



An introduction to pricing with

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pricing



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1. Mettre les diapos en format plein écran en cliquant sur 
2. Faire défiler l'animation en cliquant **sur** les diapositives

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Behavioral & Experimental Finance

- *The goals of **experimental finance** are to establish different market settings and environments to observe experimentally and analyze agents' behavior and the resulting characteristics of markets.*
- *This can be reached by conducting trading simulations*
- *Researchers in experimental finance can study to what extent existing **financial economics** theory makes valid predictions and discover new principles on which theory can be extended*

http://en.wikipedia.org/wiki/Experimental_finance



Organization

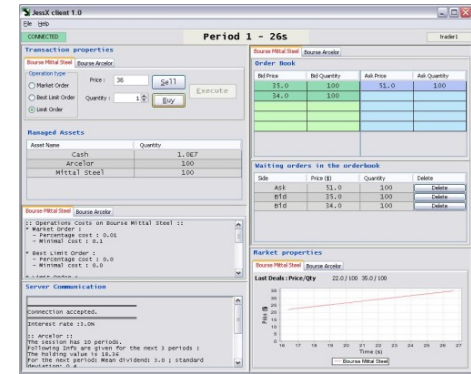
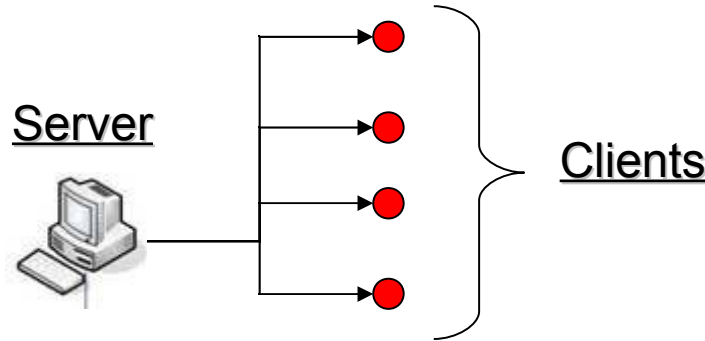
- Collective market simulation sessions
 - Sessions can take place in a single big room or remotely, on network
- ..or you can train alone..
 - ...by trading against a stupid robot



Image : [Source](#)



Configuration



Analyzer

.. when the trading session in over





The main problem for a trader : pricing

- What is the appropriate price for buying or selling an asset on the market ?
 - Actualization says the fair price is the actualized sum of cash flows, the **Net Present Value**, also called **holding value**

