Sociology and political economy of financial markets

L2. Rationalities of the market. Performativity of theories and social backgrounds

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Calculation as an object of research

- Finance a sphere of life where people explicitly calculate
  - Involved in profit maximization
  - Use of complex mathematical formulas
  - Embedded in software.
- A good object for RAT. It is not an "as if"
  - Mathematical rational action model justified
  - But is it a description of what people do? When people use results from the mathematical econ/financial literature → performativity

Rationality is still far from perfect

- Mania, panic, crisis
  - Cognitive defects → Behavioral finance
- Not just a "psychological" limitation. Social process of improvement
  - Rationalization (Weber, 1923 ; Godechot, 2001)
  - Social background matters (Bourdieu, 1979; Godechot, 2016)

Beunza, Daniel, 2019. “Chapter 3. Trading robots and social cues”, *Taking the Floor,* Princeton University Press, 38-54.

The performativity approach

The performativity approach to finance

- How scientific, theoretical, technical devices institute the financial markets
- A major topics in the field of *social studies of finance*
  - "Social studies of finance" coined on the model of "social studies of science"
- Good cases of performativity of (financial) theory
- Scope of the approach is discussable

Performativity

- Origins of the concept of *performativity* as an intersection of
  - Linguistics
  - Reflexive social sciences
  - Science studies
- Three theories of finance that changed finance
  - Portfolio selection, efficient market, option pricing
- Option pricing as a case of performativity

Austin does something with words (and explains how)

Austin, 1962, *How to do things with words*

- Challenges formalist and positivist approaches to language (Whitehead, Russell) based on logics
  - Language is used to make descriptive or constative statements on the world
  - Utterances can be judged in terms of degree of adequacy. True or False
  - Limits: hard to decide for many utterances
- Performative utterances
  - "I do" uttered during a wedding ceremony
  - "I name this ship the *Queen Elizabeth"*
  - "I give and bequeath my watch to my brother" as occurring in a will
  - "I bet you six pence it will rain tomorrow"
- Difficult to see those utterances as "self-descriptive"
  - Resemble constative utterances
  - But the adequacy to the world can not be judged ➔ changes the world

How to do things with words? (2)

- Performativity is not only in language but requires specific conditions
  - "Suppose, for example, I see a vessel on the stocks, walk up and smash the bottle hung at the stem, proclaim "I name this ship the Mr. Stalin" and for good measure kick away the chocks : but the trouble is, I was not the person chosen to name it"
- Difficult to decide the limits between performative and constative
  - "I apologize" (performative) versus "I am sorry" (mixed)
- Normative, imperative and performative
  - Distinction between "Go !" (implicitly performative) and "I order you to go !" (explicitly performative)
  - What is performed is the order. Not the result (action of the person).

Bourdieu and performativity : criticism of pure linguistic performation

- Social conditions for performativity
  - 1982, *Ce que parler veut dire;* tr: 1991, *Language and symbolic power*
  - Challenges not so much Austin than the followers restricting performativity to a linguistic phenomenon
    - "The real source of the magic of performative utterances lies in the mystery of ministry, i.e. the delegation by virtue of which an individual (...) is mandated to speak and act on behalf of a group, thus constituted in him and by him"

… to theory effect

- "In short, social science must include in its theory of the social world a theory of the theory effect which, by helping to impose a more or less authorized way of seeing the social world, helps to construct the reality of that world" (p. 106)

- Analyzes further the relation between "description" and "prescription"
  - "This means that science is destined to exert a theory effect, but one which takes a very particular form: by expressing in a coherent and empirically valid discourse what was previously ignored, i.e. what was (according to the case in question) implicit or repressed, it transforms the representation of the social world as well as simultaneously transforming the social world itself, at least to the extent that it renders possible practices that conform to this transformed representation." (p. 133)

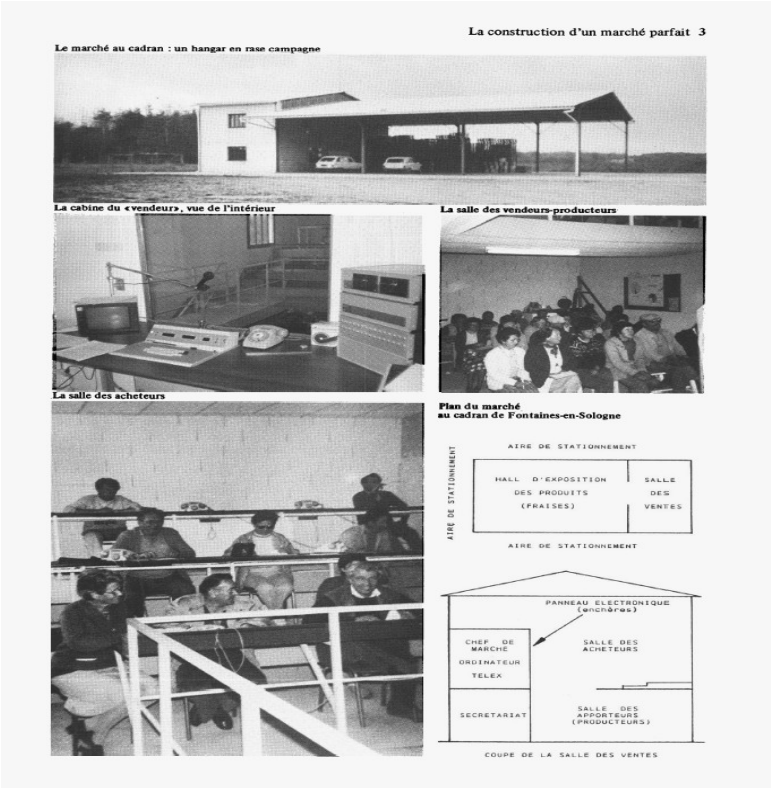
… theory effect (2)

- Marxism as the example of performativity
  - "Even the most strictly constative scientific description is always open to the possibility of functioning in a prescriptive way, capable of contributing to its own verification by exercising a theory effect through which it helps to bring about that which it declares. Like the phrase, 'the meeting is open', the thesis, 'there are two classes', may be understood as a constative utterance or a performative utterance." (p. 134)
- In brief
  - Performativity of language
    - Works if social conditions (legitimacy) are met
  - Can be extended to (social) science
    - To the extent again that social conditions are met

Applying Walras to strawberries

Garcia, 1986, "La construction sociale d'un marché parfait", *ARSS*. Tr: "The Social Construction of a Perfect Market" 2007 in *Do economists make markets ?*, Princeton University Press.

