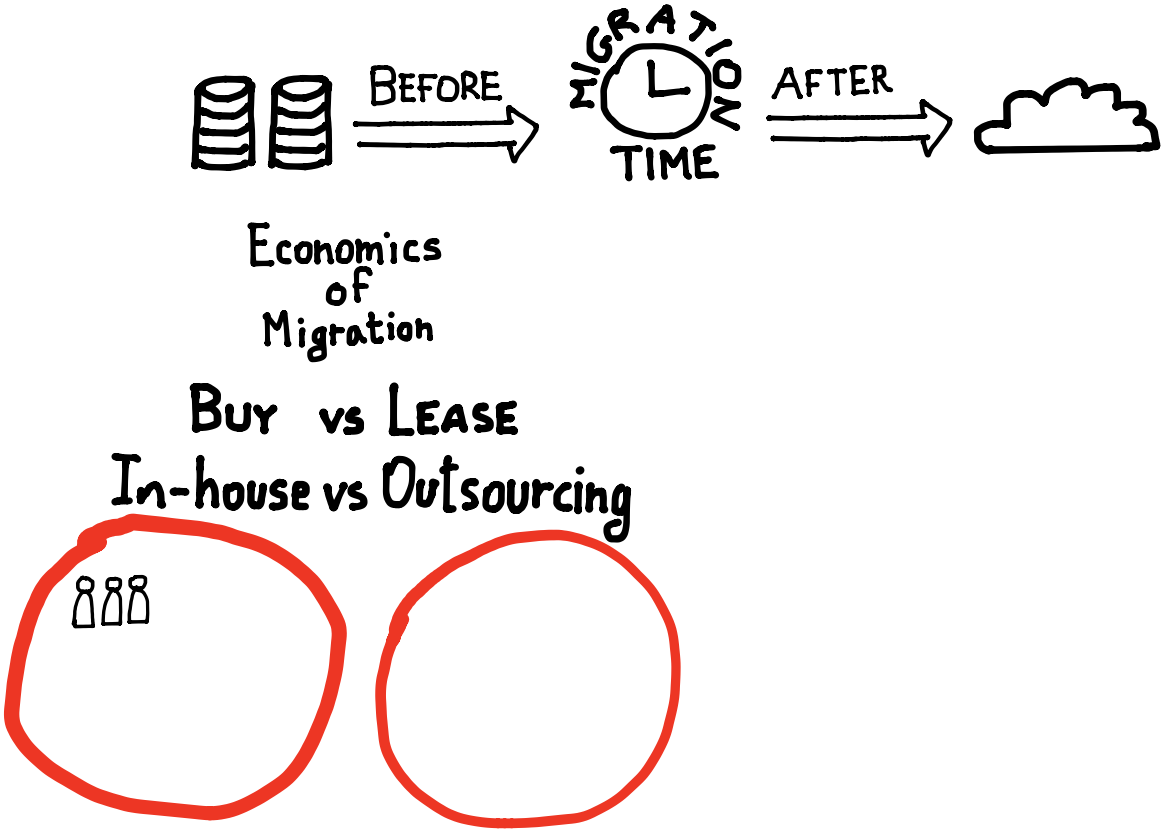

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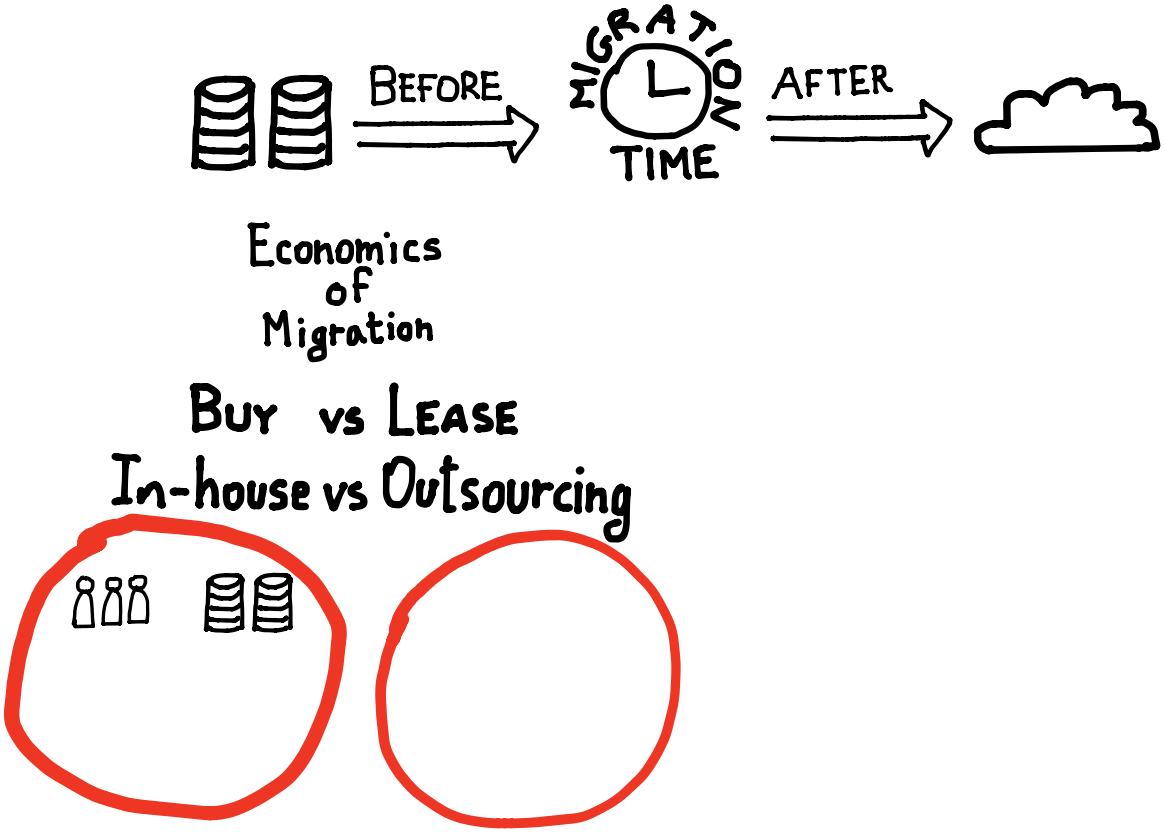

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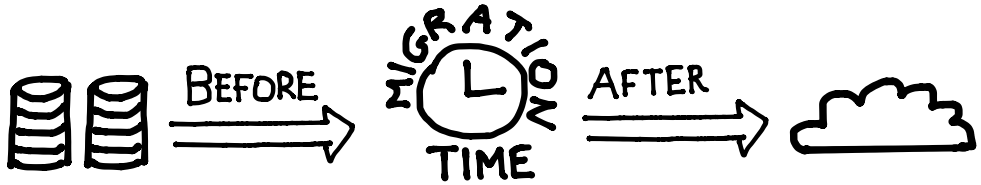

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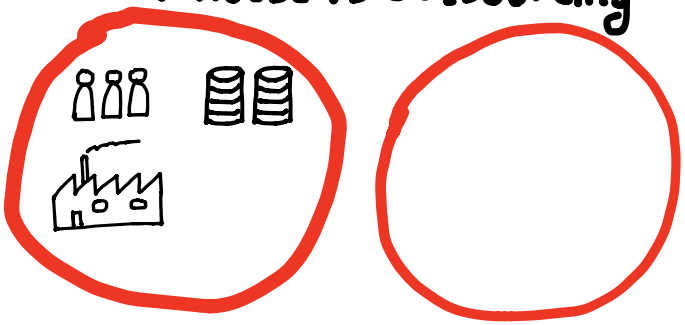

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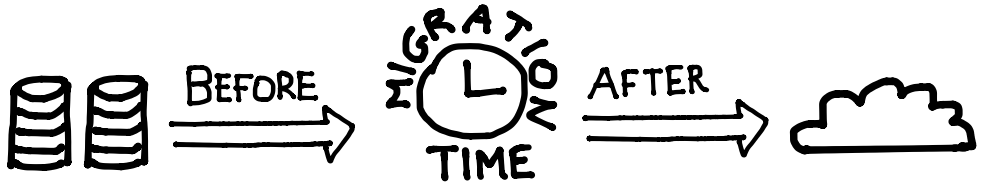

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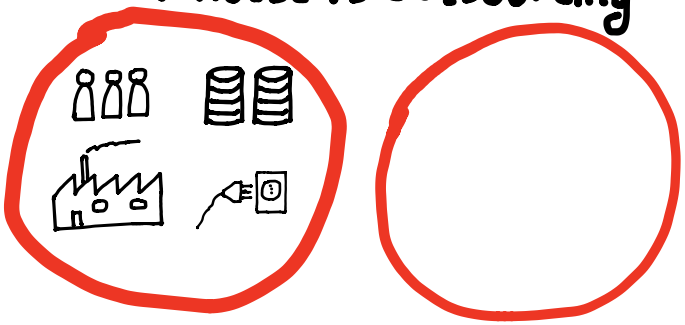

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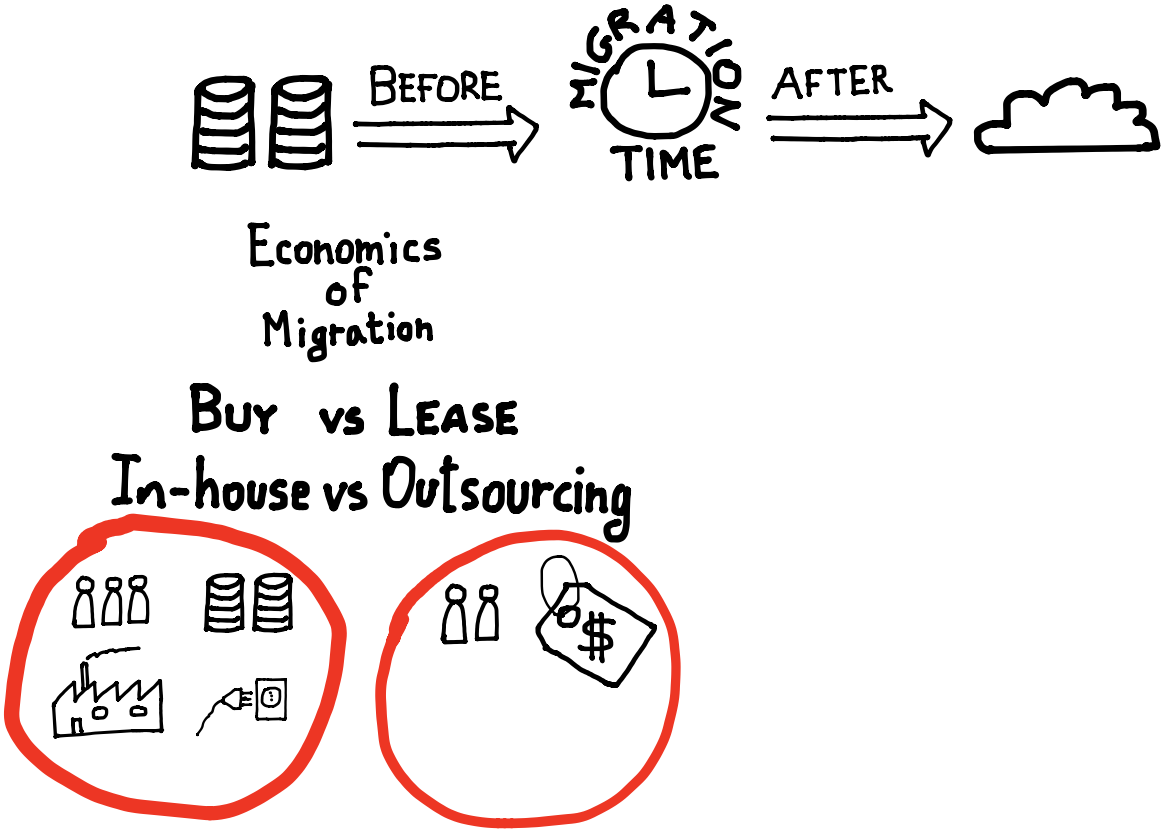

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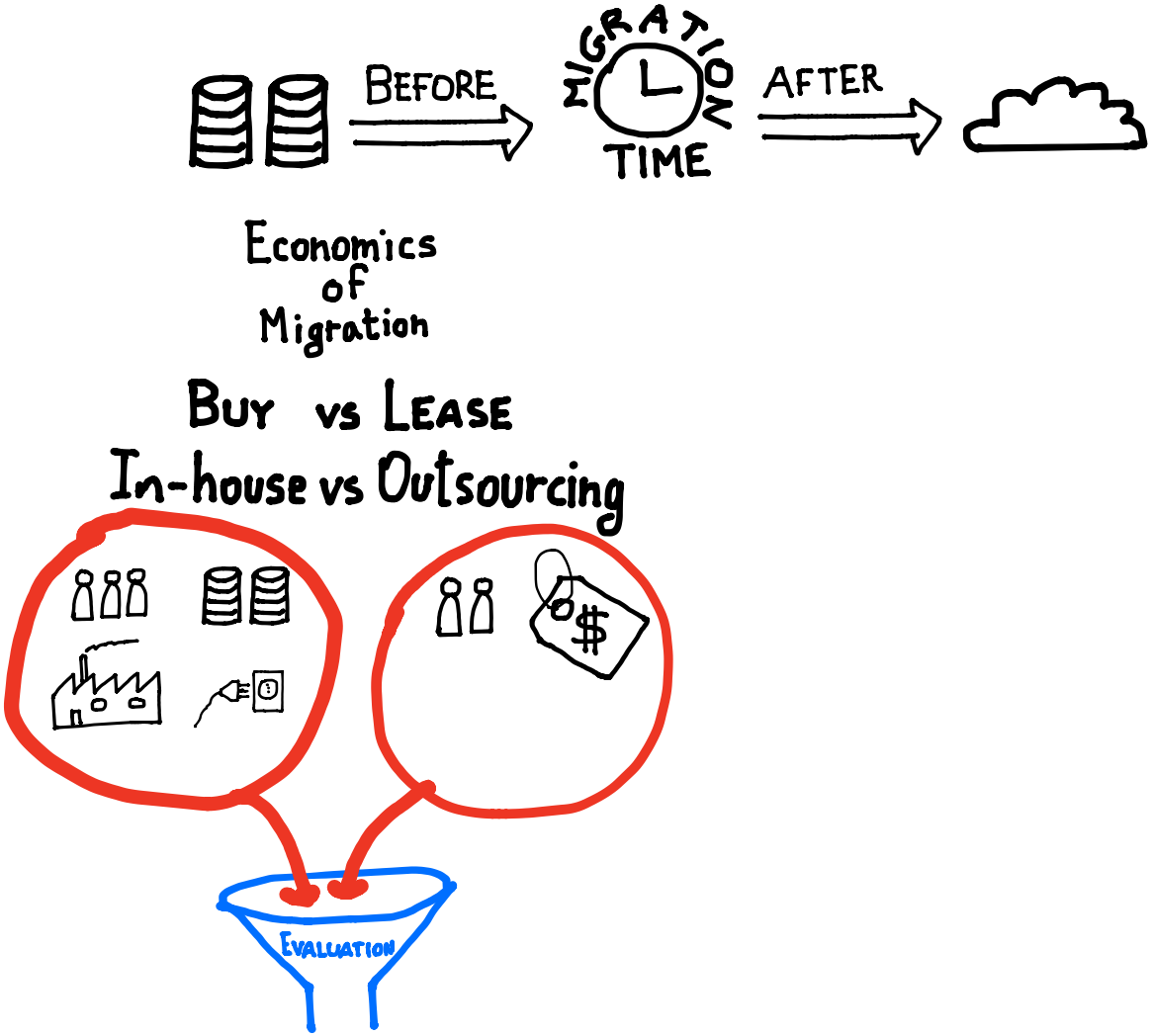