$$NPV = F_0 + F_1/(1+i) + F_2/(1+i)^2 + F_3/(1+i)^3 + \dots + F_n/(1+i)^n$$

$$S_n = \sum_{k=0}^n U_0 \cdot q^k = U_0 \cdot \frac{1 - q^{n+1}}{1 - q}$$



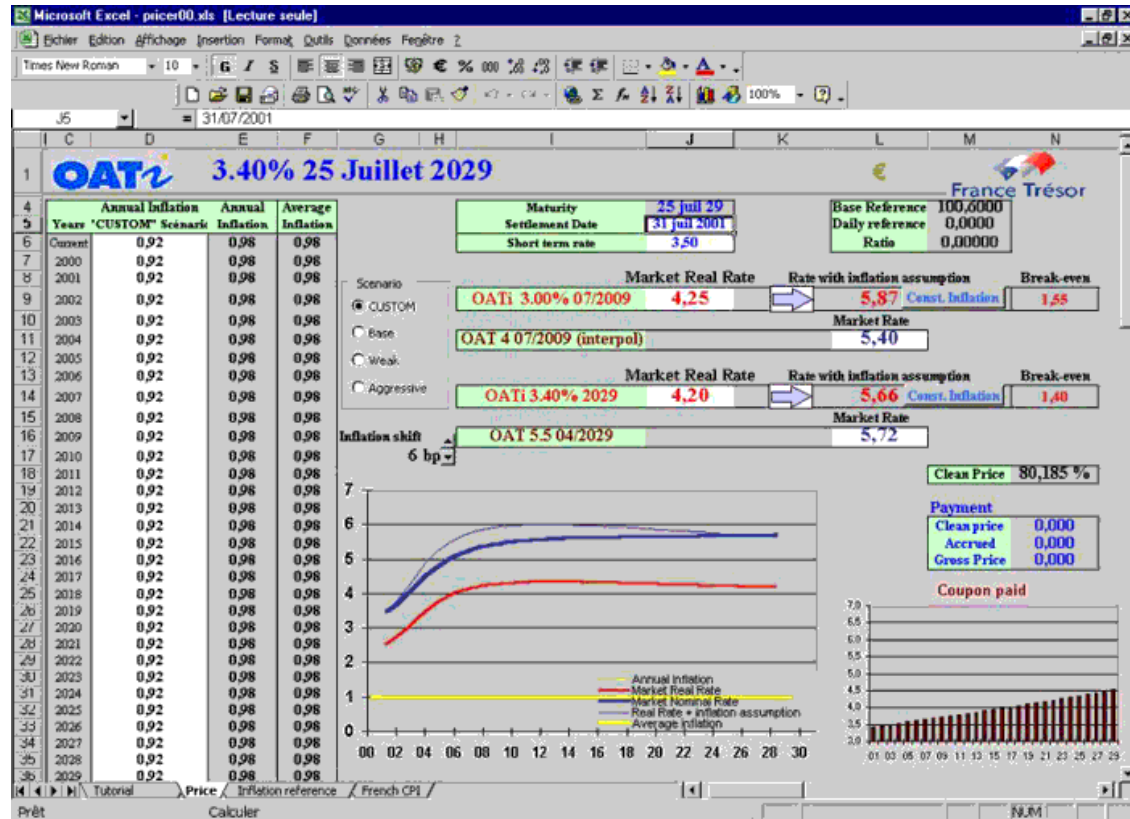
Building a pricer

A pricer is a spreadsheet

- Input : *interest rate, cash flows, risk..*
- Output : *fair price*

Before the session, you have to design your own pricer

- Open office or Excel-compatible.
- Can process several assets types bonds, stocks .. and cash.





Cash flow for cash



Image : [Source](#)

- Zero risk
- Interest paid at the end of each period

- *This is the way it works with JessX*

If, at the end of a period

1. I have 100€ cash
2. Interest rate is 3%

⇒ I get 3€



Cash flow for bonds



Image : [Source](#)

- Zero risk, unless the issuer goes bankrupt (*which is rare*).
- At the end of each period you will earn interest (the *coupon*)
- At the maturity date of the bond you earn the principal (or *nominal*)
- *This is the way it works with JessX*

If I hold a 100€-nominal bond at 5%

1. At the end of each period, I get 5€
2. At maturity, I get 5€+100€



Cash flow for stocks (1/2)



Image : [Source](#)

- At the end of each period you are repayed with dividends
- Dividends vary every year with the profit made by the company
- In this simulation, dividend *mean value* is known, but the uncertainty on dividends is evaluated by the *standard deviation* of a Gauss distribution

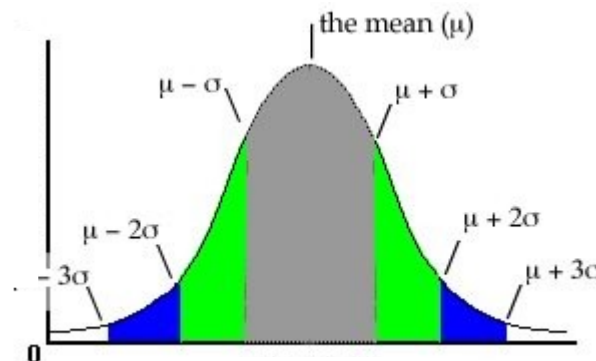


Image : [Source](#)

- More risks : *news* can modify dividend expectations
- A stock is never repayed, but at the end of the session, it is valued at the NPV of its future dividends.



Cash flow for stock (2/2)

- *This is the way it works with JessX*

If, at the end of a period, I hold a stock, with a *10€ mean, 1€ std deviation* dividend,

- *At the end of each period, I have 66% odds that I get a 9€ to 11€ dividend*

... if interest rate is 3%

- *At the end of the session, my stock is valued at its holding value,*
 - *which is the NPV of 10€/year at 3% = 343,4€.*