- Strawberry market organized as a perfect market
  - Decreasing price auction
  - Standardization of quality
  - Separation of buyers and sellers
- Why and how?
  - Settling a social dispute between sellers (growers) and buyers (brokers and shippers). Breaking forms of dependency.
  - Role of a young advisor of the Agriculture chamber, diploma in agronomy, law and biology. Classes in economics.
    - "Have competition work again"
  - Theory effect



Callon applies it to a special science: economics

- Callon, 1998. "The embeddedness of economic markets in economics", *in* Callon, *The laws of markets*, Blackwell: 1-57.
  - Based mainly on Garcia 1986
  - Emphasis on the role of economic theory
  - The group struggle is overlooked
- Economics is performative
  - "the *economy is embedded not* in society but in *economics"* (p. 2)
  - "economics . . . performs, shapes and formats the economy, rather than observing how it functions" (p. 2)
- Homo-economicus is not a fiction that sociology must complain about
  - "Yes, homo-economicus really does exist. (...) Of course, he exists in the form of many species and his lineage is multiple and ramified. But if he exists he is obviously not be found in a natural state – this expression has little meaning. He is formatted, framed and equipped with prostheses which help him in his calculations and which are, for the most part, produced by economics" (p. 51)

Three theories which changed the history of finance

- Efficient market hypothesis (Cowles, Fama)
- Porfolio selection (Markowitz)
- Option pricing (Black, Scholes, Merton)

Can we beat the market?

The efficient market hypothesis

- Cowles, 1933, "Can stock market forecasters forecast", *Econometrica*
  - Cowles businessman said to have lost a fortune in the 1929 crash
  - Founded and funded Cowles commission ➔ rise of econometrics in the USA
  - Devoted his remaining fortune to criticize market forecasters, seen as market gurus.

1. Sixteen financial services, in making some 7500 recommendations of individual common stocks for investment during the period from January 1, 1928, to July 1, 1932, compiled an average record that was worse than that of the average common stock by 1.43 per cent annually. Statistical tests of the best individual records failed to demonstrate that they exhibited skill, and indicated that they more probably were results of chance.

2. Twenty fire insurance companies in making a similar selection of securities during the years 1928 to 1931, inclusive, achieved an average record 1.20 per cent annually worse than that of the general run of stocks. The best of these records, since it is not very much more impressive than the record of the most successful of the sixteen financial services, fails to exhibit definitely the existence of any skill in investment.

3. William Peter Hamilton, editor of the *Wall Street Journal*, publishing forecasts of the stock market based on the Dow Theory over a period of 26 years, from 1904 to 1929, inclusive, achieved a result better than what would ordinarily be regarded as a normal investment return, but poorer than the result of a continuous outright investment in representative common stocks for this period. On 90 occasions he announced changes in the outlook for the market. Forty-five of these predictions were successful and 45 unsuccessful.

4. Twenty-four financial publications engaged in forecasting the stock market during the 4½ years from January 1, 1928, to June 1, 1932, failed as a group by 4 per cent per annum to achieve a result as good as the average of all purely random performances. A review of the various statistical tests, applied to the records for this period, of these 24 forecasters, indicates that the most successful records are little, if any, better than what might be expected to result from pure chance. There is some evidence, on the other hand, to indicate that the least successful records are worse than what could reasonably be attributed to chance.

Fama 1965

Fama, 1965, "The Behavior of Stock-Market Prices", *The Journal of Business*

- A test of chartist theories
  - "Although there are many different chartist theories, they all make the same basic assumption. That is, they all assume that the past behavior of a security's price is rich in information concerning its future behavior. History repeats itself in that "patterns" of past price behavior will tend to recur in the future."
  - Disclaimer
    - " from a practical point of view the chartist would not regard either type of analysis as an *adequate* test of whether the past history of the series can be used to increase the investor's expected profits. The simple linear relationships that underlie the serial correlation model are much too unsophisticated to pick up the complicated "patterns" that the chartist sees in stock prices."
- Independence
  - "On the basis of all these tests it was concluded that the independence assumption of the random-walk model seems to be an adequate description of reality."
- Distribution
  - "On the basis of these estimates of α and the results produced by the frequency distributions and normal probability graphs, it was concluded that the Mandelbrot hypothesis fits the data better than the Gaussian hypothesis."

Three forms of efficient market hypothesis

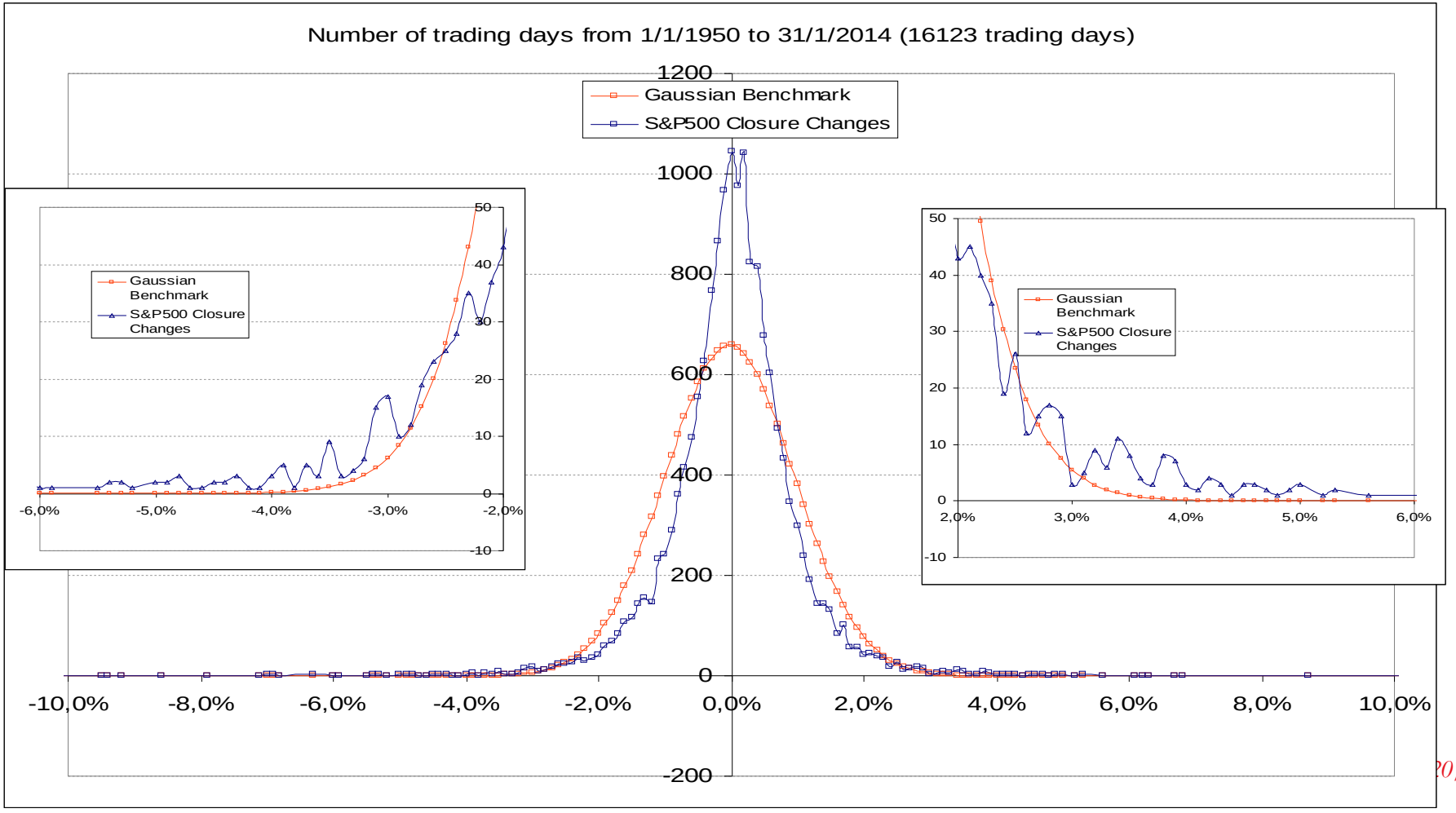
- $E(P_{t+1})=P_t$: the best expectation for tomorrow's price it today's price… or you "can't beat the market"
- Weak form of EMH
  - It is impossible to predict the market based on past prices
  - Chartist price forecasting is inefficient
- Semi-strong form of EMH
  - It is impossible to predict the market based on all public information
  - Both chartist and fundamentalist can't beat the market
- Strong form of EMH
  - It is impossible to predict the market based on all information (either public or private)