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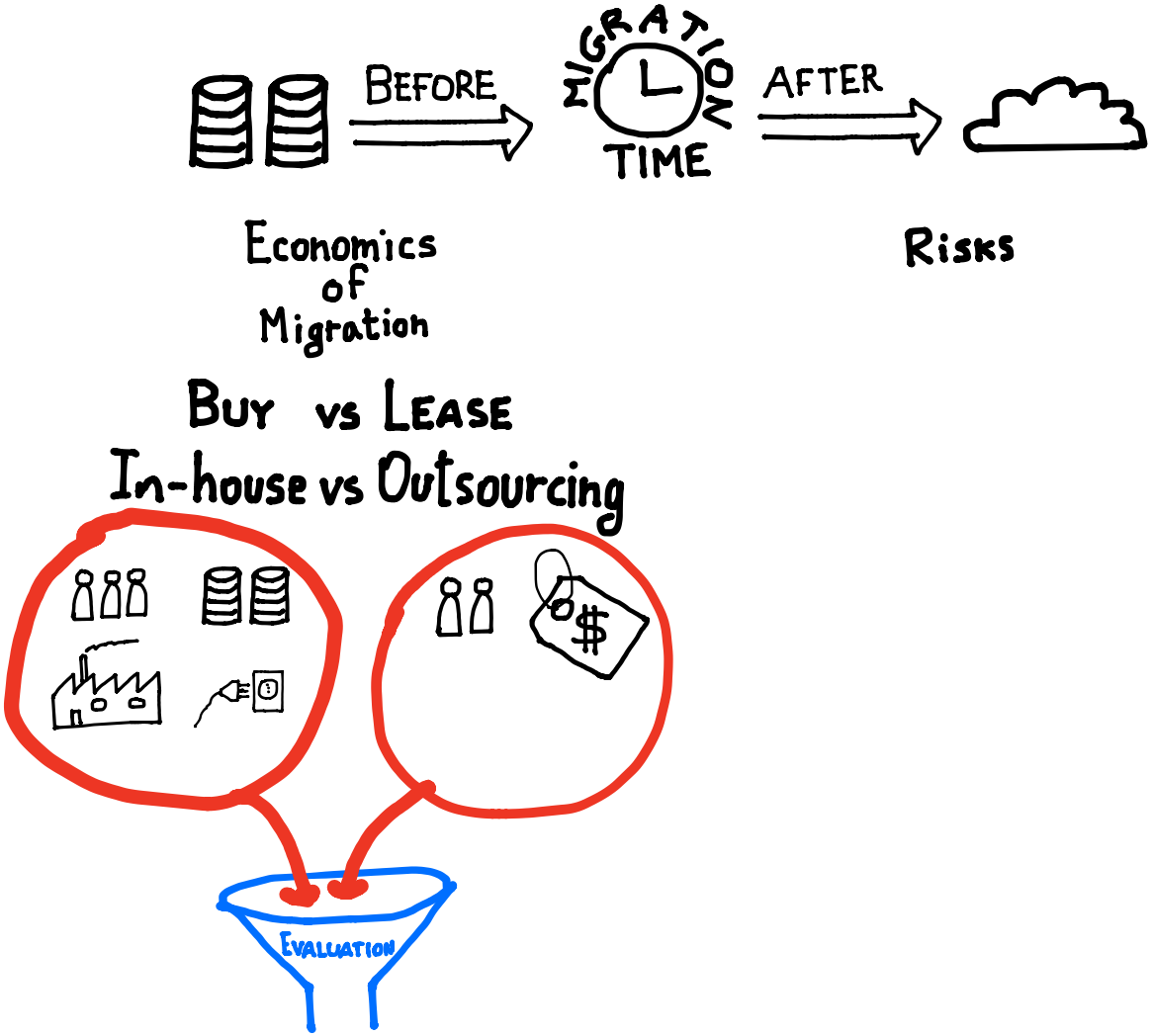

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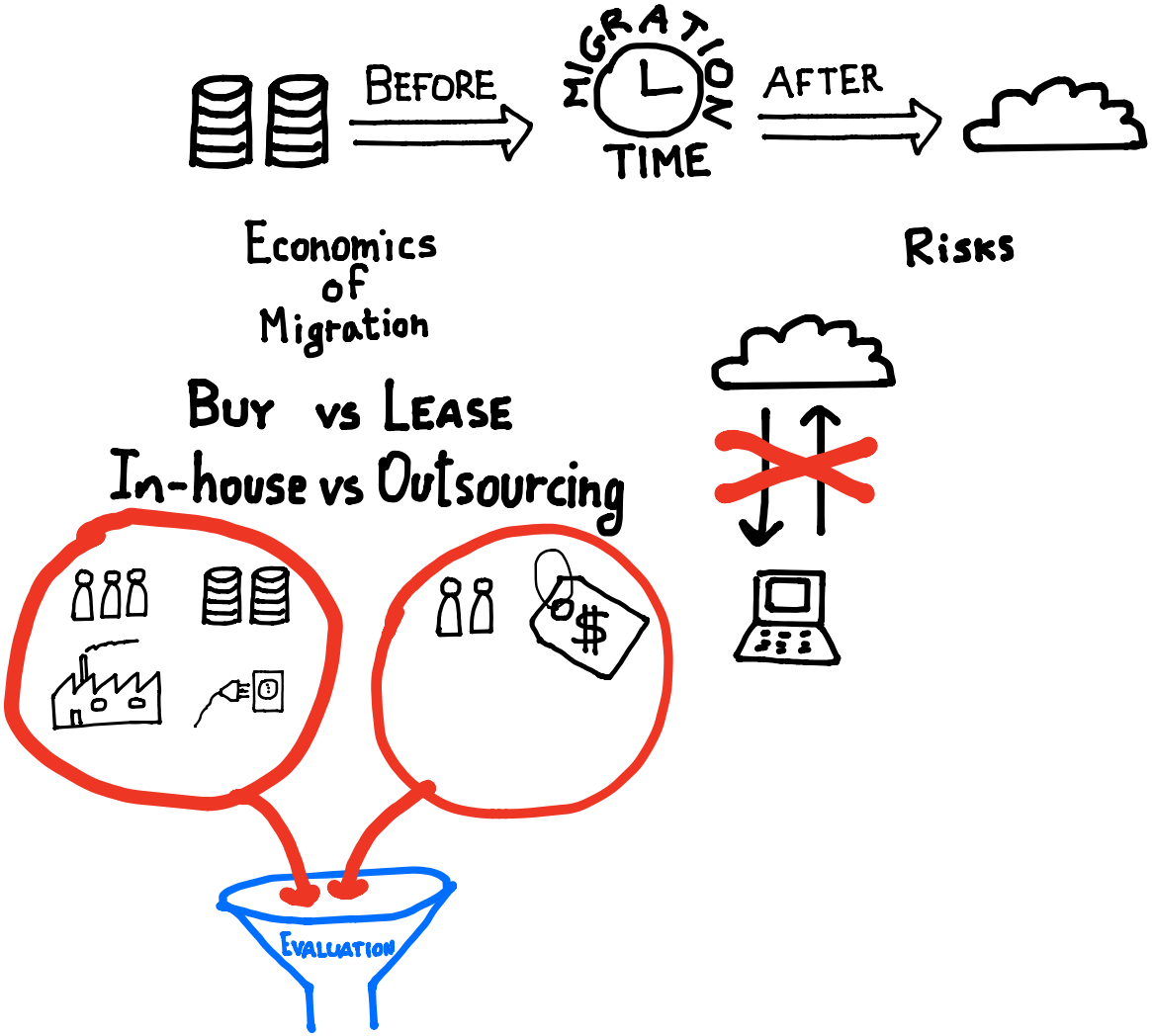

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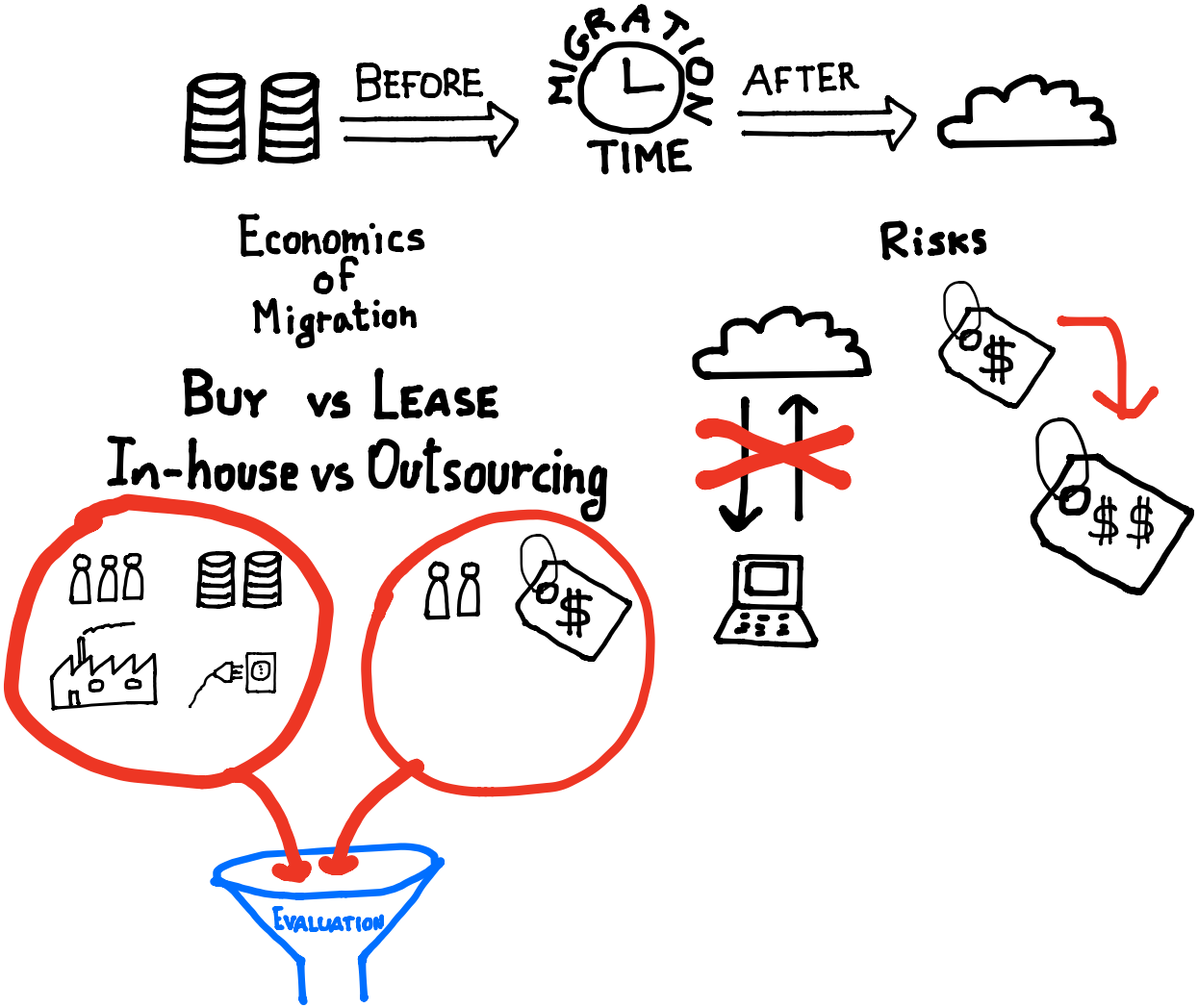

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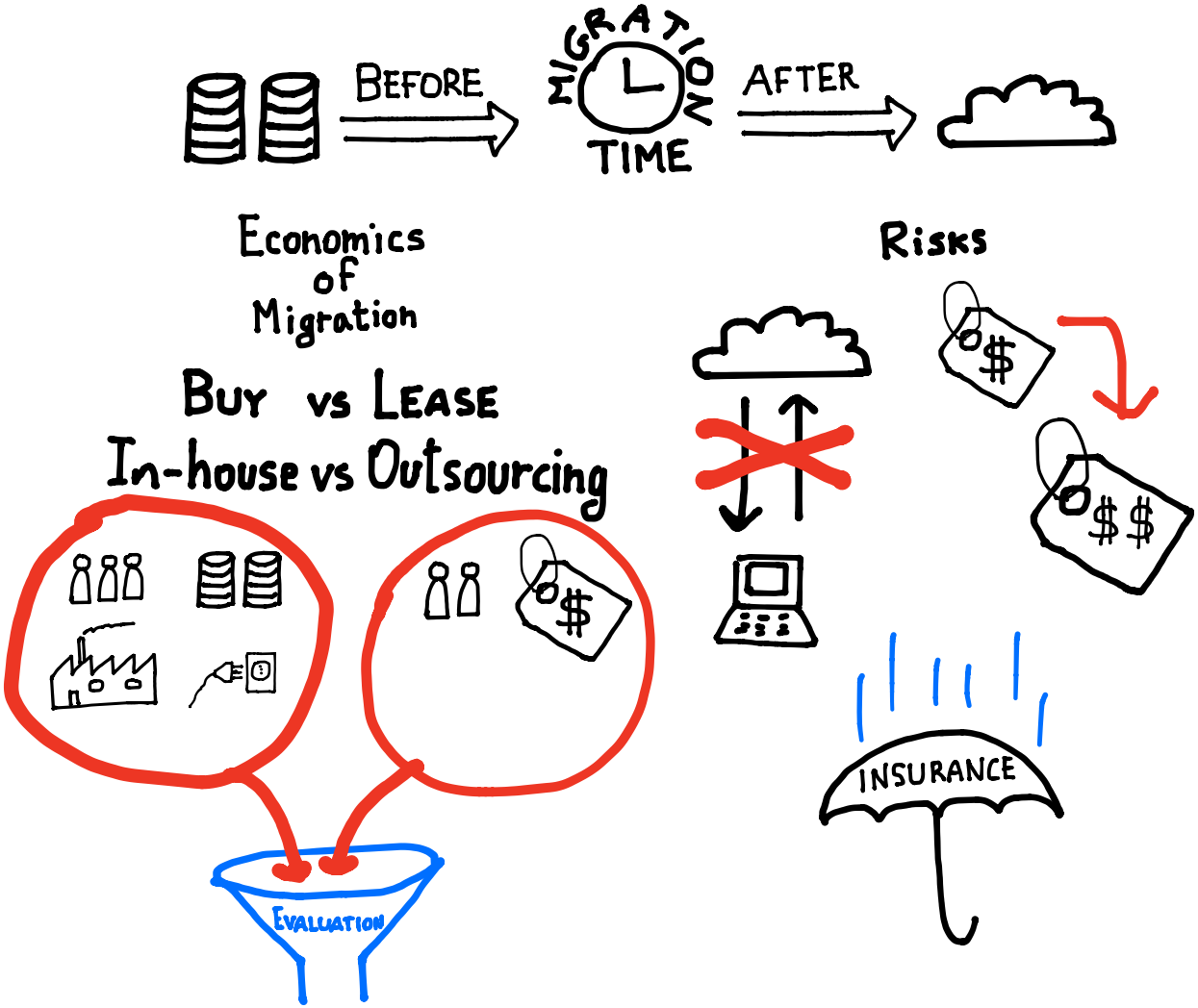