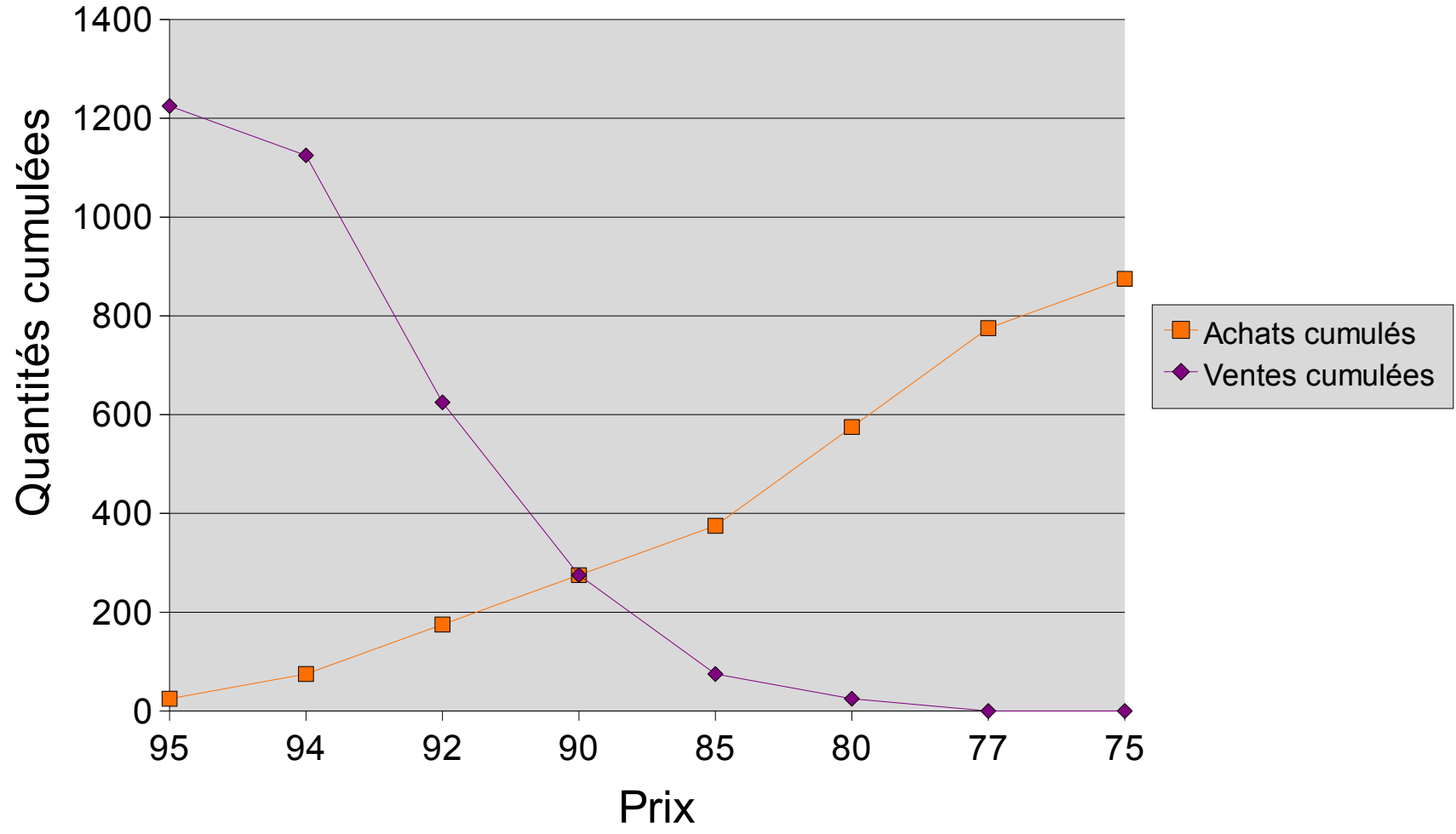
A good pricer is nice, but ...

- The pricer will help you determine the right price for an asset
- It will allow you to immediately forecast where the price is going in cases such as...
 - a good / bad news for the company.. dividend are higher / lower than expected.
 - If the dividend for a given period is know a bit in advance (leak ...)
 - ...
- Don't forget that “being right”, but against the market means you lose money
 - ... and that's bad because trading is about winning money !
 - So your pricer helps decision-taking, but you must take other factors into account
 - Offer and demand
 - Other traders can be ‘stupid’
 -
 - At the end of the last period, the bonds and stocks you have in your portfolio will be valued at their theoretical Holding Value, regardless of market price.



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Equilibrium price



Exemple

Price (€)	Buy Orders	=> Sum	Sell Orders	=> Sum
95	25	25	100	1225
94	50	75	500	1125
92	100	175	350	625
90	100	275	200	275
85	100	375	50	75
80	200	575	25	25
77	200	775		
75	100	875		

Price =>

Questions ?



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Mon CV est disponible ici.

Mes principaux cours à Centrale

Gestion de projet, sociologie des organisations, recueil, analyse et traitement de données, prévention du plagiat, module de marchés financiers, cours de qualité et méthodes de résolution de problèmes, établir des cartes conceptuelles, utiliser Wikipédia et CentraleWiki, formation au coaching pédagogique et à l'encadrement