The (a)-normality of prices:

What is the best probability distribution for fitting prices?

- Normal distribution
  - Started with Bachelier (*Théorie de la spéculation*, 1900)
    - Small adaptation from normal to log-normal distribution
- Gaussian distribution of return: $R_t = log(p_t) - log(p_{t-1})$
  - Easiest way to build models on
    - Two parameters, Mean and Variance
      - Average return
        - Daily S&P 500 average (from 1/1/1950 to 31/1/2014) =0,03%
    - Daily S&P 500 volatility (standard deviation)
      - 0,98%
      - Yearly volatility= [252*V(Rt)]0.5=15,49%

Fat tails issue



Gaussian versus real

- Probability of S&P drop in price larger than
  - 4%
    - Real : 0,3% versus Gaussian : 0,002%
    - In terms of 16123 trading days : 45 trading days versus 0,3 days…
- Largest drops:
  - 19/10/1987 : -22.9%...
    - Gaussian probability $=1.89*10^{-122}$
  - 15/10/2008 : -9.5%
    - Gaussian probability$=7.75*10^{-23}$

The problem with paretian fit

- Mandelbrot early work on stock-exchange
  - Paretian fit
  - Recognized by Fama in 1965
  - But abandoned afterwards in most of his papers
- Pareto laws
  - Good fit
  - But not convenient
    - $\alpha \leq 2$ ➔ infinite variance
    - $\alpha \leq 1$ ➔ infinite mean
- For almost models… let's do "as if" prices were log-normal

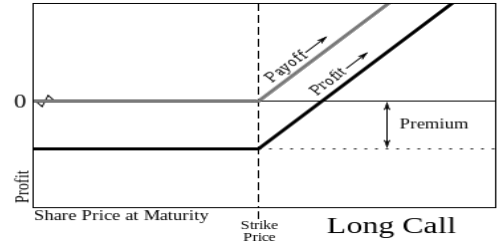
Diversification is the solution (Markowitz, 1952)

Markowitz, 1952, "Portfolio Selection", *Journal of Finance*

Sharpe, 1964, "Capital asset prices: A theory of market equilibrium under conditions of risk", *Journal of Finance*

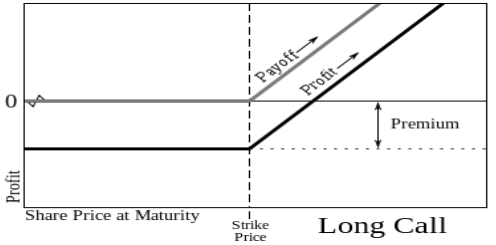
- Rational risk-averse investors maximize expected return for a given level of risk or to minimize risk for a given level of return
  - Normal distribution
  - An investor can reduce portfolio risk simply by holding combinations of instruments that are not perfectly positively correlated
  - The efficient portfolio is a combination of risk free assets and the market portfolio
- Gives rise to index industry, index replication and passive fund management

Options



- An option is a contract which gives the buyer (the owner) the right, but not the obligation, to buy or sell an underlying asset or instrument at a specified strike price on or before a specified date.
  - Example. BNP Paribas price was on Friday 59.51 €
    - 10 contracts BNP 60C 0314S gives me the right to buy 1 share at 60 € on the 21/03/2014
      - If on that date BNP price is 67.21 €, I will "exercise" the option and the payoff is 67.21-59.51=7.70
      - If on that date BNP price is 57.56 €, I will not exercise the option and loose 0.
    - 10 contracts cost on Friday 2.50 €
- Goals of options
  - Speculation
  - Insurance
    - Example Put options. I fear a BNP crash. I can buy a put 5 contracts BNP 55P 0314S that allows to sell 1 share at 55 €. This will cost me: 0.75 €.

More on options



- Types of options
  - *Call option*: right to buy ; *Put option*: right to sell
  - *European option*: an option that may only be exercised on expiration. ; *American option*: an option that may be exercised on any trading day on or before expiry
  - (For a call) *out of the money:* a strike price that is higher than the market price; *at the money :* a strike price that is at the level of the market price; *in the money :* a strike price that is lower than the market price

How to price an option?