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In-house costs

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Costs in the in-house solution

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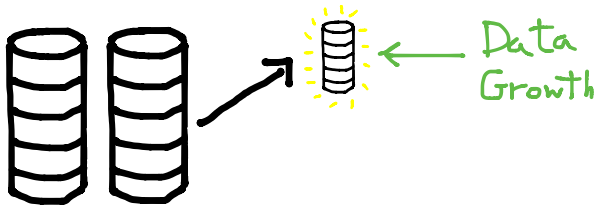

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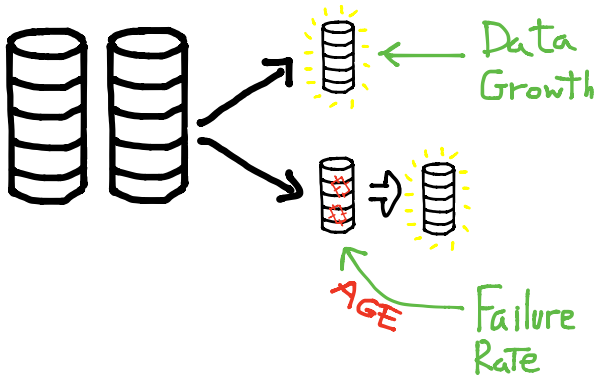

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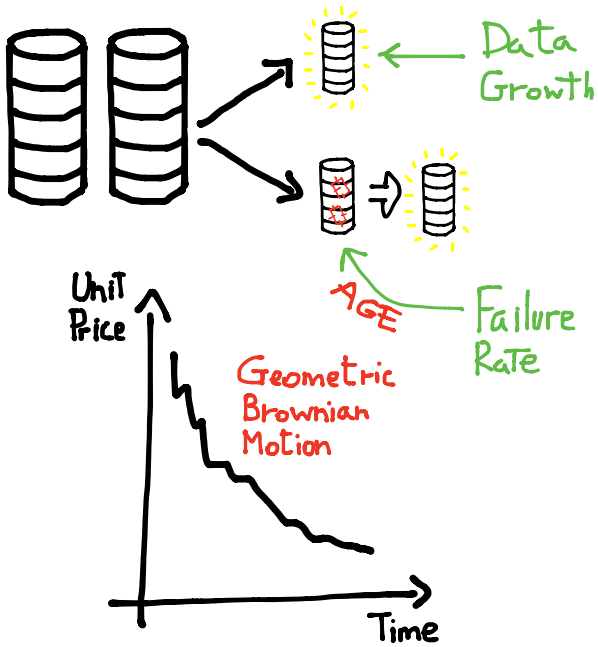

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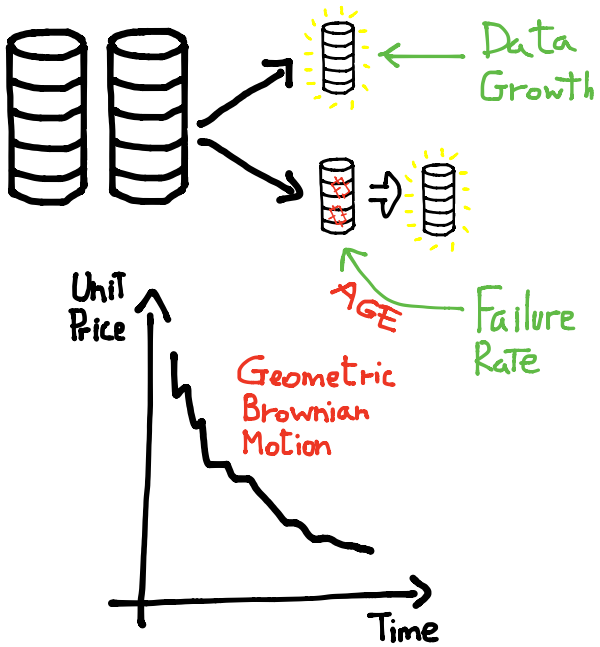

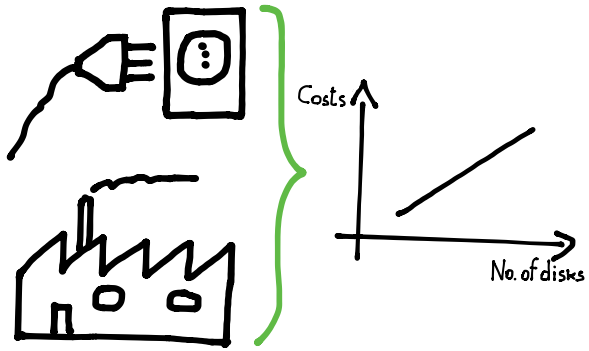

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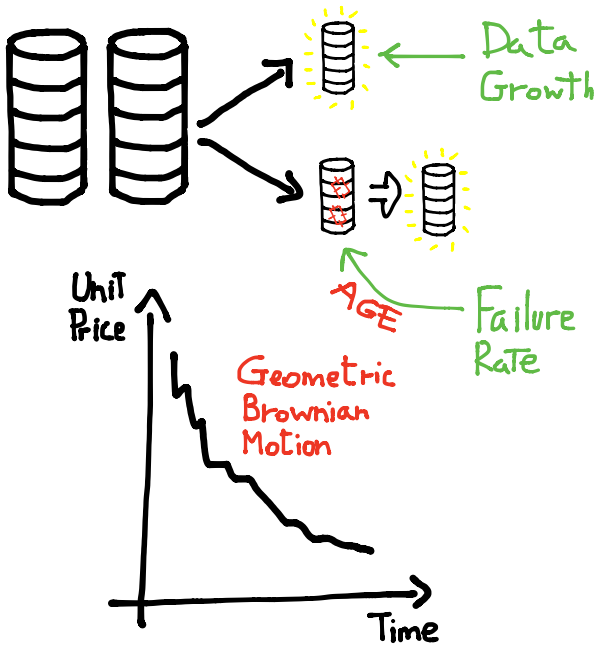
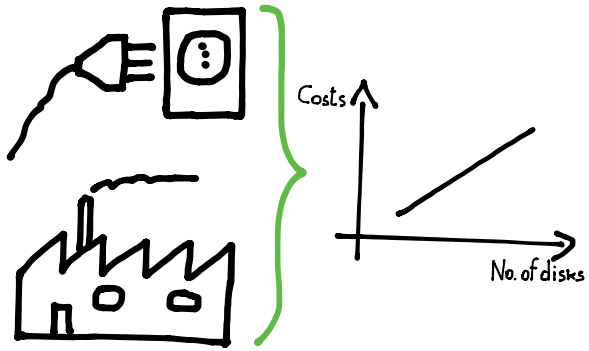
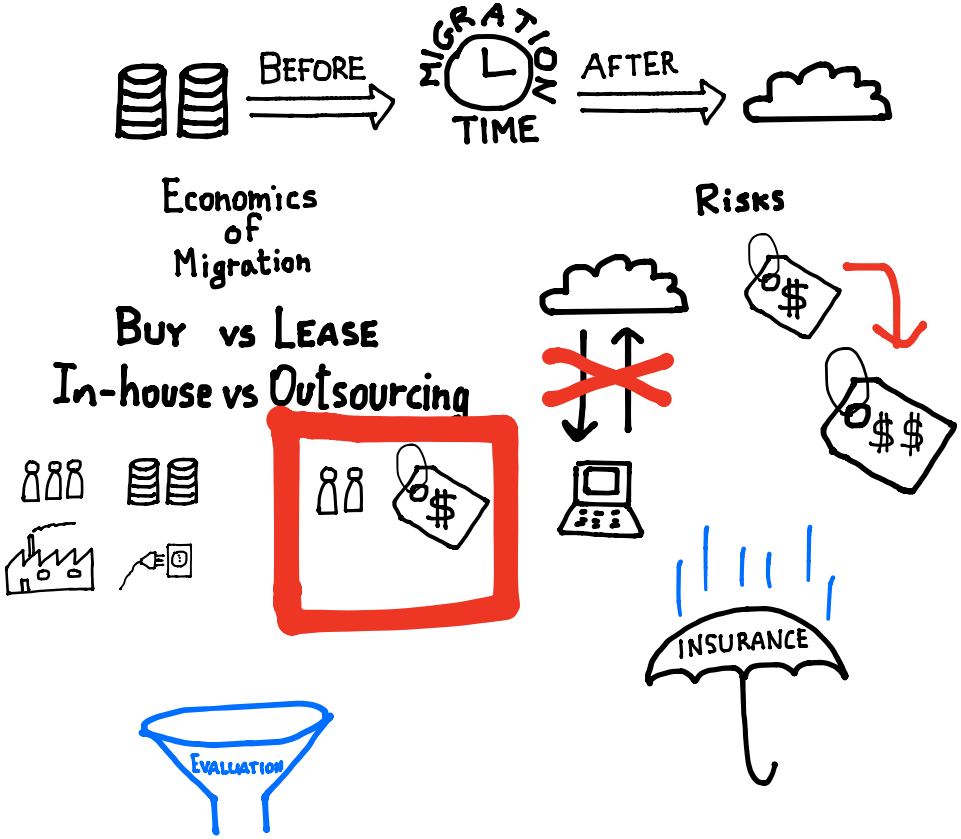




Costs of outsourcing



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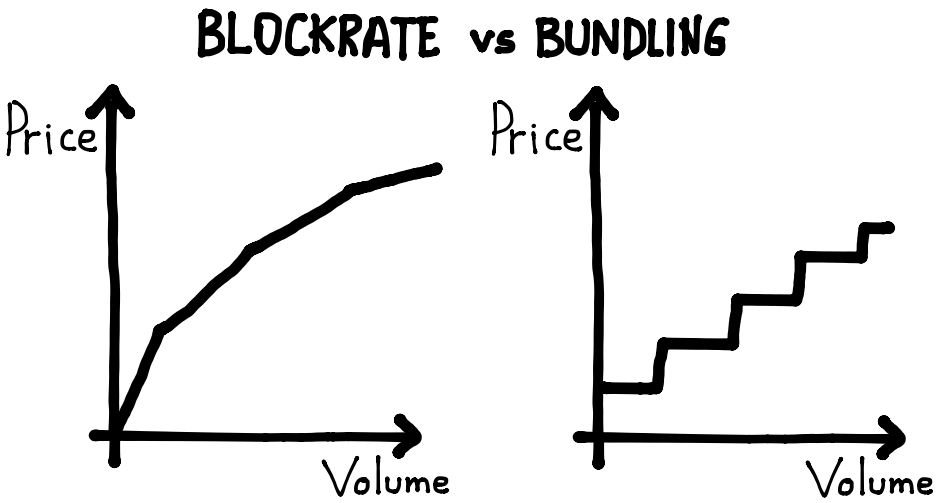
Pricing models

Pricing models



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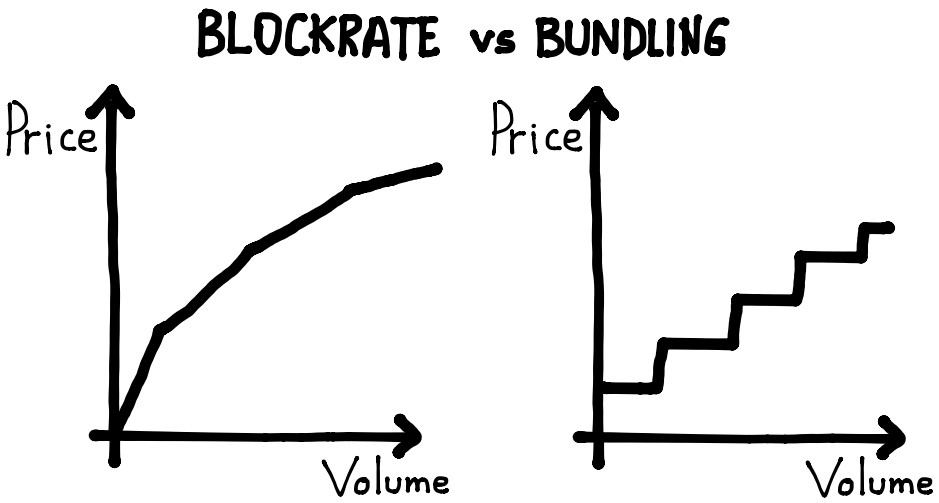
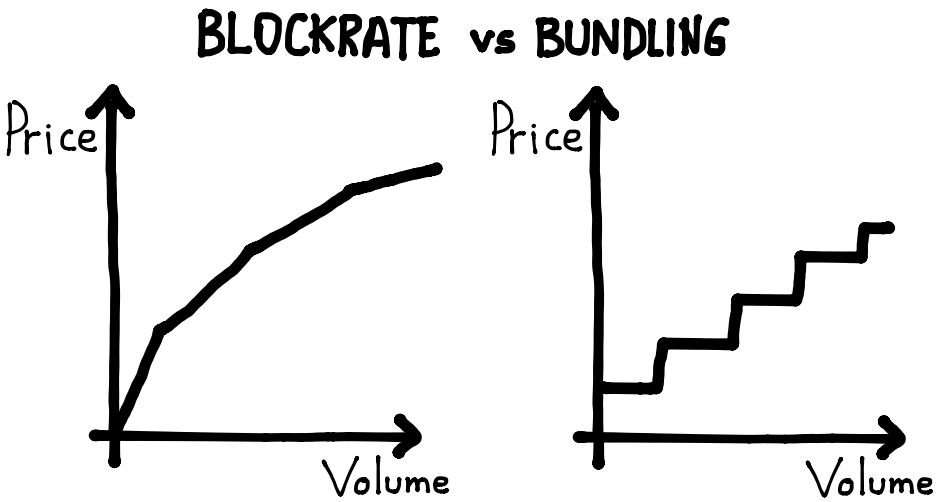
Pricing models



Amazon

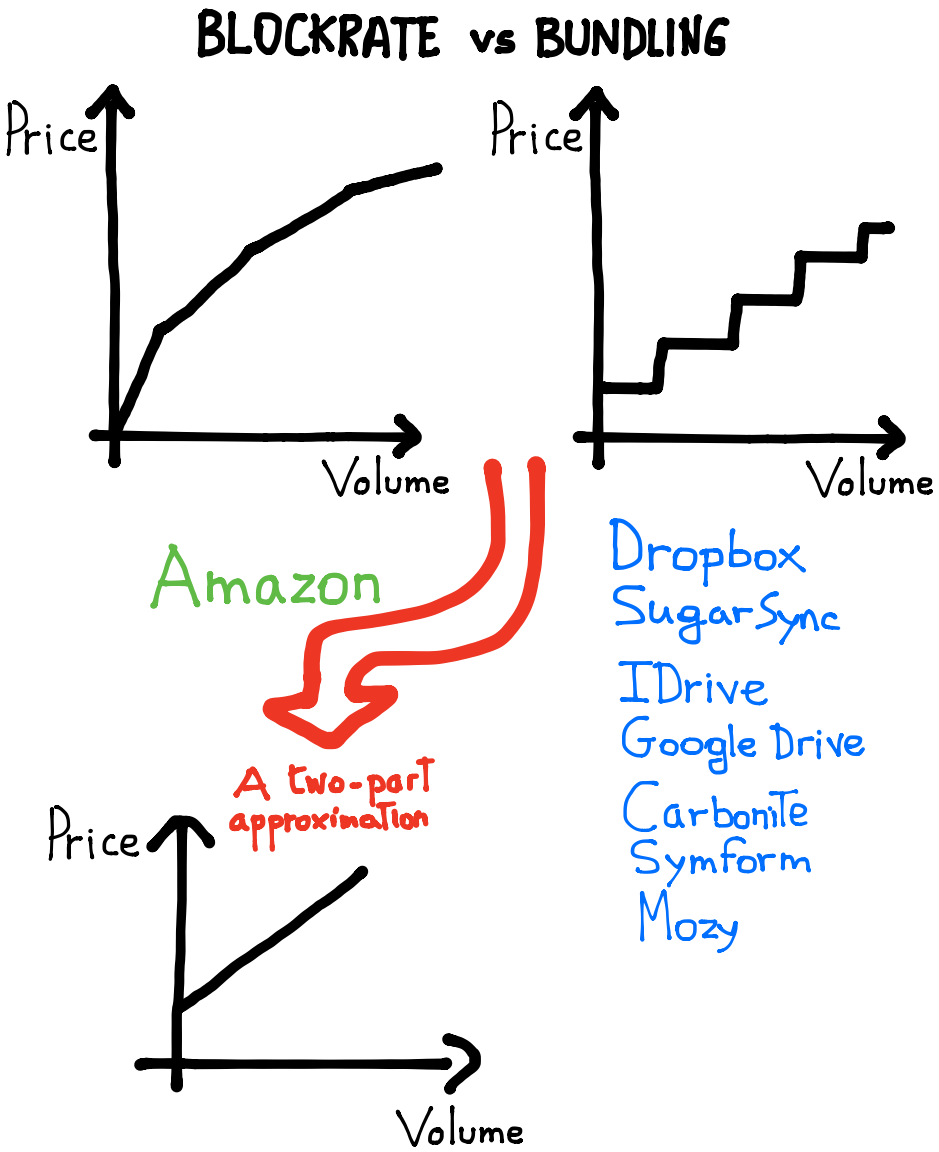
Pricing models



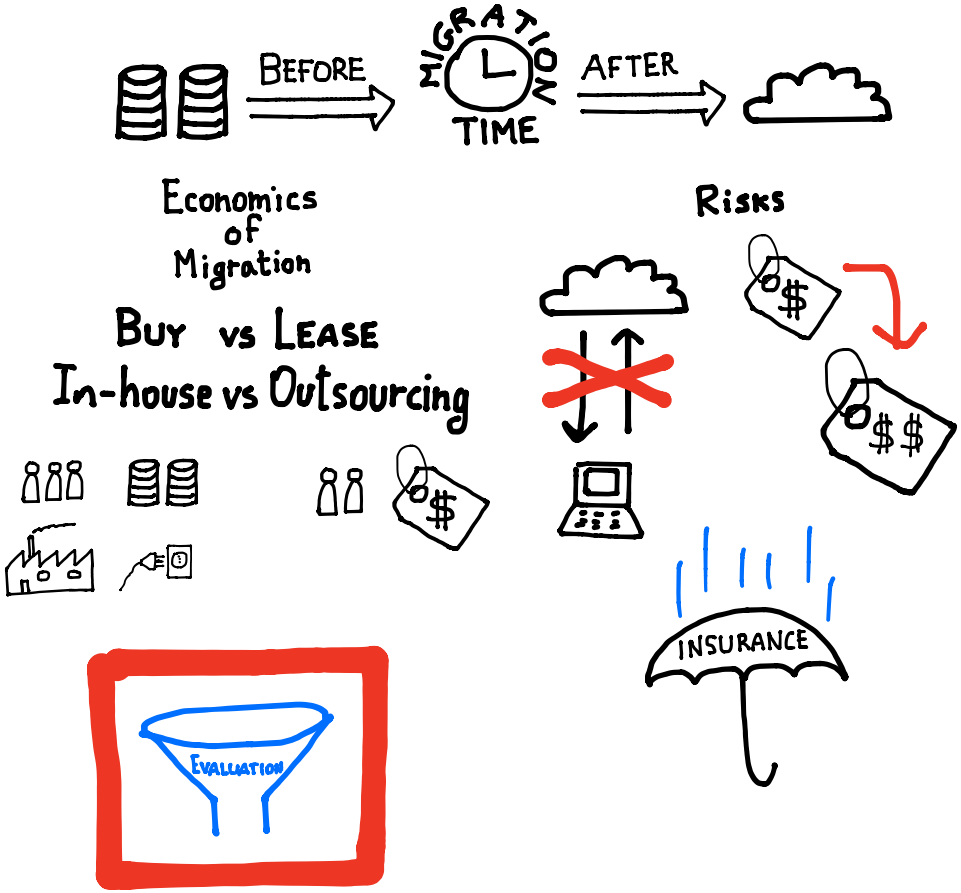
Amazon

Dropbox
SugarSync
IDrive
Google Drive
Carbonite
Symform
Mozy

Pricing models



Decision criteria



The evaluation approach

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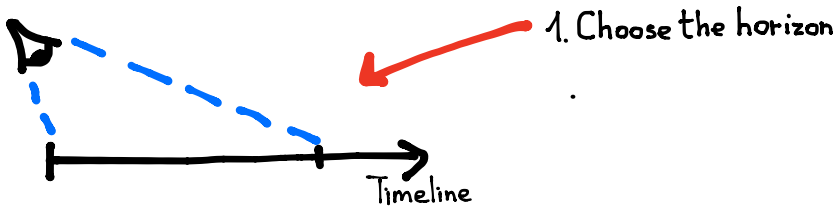

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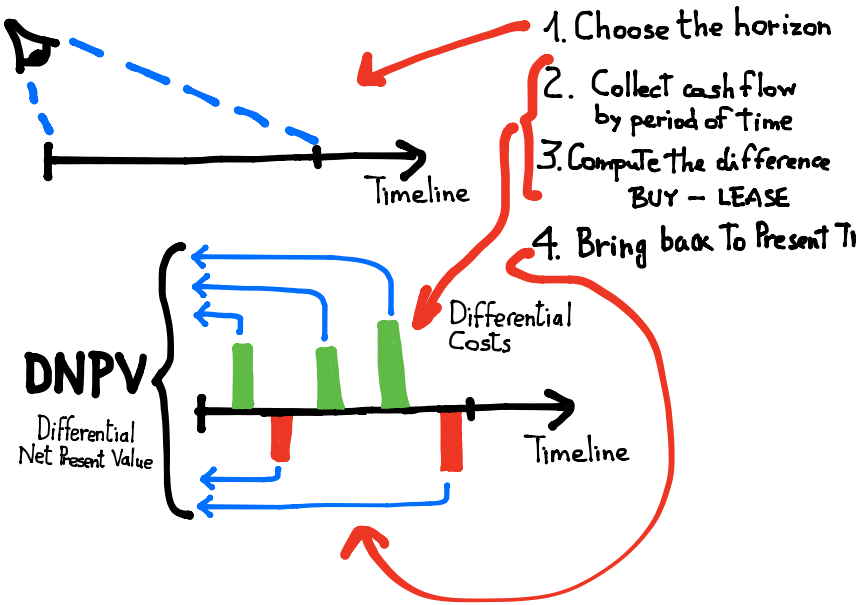

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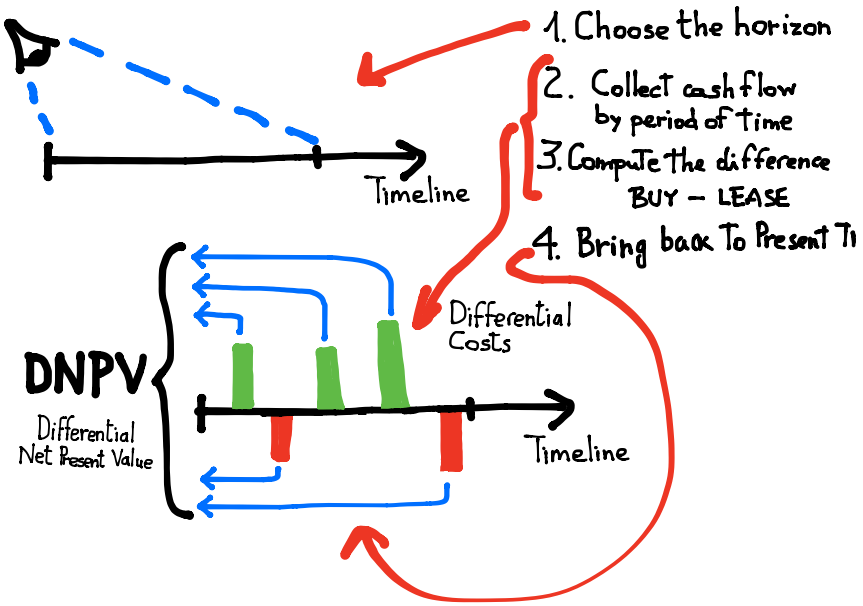
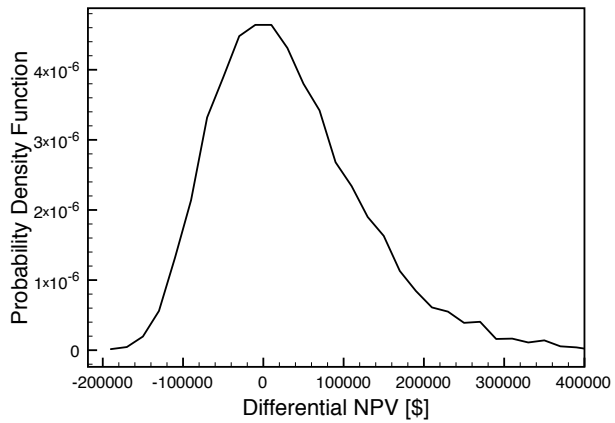


BUT
the DNPV is a
RANDOM value



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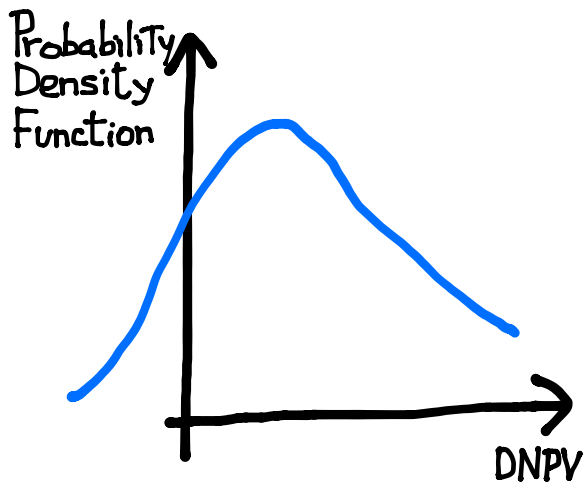

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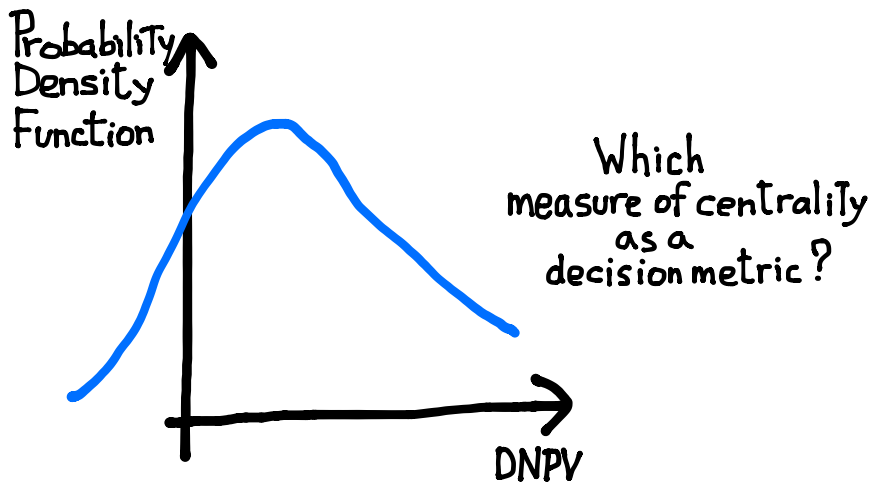

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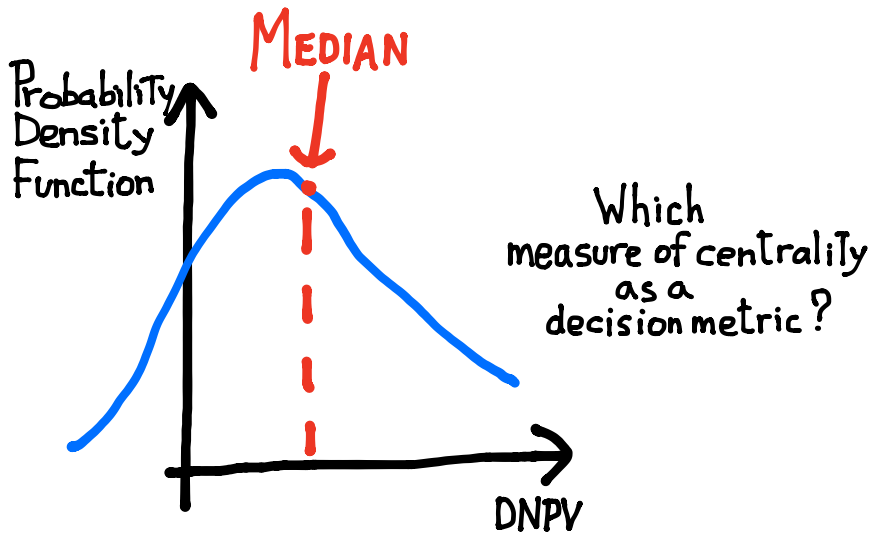