- First models of option pricing
  - Bachelier, 1900
  - In the sixties hot question in academic finance and economics
  - Black, Scholes, 1973, "The Pricing of Options and Corporate Liabilities" *Journal of Political Economy*
  - Merton, 1973, "Theory of Rational Option Pricing", *Bell Journal of Economics and Management Science*
- The idea
  - There is a relation between the stock price, the strike and the option price
    - If for a call the strike is in the money (under the price) : example BNP 55C… the option is at least > 59.5-55 > 4.5 euros. Ex : BNP 55C 0314S= 5.55 euros
  - There is a relation between the volatility of the stock the option price
    - The higher the volatility, the more likely the option will be exercised
  - There is a relation between time left before exercise and option price
    - The closer it is, the less likely it will be exercised (most generally)

The formula

- *Symbols*
  - N is the cumulative distribution function of the standard normal distribution
  - $(T - t)$ is the time to maturity
  - S is the spot price of the underlying asset
  - K is the strike price
  - r is the risk free rate (annual rate, expressed in terms of continuous compounding)
  - σ is the volatility of returns of the underlying asset

$$C(S,t) = N(d_1)S - N(d_2)Ke^{-r(T-t)}$$

$$d_1 = \frac{1}{\sigma\sqrt{T-t}}\left[\ln\left(\frac{S}{K}\right) + \left(r + \frac{\sigma^2}{2}\right)(T-t)\right]$$

$$d_2 = \frac{1}{\sigma\sqrt{T-t}}\left[\ln\left(\frac{S}{K}\right) + \left(r - \frac{\sigma^2}{2}\right)(T-t)\right]$$

$$= d_1 - \sigma\sqrt{T-t}$$

- Method, building a portfolio constituted of cash and underlying asset equivalent to the call option
  - Brownian model of price evolution (Gaussian)
  - Efficient market hypothesis
  - Risk-neutral investors
  - For European calls
  - Without dividends
- Results Price of C
  - Call price increases with spot price, risk free rate, volatility, and most of the time with time to maturity
  - Put price decreases with spot price, risk free rate increase with volatility and most of the time with time to maturity

The limits of the formula

- Volatility parameter as a given constant parameter
  - Not constant
  - Historical volatility ➔ past volatility
- Reversal of the formula enables to calculate
  - Implied volatility: volatility forecasted by the market
  - Enables comparisons between volatility for different strikes and different on similar underlying assets
- Gaussian modeling ➔ big changes in prices are overlooked

The Black and Scholes formula a a case of performativity

- References
  - MacKenzie, Millo, 2003, "Constructing a Market, Performing Theory: The Historical Sociology of a Financial Derivatives Exchange", *AJS*
  - MacKenzie Donald, 2006, « Is economics performative? Option theory and the construction of derivatives markets », *Journal of the History of Economic Thought*, 28.1 (2006): 29-55
  - MacKenzie, 2006, *An engine, not a camera*
- Callon's theory of performativity
  - economics *performs the economy,* creating the phenomena it describes.
  - Challenging:
  - Under sharp criticisms. Miller views it as a defense of neoclassical economics. Forget the discrepancies.
  - Very few examples, except Garcia
- Joint history of the Chicago Board Options Exchange CBOE and option pricing history enables to coin a good example of an effective (barnesian) performativity.

Performativity key points

- It's not just a self-fulfilling prophecy
- It's not just the discovery of the "true solution"
- It's the creation of a world that dictates its logic

Collective action for options

- Chicago board of Trade inventing option
  - Facing in the 1960's a difficult economic environment (due to agricultural price regulation)
  - Inventing a new product: options on Equities
  - Pushing for deregulation in favor of the new product
  - Collective action for community reason in instituting the market (Melamed)

Option pricing arrives in parallel

- B&S model gives legitimacy to options while discussing with the regulators
  - Not anymore a matter of gambling and passion
  - But rationality, arbitrage, insurance
- Fit of the theory is first poor
    - "the calls were maybe 30–40% overvalued!"- "The model's right." - "Give me more money and we're going to have a killing ground here."
  - But difficulty to benchmark due to uncertainty on volatility
  - B&S prediction ➔ options on same asset, must be traded at the same implied volatility
  - Fit improves in the 1980s. "by 1986 typical deviations had fallen to less than 1% (Rubinstein 1994, p. 774)".

Creating a world

- Portfolio replication eased with removal of regulation T (preventing short-selling), and end of fixed commissions
- Short selling in bear markets
  - Calls are not hedged : "Sell the 280s and drive a Mercedes,"
  - Surge in prices in April 1978 ➔ important losses
- From a macho trading to the use of pricing devices
  - Electronic calculators not much in use
  - Pricing sheets were sold by F. Black himself and more convenient
  - 'You're not a man if you're using those theoretical value sheets.'
  - Changing legitimacy with the losses. From "I got the trade 'cos I'm faster than you, buddy." to "I got the trade 'cos I thought it out"
- Increase in the number of options, more volatile underlying assets

Creating a world (2)

- Institutions start using the formula
  - Options on OTC equities traded on the Nasdaq
  - No unique price
  - "Autoquote" systems use B&S to calculate the underlying price
  - B&S used to calculate margin calls

Appearance of the skew (or Smile) (Rubinstein, 1995)

- Smile on CBOE S&P500 on the 7-iul-1987

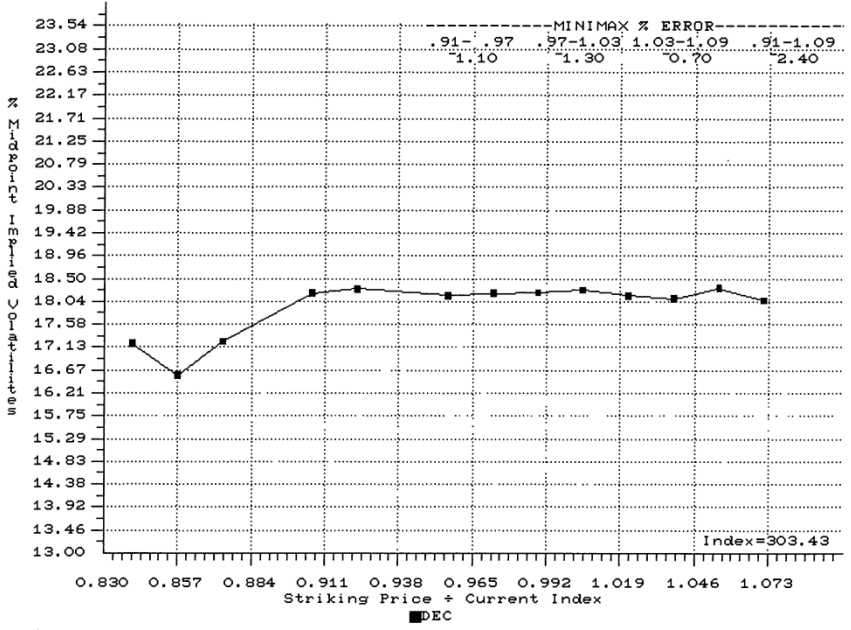


Figure 1. Typical precrash smile. Implied combined volatilities of S&P 500 index options (July 1, 1987; 9:00 A.M.).