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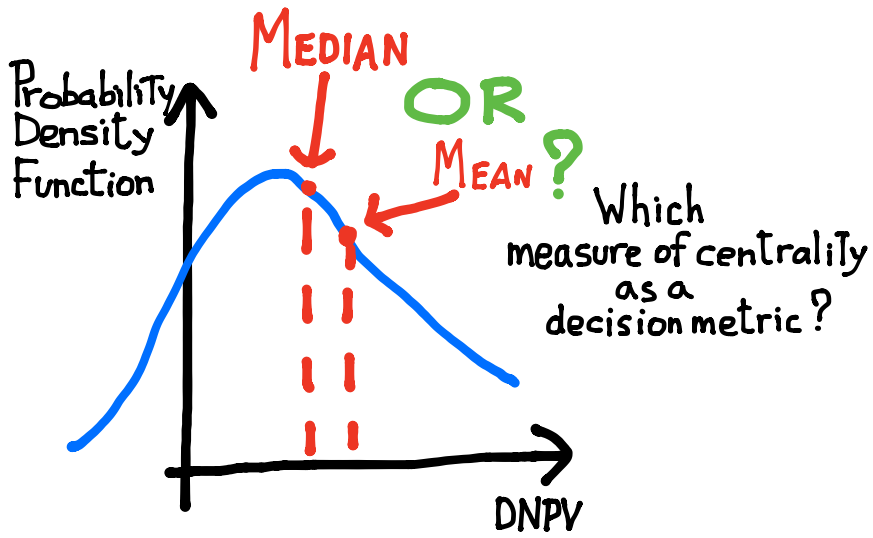

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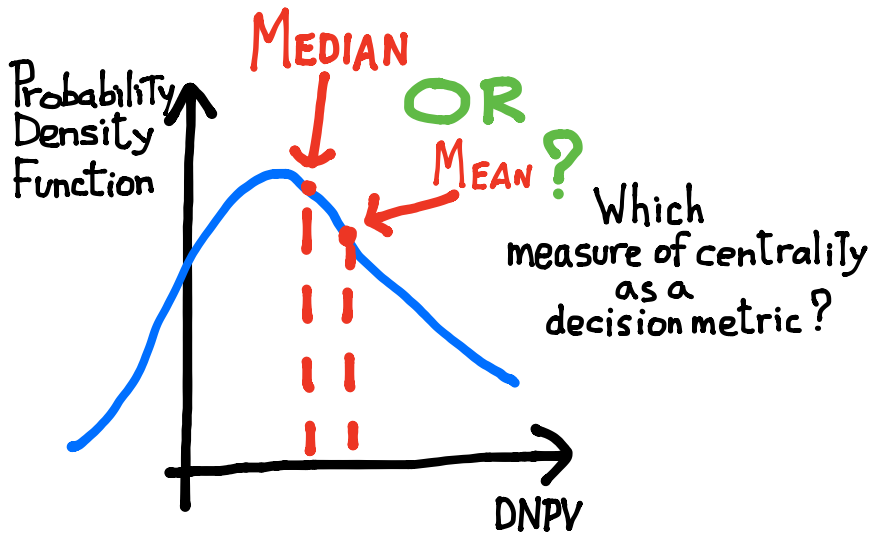
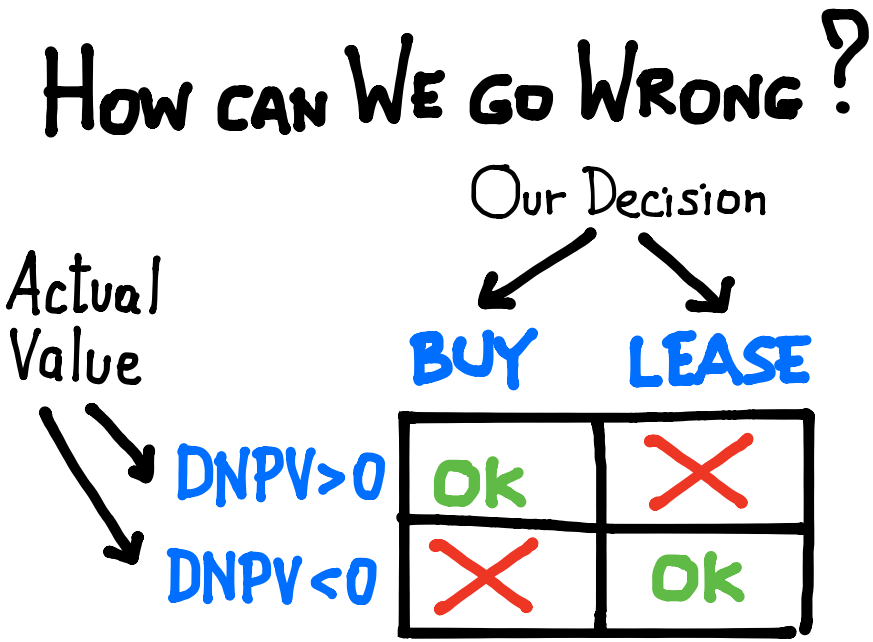


$$DNPV = NPV_{BUY} - NPV_{LEASE}$$

$$\overline{DNPV} \text{ OR } Med(DNPV) = \begin{cases} >0 \rightarrow \text{BUY} \\ <0 \rightarrow \text{LEASE} \end{cases}$$

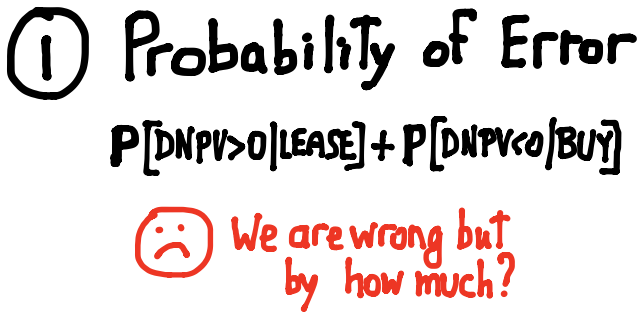
Errors

Errors


How can We Go Wrong?
Our Decision
Actual Value
BUY
LEASE
DNPV>0
DNPV<0
Ok
Ok

Risk analysis

Risk analysis



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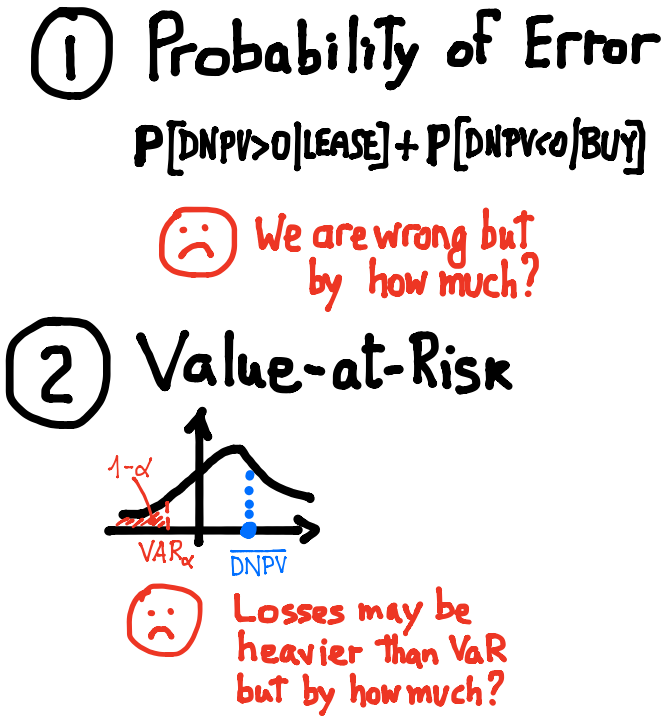


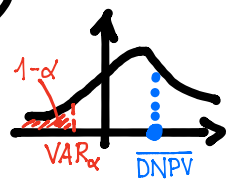
Risk analysis

1. Probability of Error

$$P[DNPV>0|LEASE] + P[DNPV<0|BUY]$$

We are wrong but by how much?

2. Value-at-Risk



Losses may be heavier than VaR but by how much?

3. Conditional Value-at-Risk

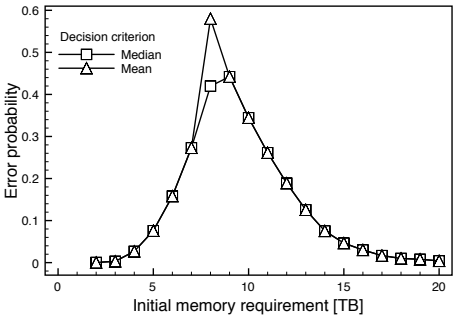
$$CVaR = \frac{1}{1-\alpha}\int_{\alpha}^{1} VaR_u \, du$$

Risk analysis

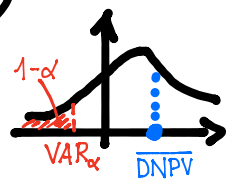
① Probability of Error

$P[DNPV>0|LEASE] + P[DNPV<0|BUY]$

☹ We are wrong but by how much?



② Value-at-Risk



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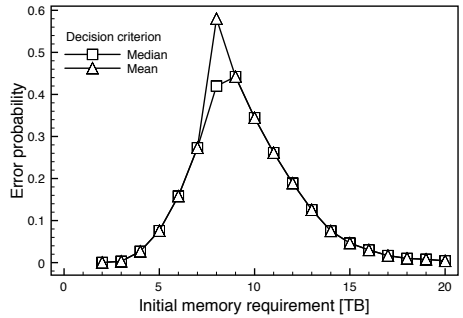

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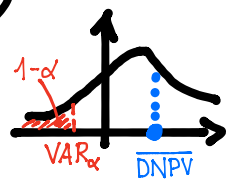

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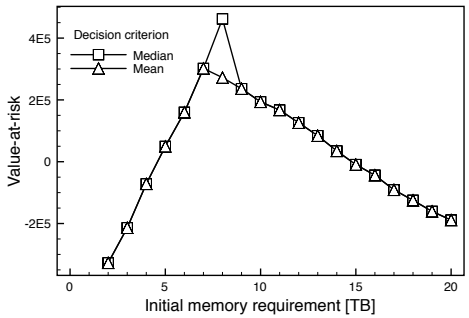

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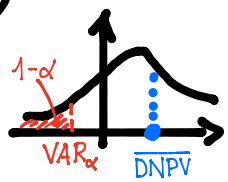

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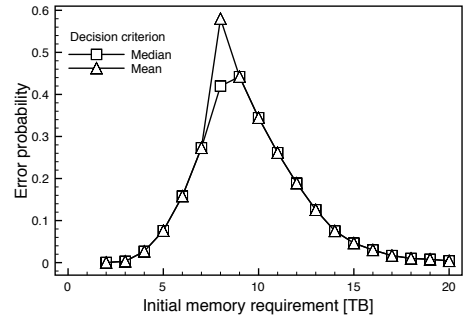
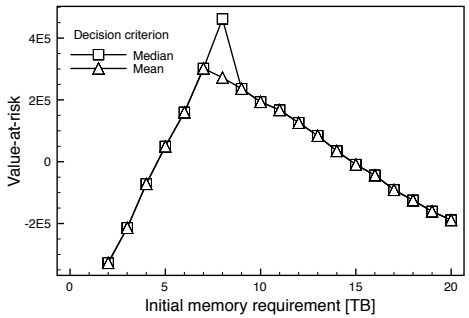
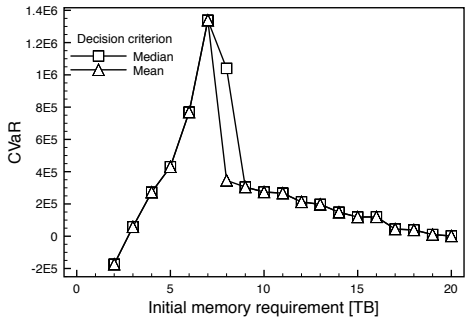
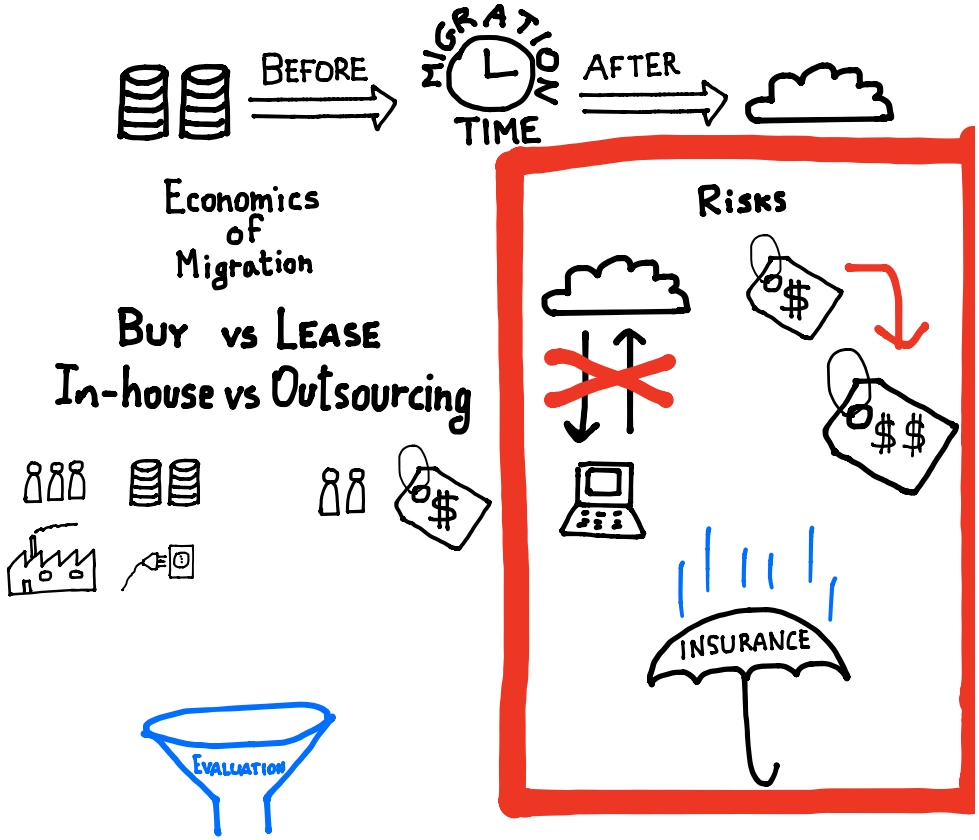






Risks after adoption



Fighting unavailability: a multicloud arrangement

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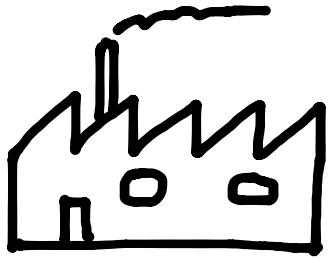

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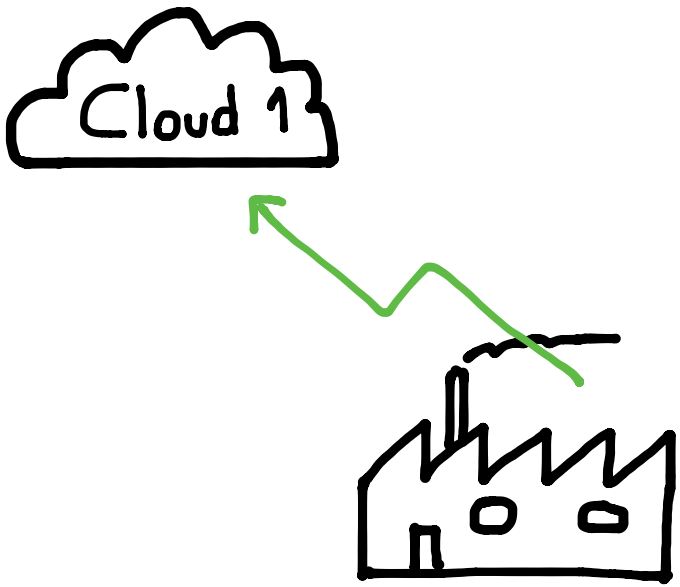

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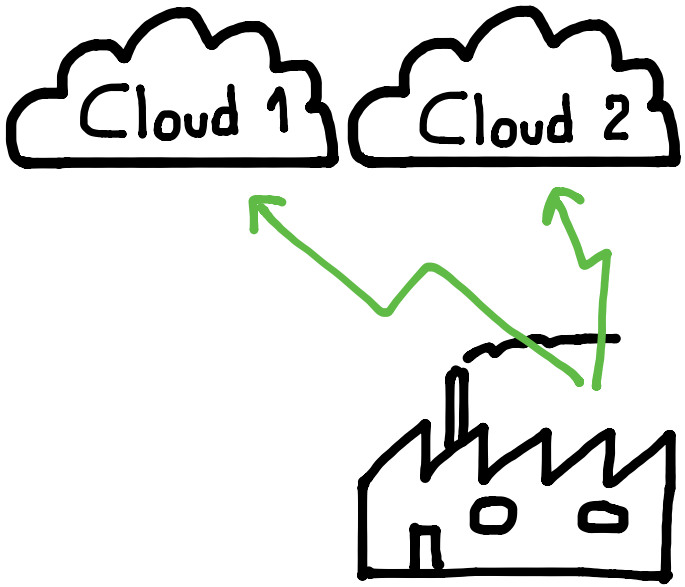
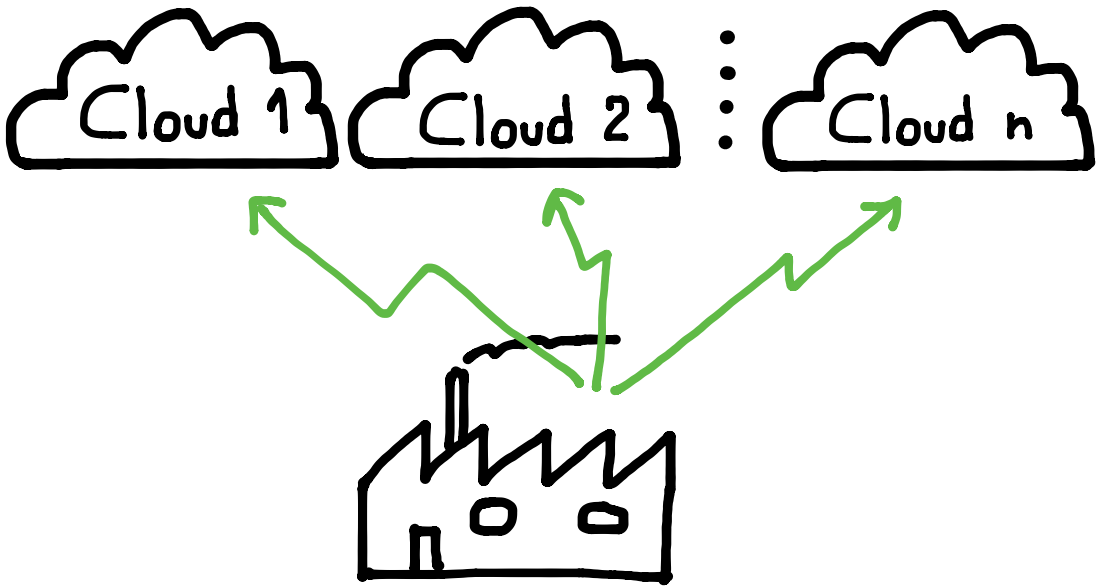


Fighting unavailability: a multicloud arrangement



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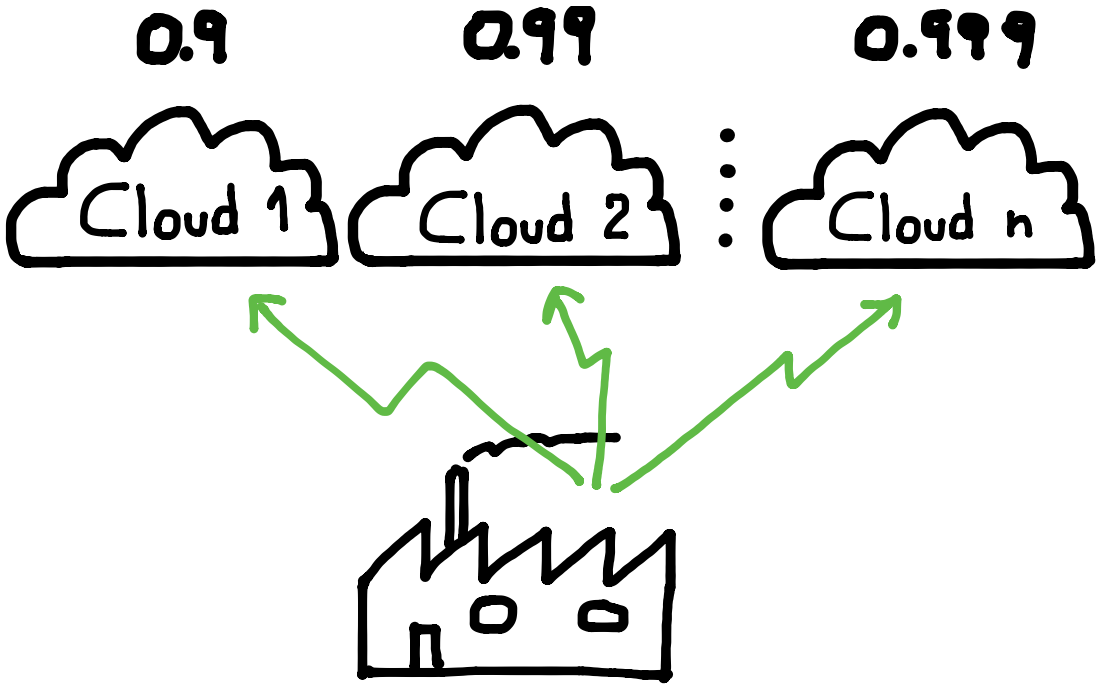

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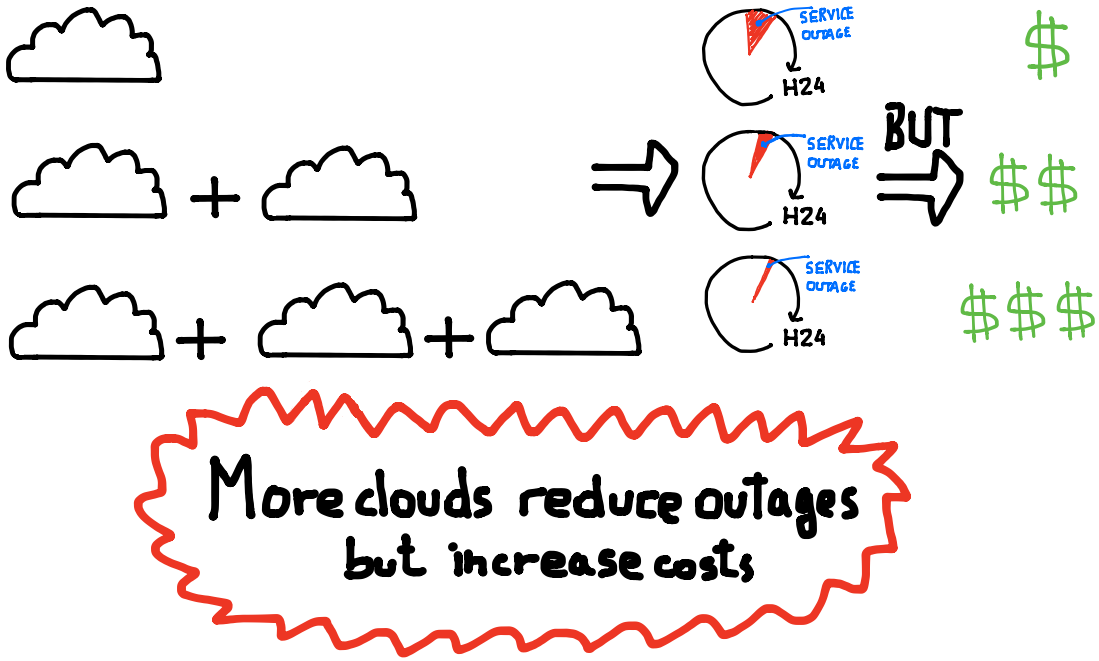

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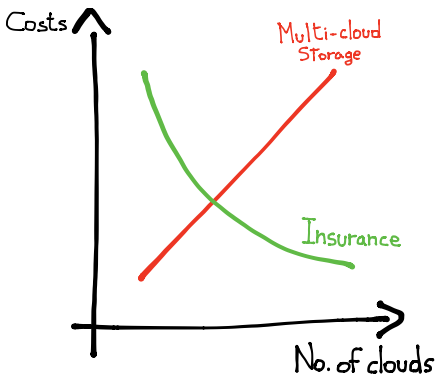

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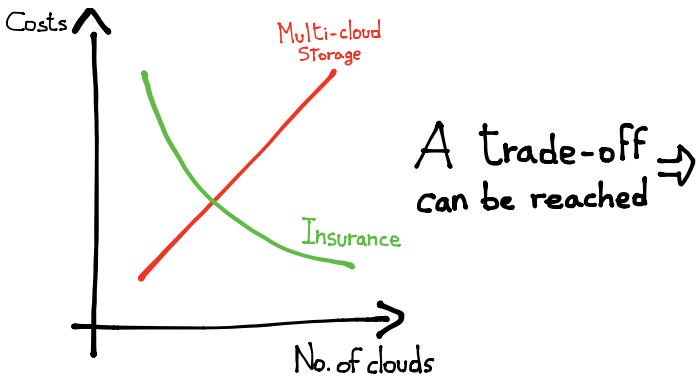

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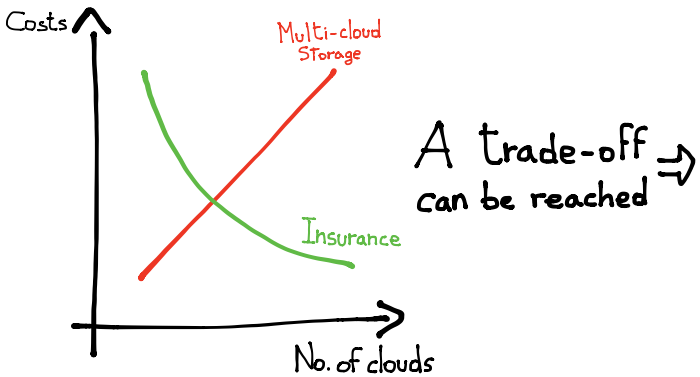

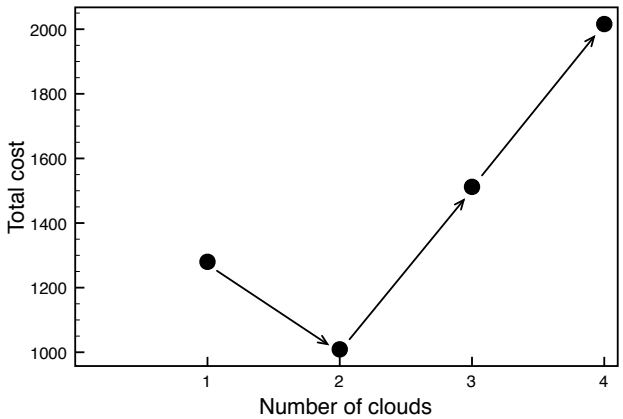

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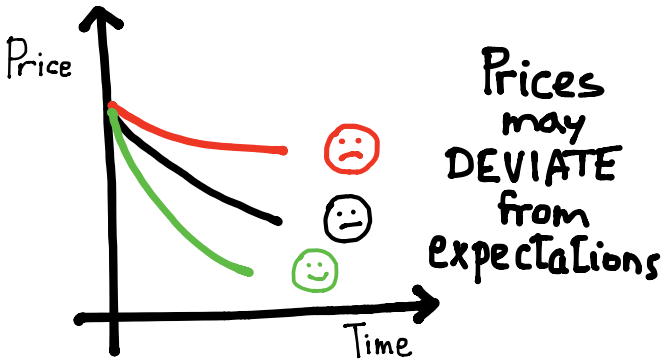

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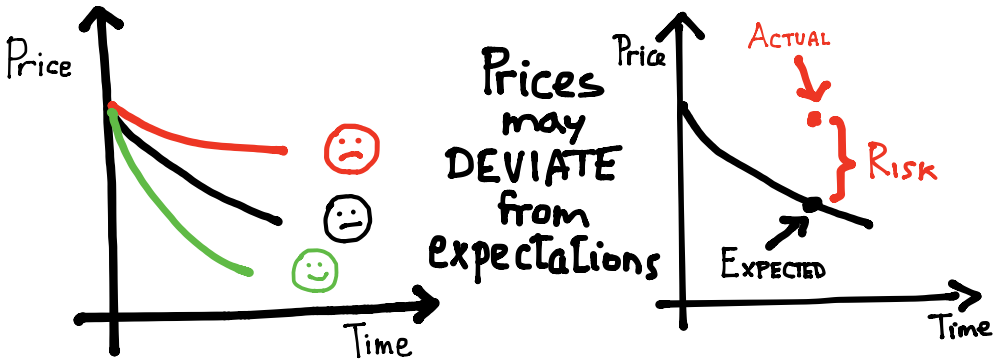