- Smile on CBOE S&P500 on the 2-jan-1990

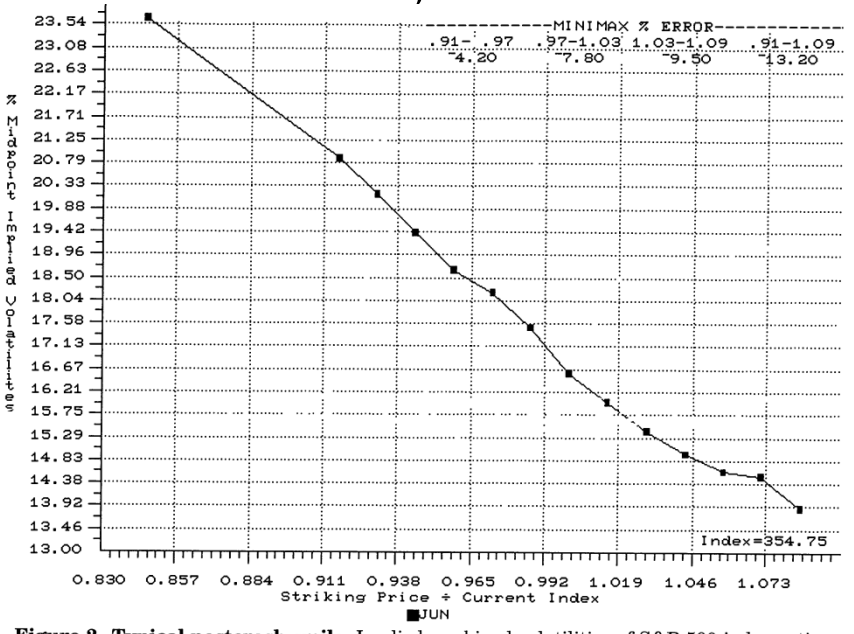


Figure 2. Typical postcrash smile. Implied combined volatilities of S&P 500 index options (January 2, 1990; 10:00 A.M.).

Appearance of the skew (or Smile)
(Jackwerth, Rubinstein, 1996)

- Rise of kurtosis => fat tail phenomenon
- Decrease of skewness

  ⇒ Left tail bigger than right tail
- Slightly left-skewed and platykurtic (flat-topped) distributions prior to the 1987 crash have been replaced by more or less consistently left-skewed and leptokurtic (more peaked and long-tailed) distributions

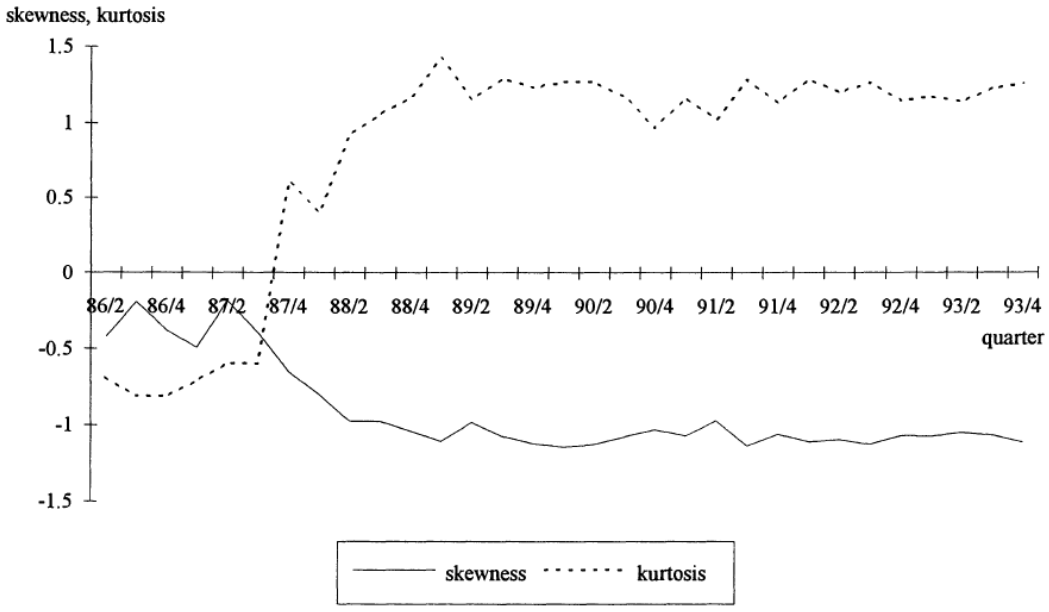


Figure 6. Skewness and kurtosis of implied probability distributions. For all dates from April 2, 1986, through December 31, 1993, we calculate the skewness and normalized kurtosis for the implied probability distributions based on options with time-to-expiration from 135 through 225 days. We graph the median daily skewness and kurtosis for each quarter.

The memory of the market

- 19/10/1987 Crash. S&P 500 falls by 23%, and future index by 29%. -27 σ event. Probability= 10^{-160}
- CBOE almost bankrupt due to clearing difficulties
- Trauma ➔ important smile/skew. Much bigger than in Europe
- People selling puts at low strikes without a very conservative hedge ➔ "shit-sellers"
- New calculation of margin calls based on the smile in order to avoid shit-sellers.

Three periods of performativity

- Before 1978 ➔ B&S bad fit. B&S is not performed
  - "Black, Scholes, and Merton's model did not describe an already existing world: when first formulated, its assumptions were quite unrealistic, and empirical prices differed systematically from the model."
- 1978-1986 ➔ B&S is performed perfectly (although it may be questionable)
  - "Pricing models came to shape the very way participants thought and talked about options, in particular via the key, entirely model-dependent, notion of "implied volatility.""
  - But "No feedback loop of performativity stabilized the assumption of lognormal stock price movements."
- After the crash of 1987 a new version is performed

Partial creation of homo-oeconomicus

- "In one critical aspect, option market participants did not become *homines oeconomici*. *They might have* priced options as economic theory said they should, but they never became morally atomistic."
- Market cultures, norms, and structural embeddedness

II. The habitus approach to financial rationality

How to cope with financial rationality?

- Traditional economical approach.
  - Rationality as a method
    - Perfect
    - Equally distributed
    - Eternal (no evolution)
  - Enables the construction of "as if" equilibrium models
  - An approximation that is not measured
- Bounded rationality models
  - Rationality is imperfect
  - Rationality remains generally set "a priori" by the scientist

Towards a sociological approach

- Behavioral economics
  - Rationality more inductive
  - But laboratory rationality only.
  - Uniform approach of rationality (bias generalization)
- Towards a sociological approach
  - Rationality analyzed in situ (as a work habit)
  - Not uniformity is not granted : diversity
  - Evolves in time
  - Universe of values
  - Hierarchy
  - Sociology of finance has its own corpus and a tradition of studying financial rationality in situ : MacKenzie, Zaloom, Ho, Smith, Beunza, Godechot, Muniesa, etc.