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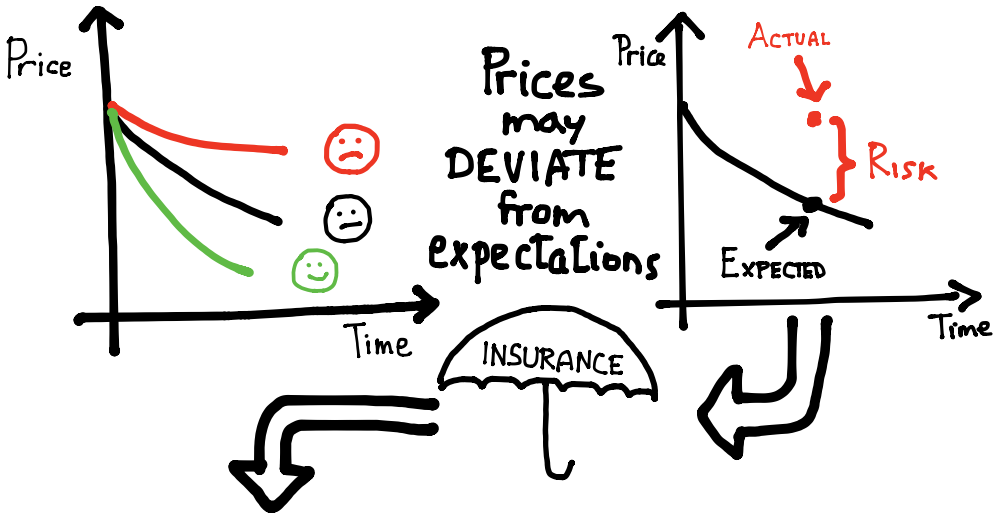

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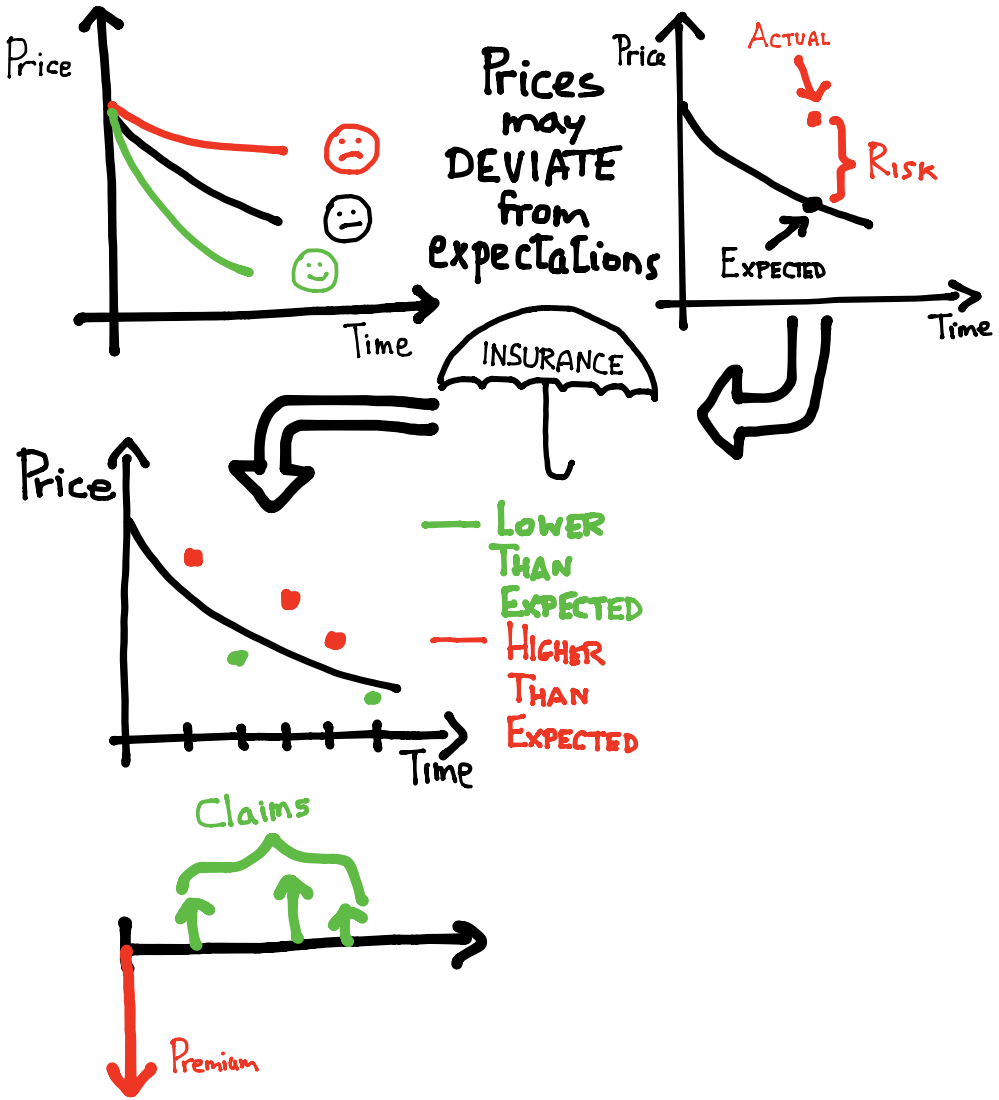

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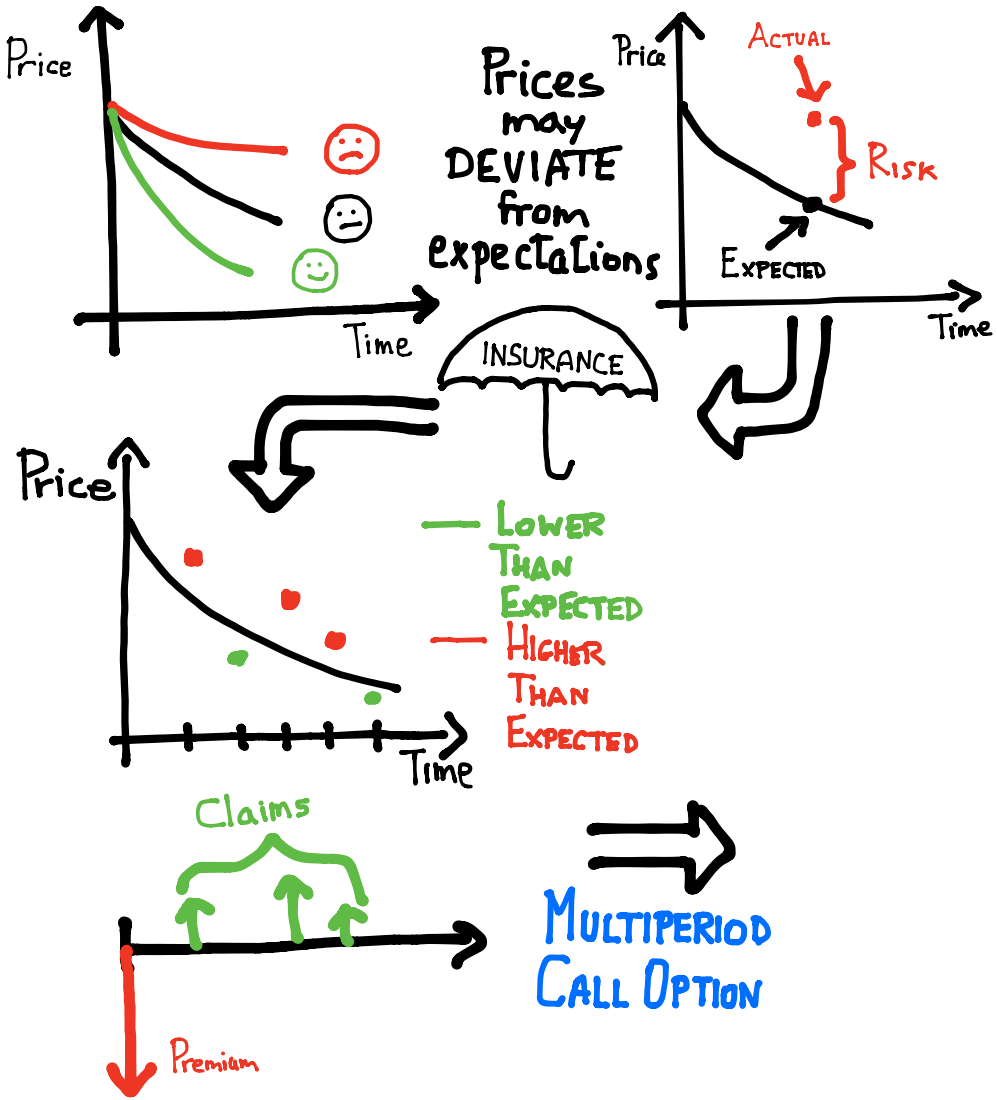

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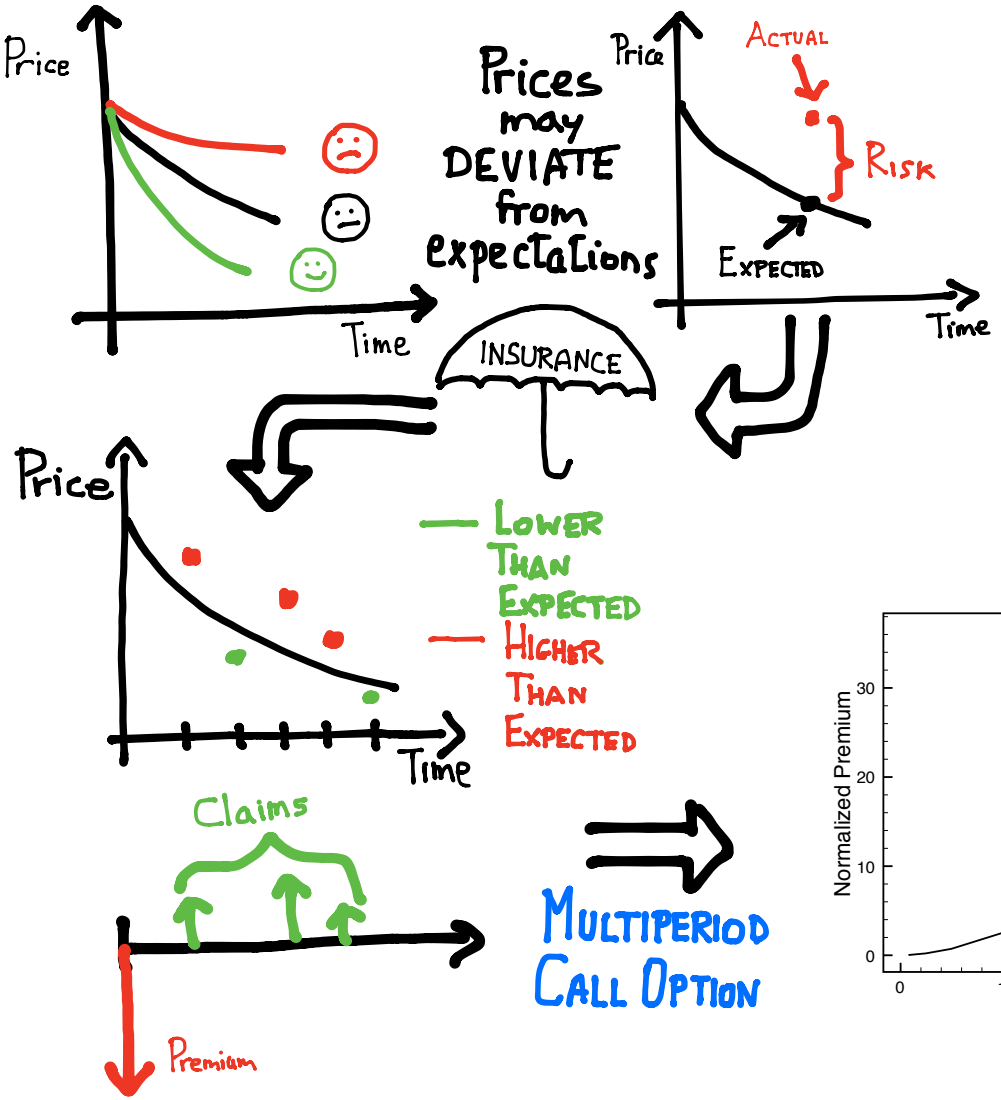

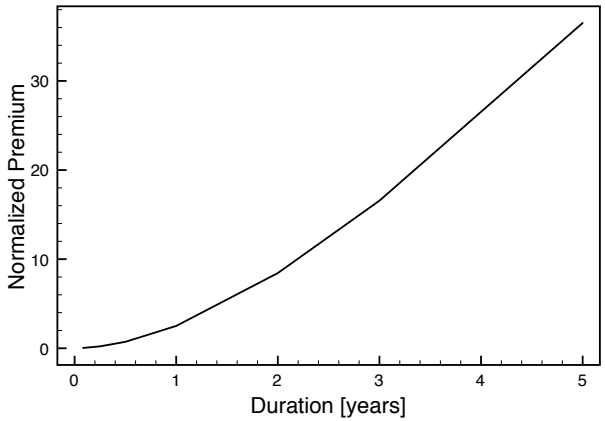

Protection against overall costs

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$$\text{Actual DNPV} \neq \overline{\text{DNPV}}$$

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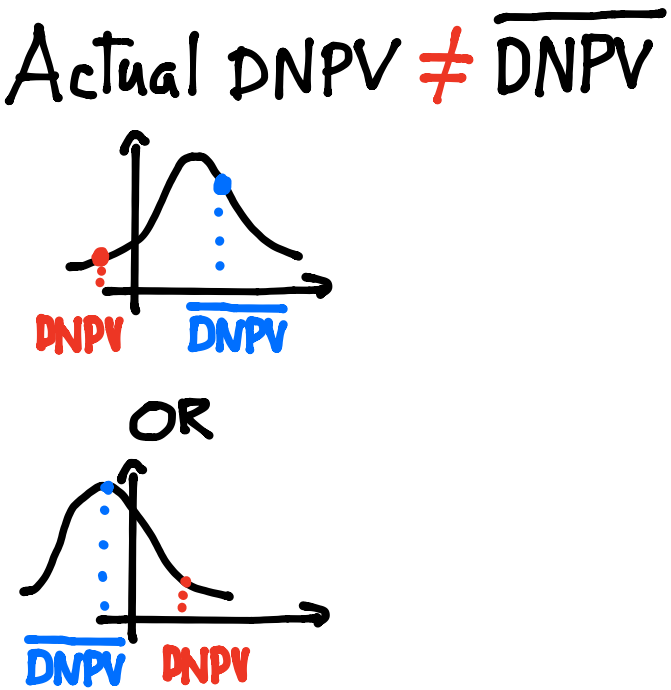