Bazaar of rationality

- Godechot, 2000, "Le bazar de la rationalité", *Politix*
- Godechot, 2001, *Les traders*
- Godechot, 2016, "Back in the bazaar"

- Bourdieusian inspiration
- Inductive account of financial rationality
- Three logics and their social origins
- Confrontation

Distinction in Finance: introducing Bourdieu

- Esthetic judgment as a model for financial rationality.
  - Bourdieu, 1979/1984, *Distinction,*
- Logic of distinction
  - Socialization
    - Taste is a product of habitus, thas is of long term class socialization
    - Formalism vs taste of necessity
      - Lower class esthetics is in continuity with life ("practical" enhances beauty)
  - Relational
    - Imitation : we value the things (or the people) that value people (or the things) we value
    - Demarcation : we disvalue the things (or the people) that value people (or the things) we disvalue

1-Well-Tempered Clavier	%
manual workers	
domestic servants	3
craftsmen, shopkeepers	2
clerical and commercial employees	1
junior administrative executives	4.5
junior commercial executives, secretaries	9
technicians	10
medical-social services	11
primary teachers	7.5
cultural intermediaries, art craftsmen	12
industrial and commercial employers	4
public-sector executives	5
private-sector executives, engineers	14
professions	15
secondary teachers	31.
higher-education teachers, art producers	33.

2-Rhapsody in Blue	
manual workers	20.
domestic servants	3
craftsmen, shopkeepers	20
clerical and commercial employees	22
junior administrative executives	27.
junior commercial executives, secretaries	26.
technicians	42
medical-social services	20
primary teachers	20
cultural intermediaries, art craftsmen	22.
industrial and commercial employers	22.5
public-sector executives	15
private-sector executives, engineers	29
professions	19
secondary teachers	12.5
higher-education teachers, art producers	12

3-Blue Danube	
manual workers	50.
domestic servants	35.
craftsmen, shopkeepers	49
clerical and commercial employees	52
junior administrative executives	34
junior commercial executives, secretaries	29.
technicians	21
medical-social services	15.
primary teachers	10
cultural intermediaries, art craftsmen	12.
industrial and commercial employers	21.
public-sector executives	20
private-sector executives, engineers	18.
professions	15.
secondary teachers	4
higher-education teachers, art producers	0

Social space of taste

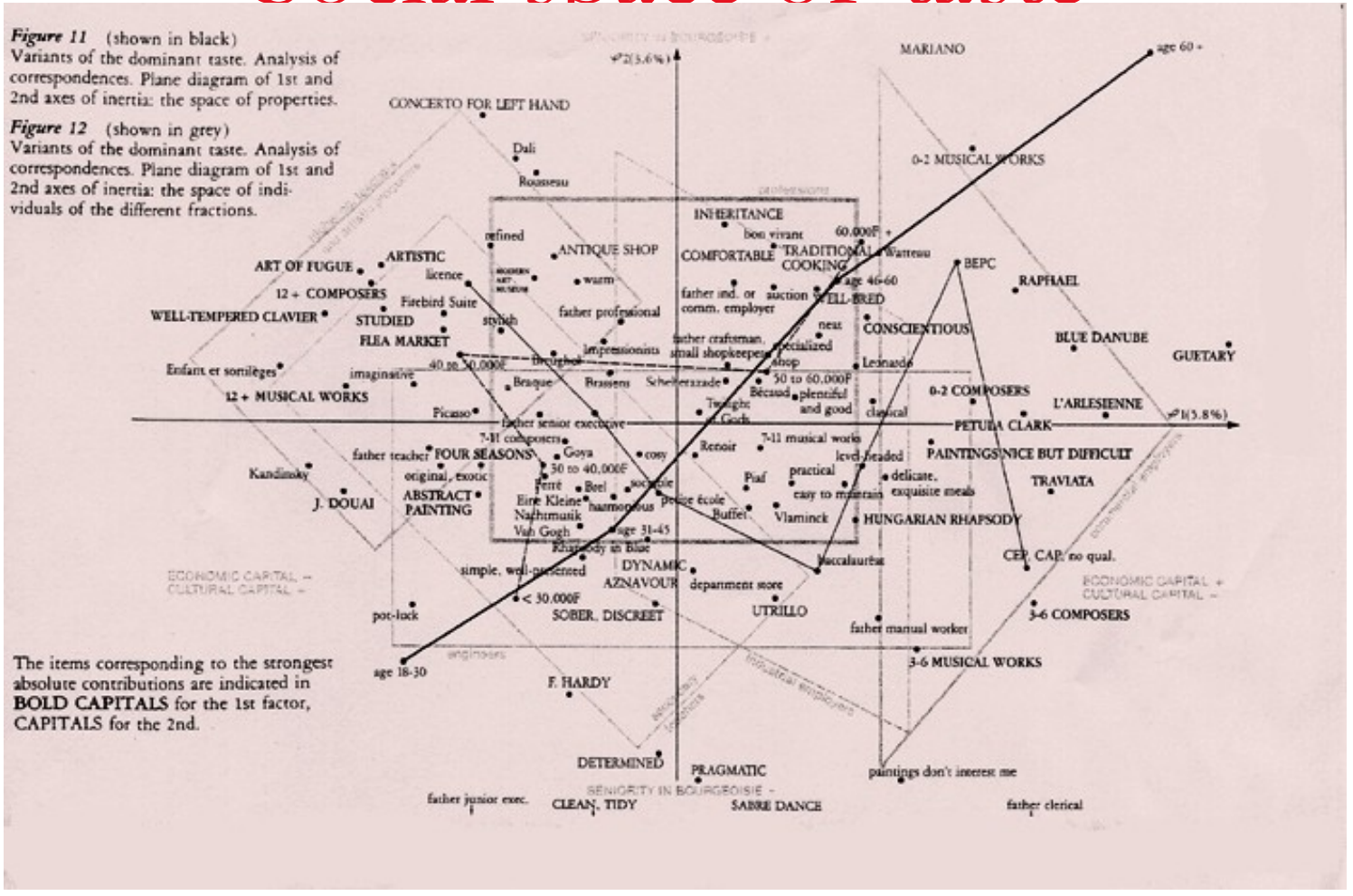


Figure 11 (shown in black)
Variants of the dominant taste. Analysis of correspondences. Plane diagram of 1st and 2nd axes of inertia: the space of properties.

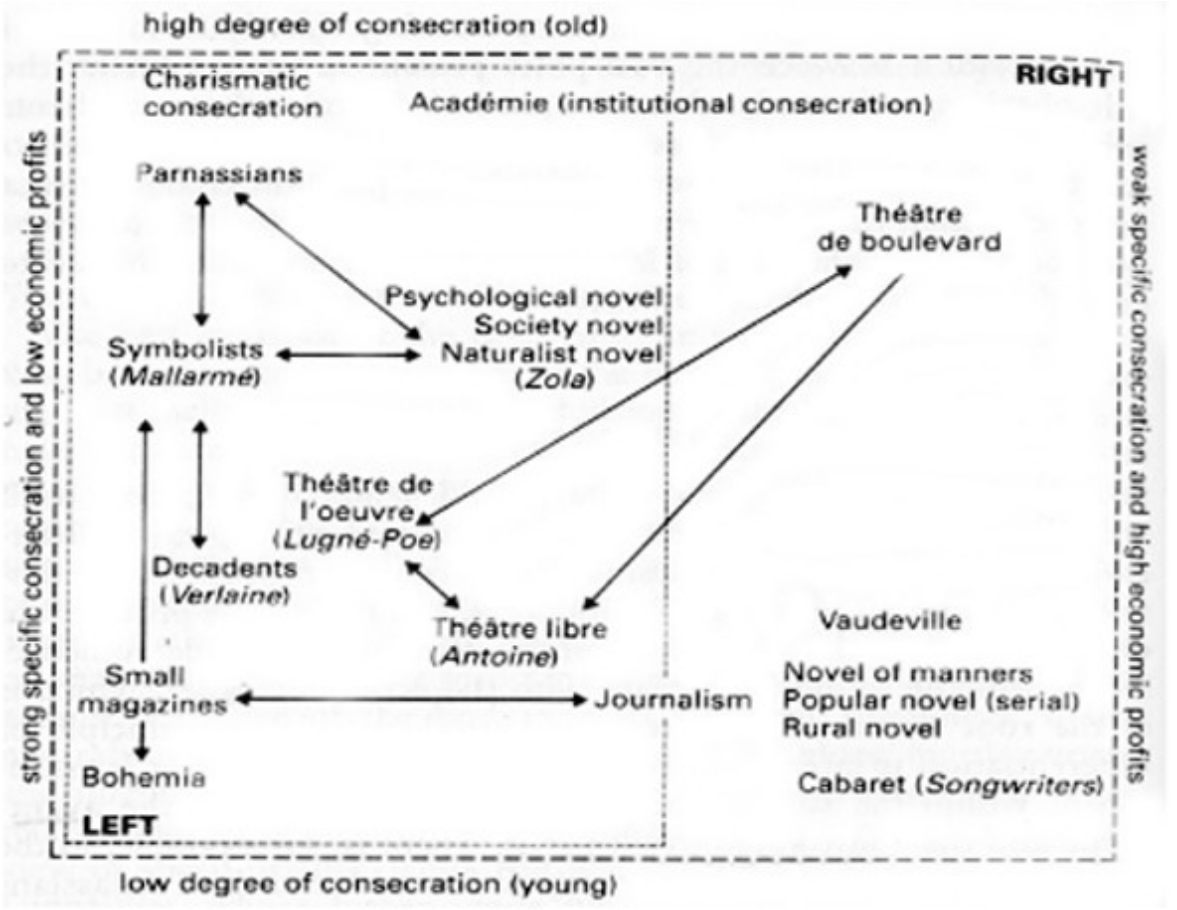
Figure 12 (shown in grey)
Variants of the dominant taste. Analysis of correspondences. Plane diagram of 1st and 2nd axes of inertia: the space of individuals of the different fractions.

The items corresponding to the strongest absolute contributions are indicated in **BOLD CAPITALS** for the 1st factor, CAPITALS for the 2nd.

Bourdieu's field logic

- Bourdieu's model
  - *Practice* =[(*habitus*)*(capital)] + field
- Field : space of competition
  - imperfect competition logic
    - People observe one another
      - Demarcation & imitation
    - Unequal resources and positions
      - Initial capital
      - Habitus
    - Seeking profits strategies
      - Price making
      - Power on price
  - bidimensional universe
    - Not just one form of value, of capital and of prices
      - Opposition of specific (symbolic) capital, and general (economic) capital
      - Opposition of diverse types of profits and valuation
  - Practical positioning
    - Not perfectly rational.
    - Combination of calculation, and more or less unconscious hierarchies of taste and distaste
- Field logic through MCA
  - First Axis: volume of capital
    - Opposition of dominants and dominated
    - Opposition of elders and younger
    - Opposition of traditional powers and newcomers
  - Second Axis: structure of capital
    - Opposition of one form of capital over another
      - Cultural/economic
      - Symbolic/Material
      - Scientific prestige / Academic power

Field examples



Three forms of winning strategies in the trading room

- Mathematical arbitrage
  - Post Black & Scholes trading.
  - Use of no-arbitrage principle in order to price products of same the family.
  - Those relations enables to see over- and under priced products
- Economic reasoning
  - Use of economic information in order to evaluate firms and to price products.
  - The economic analysis enables to see over- and under priced products
- Technical analysis (or chartism)
  - Use of the past prices in order to predict future prices
  - Sets of heterogeneous, hints, proverbs, etc.

All heterodox?

- Orthodox approach of the market :
  - All information is incorporated in price
  - The best prediction of the future price is the actual price
  - It's not possible to beat the market
- Technical analysis : the most heterodox
  - Patterns in prices should disappear.
  - Past prices should be of no use to predict prices
- Economic fundamentalism :
  - Also. Rests on the belief that all information has not been used yet.
- Mathematical arbitrage is paradoxical:
  - Rests on efficiency hypothesis.
  - Makes money only if efficiency hypothesis is violated (at least short term violation)

Mathematical arbitrage : an esthetic seduction

Regression modeling the probability of having or not advanced mathematical knowledge.

Explaining	Variables	Rough Ratios	"All is being equal" effects	
All (n=94)		**24%**		
Position	*Engineer*	62%	+31%	**
	Others	19%	-3%	**
Diploma	≥Bac + 5	40%	+22%	**
	< Bac + 5 or NA	15%	-8%	**
Gender	Man	29%	+3%	
	Woman	13%	-7%	
Experience	> 4 years in finance	21%	+2%	
	≤4 years in finance	27%	-2%	
Father's Diploma	≥Bac + 3	20%	-7%	*
	< Bac + 3 or NA	30%	+11%	*
Father's profes-sion	"Economic" Profession (CS 10 to 31 and 38)	13%	-8%	*
	Other professions	32%	+8%	*

- Use of Black & Scholes
  - Engineers
  - Parents : Public sector
  - Upward mobility
  - School capital

Mathematical arbitrage : an esthetic seduction

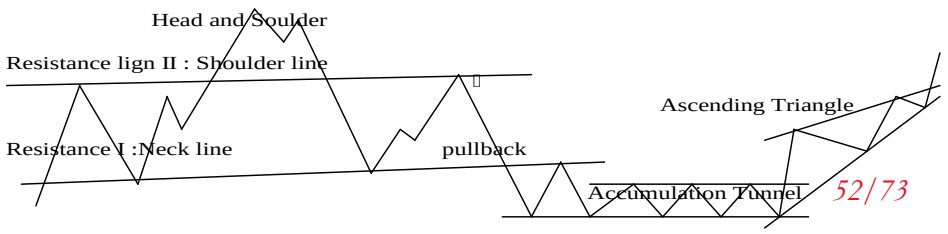
- Orientation towards mathematical arbitrage
  - Formalism
  - Coherence
  - Generality
  - Counter-intuitive : no arbitrage rule goes against the prenotion that making money is possible. Knowledge that is built against experience like the upper-class aesthetic experiment

Use of charts

Probability of using Eliott waves: Rough ratios and "all is being equal" effects..