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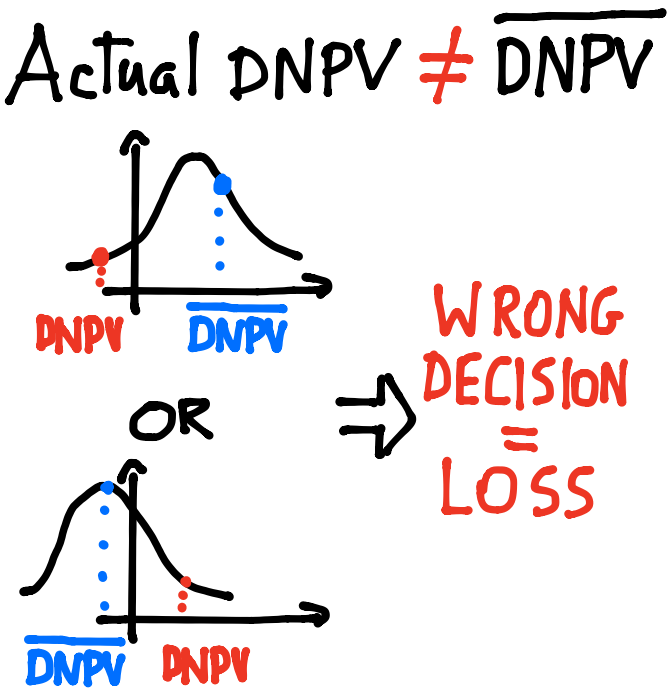

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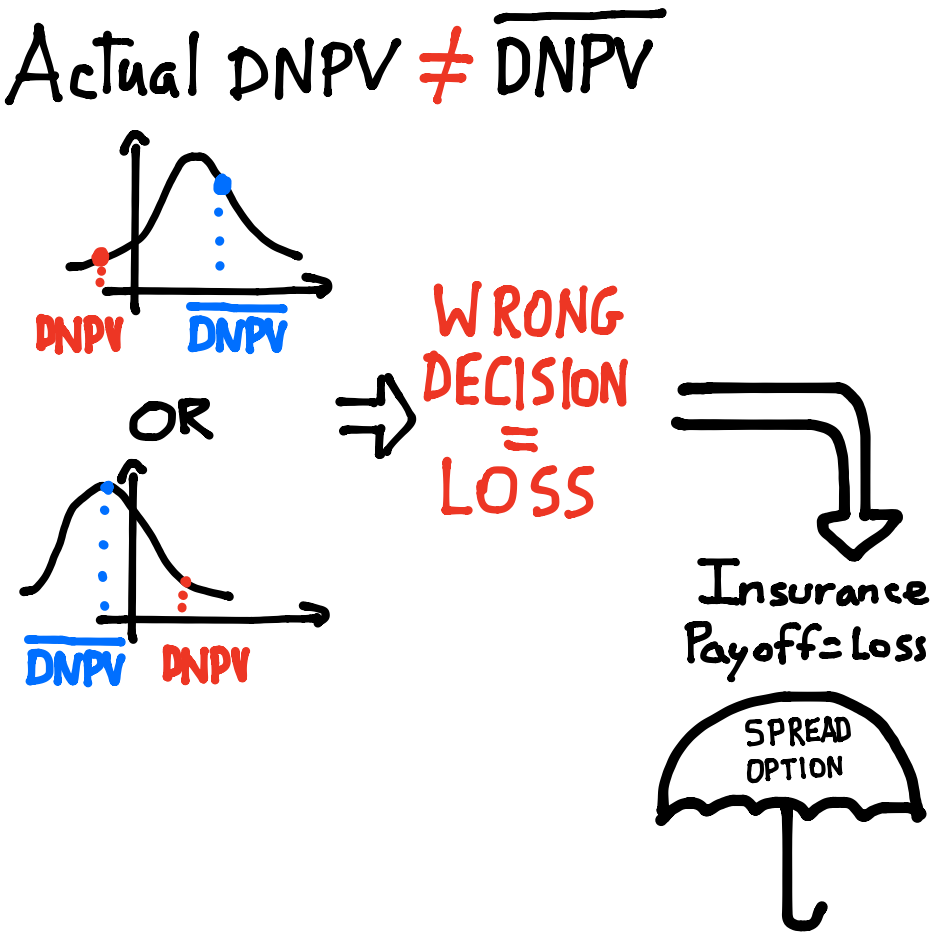

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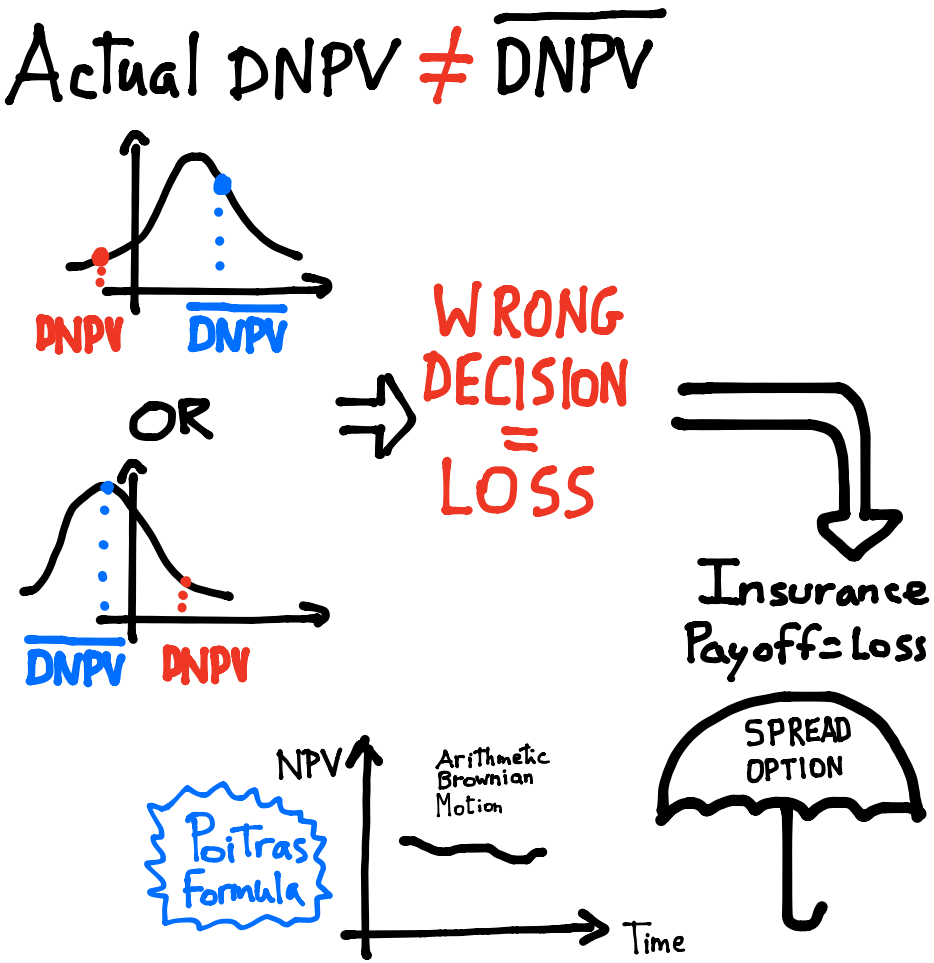

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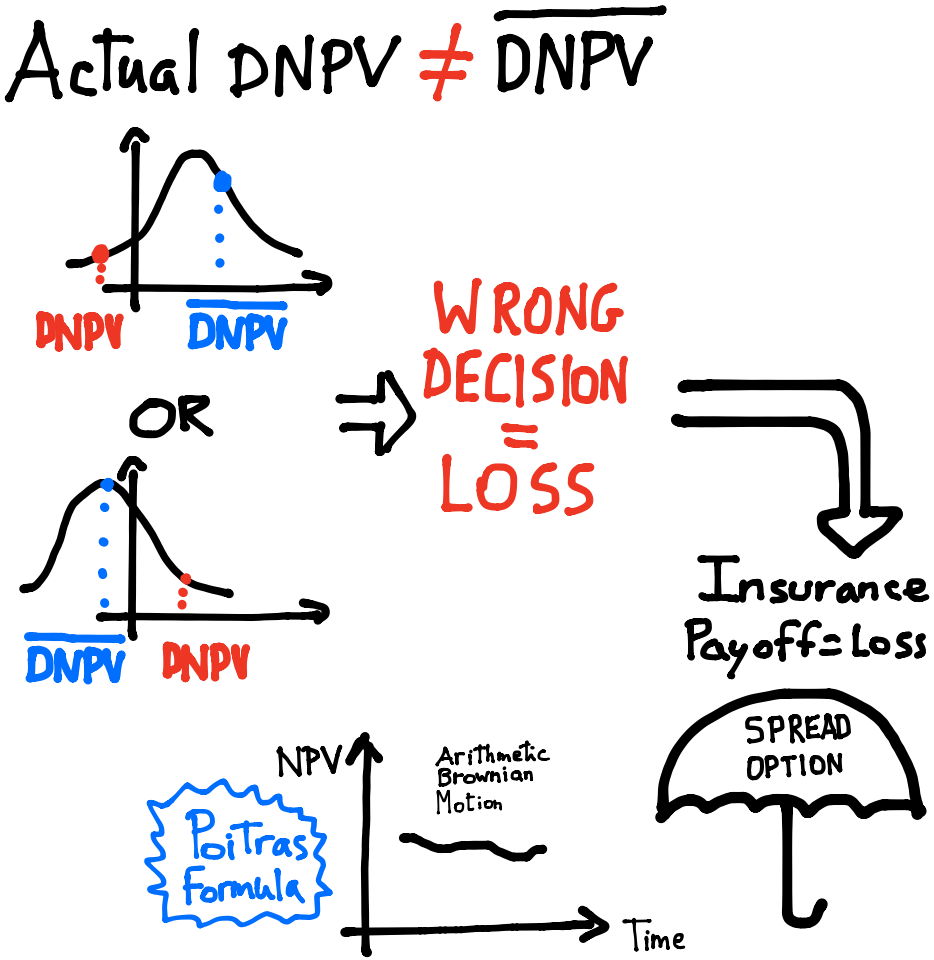

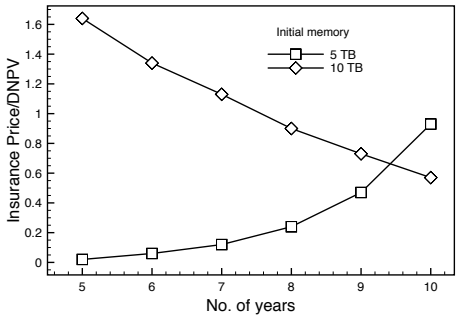

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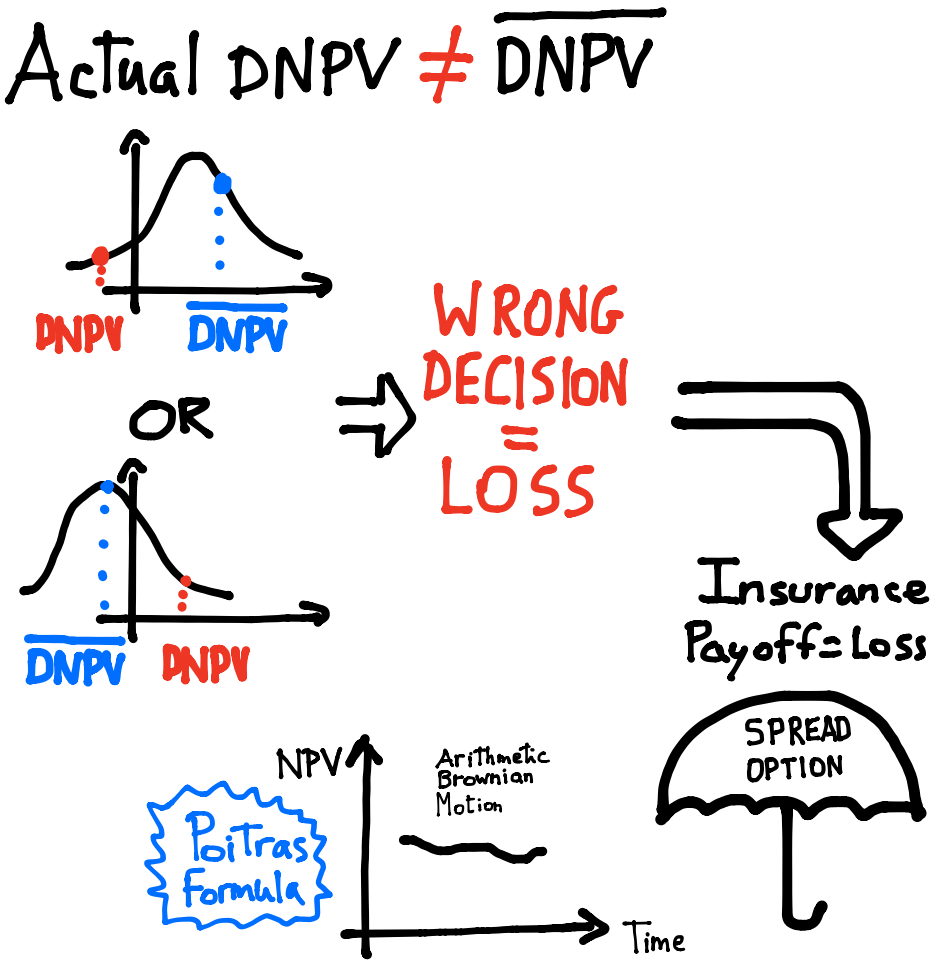

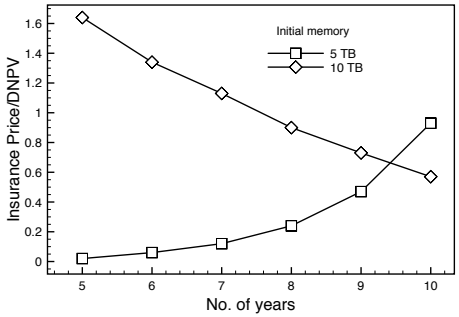

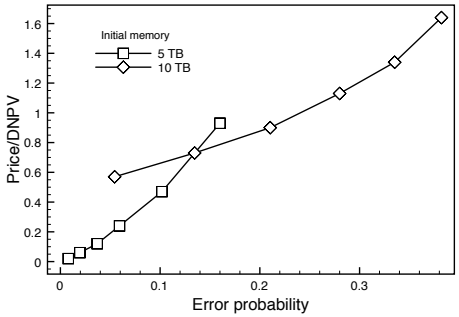

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