Variables		Rough Ratios	"All is being equal" effects
All (n=94)		**24%**	
Function	*Sales*	**36%**	+19% **
	Trader	**42%**	+16% *
	Others	10%	-10% ***
Diploma	≥ Bac + 5	17%	-3%
	< Bac + 5 et NA	29%	+2%
Experience	> 4 years in Finance	**40%**	+13% **
	≤ 4 years in finance	12%	-7% **
Gender	Woman	17%	+1%
	Man	27%	-0%
Father's diploma	≤ Bac	30%	+5% (*)
	> Bac et NA	21%	-4% (*)

- Trading and Sales ; Seniority in finance ; origin from popular classes ; lower school capital.



Charts as the arms of the little

- Charts: set of hints adapted to each case, learned through mentorship relations, homologous to popular wisdom.
- Based no general principles but those two :
  - There are some hints to make money.
  - Charts translate the actions of the others, the big, the insiders.

Economic analysis : a grand vision

- Not very much used inside Universal Company trading room in 1998
- But more generally used by salespersons, those with highest incomes and from economic upper classes origins.
- More a general culture than a school knowledge.
- Form: fast exploration of unilateral consecutions rather than general equilibrium models.
- A way of understanding the market as a whole, with no limitation. Everything, every information counts.

Economic reasoning neoclassical

Economic opinion of members of the room

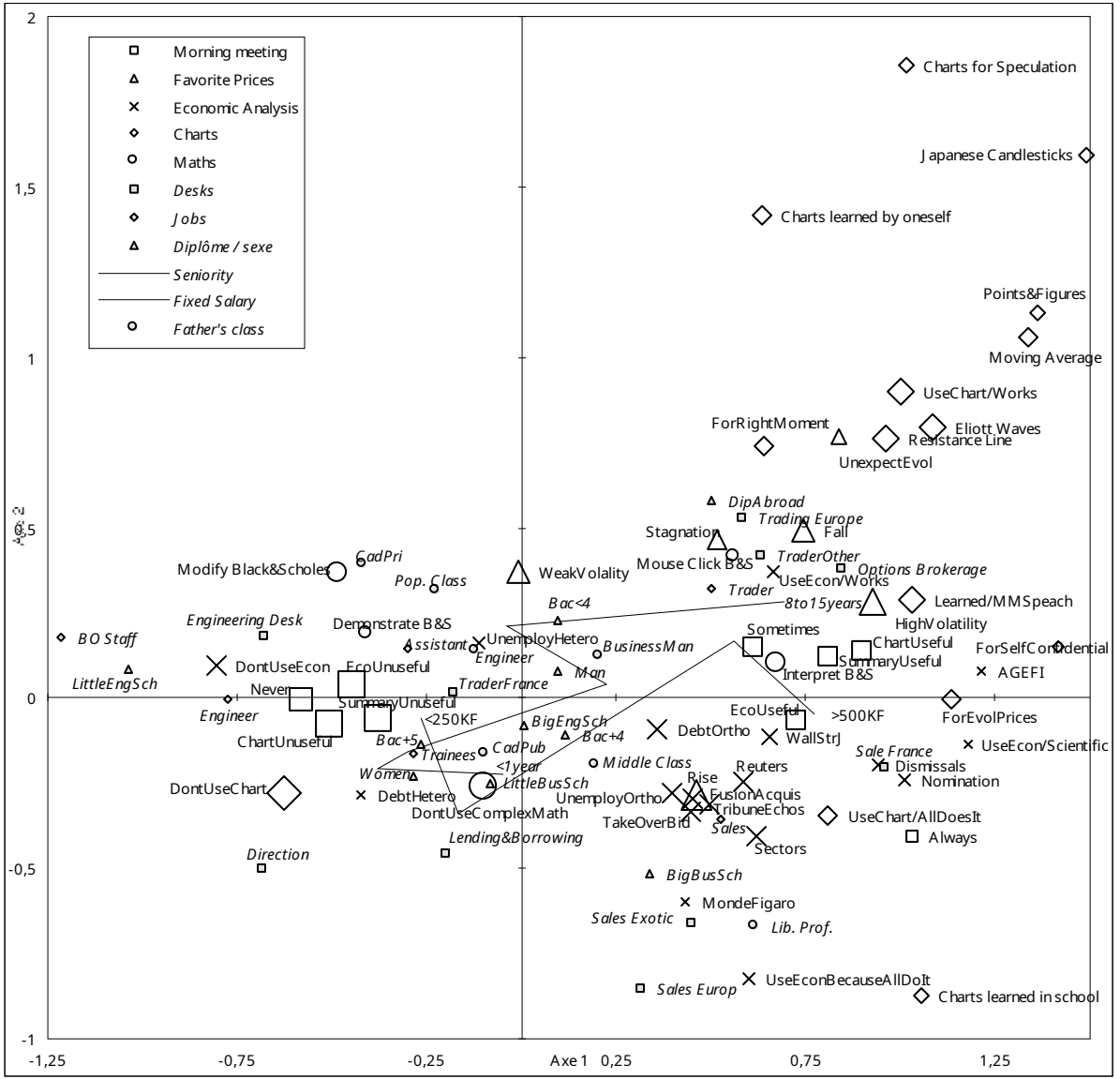
A fall in unemployment in the United States means for you:	
A rise in salaries, thus in inflation, thus in interest rates, thus a *drop in prices*.	45%
A rise in consumption, thus in profits, thus *a rise in prices*.	29%
(Ticks both answers)	(5%)
No answers	18%

A rise in public debt means for you:	
Revival of activity, rise in future profits and thus a *rise in prices*.	10%
A rise in public debt, thus a rise in interest rates, thus a *fall in prices*.	56%
(Ticks both answers)	(5%)
No answers	29%

Proportion of people who expressed an orthodox or subtle opinion as regards the two questions of economic forecasts (i.e. "both") according to their annual salary.

Salary	Proportion
Less than 250 000 F	36%
250-350 000 F	44%
350-500 000 F	55%
More than 500 000 F	67%
No salary declared	29%
All (n=94)	40%

- Tendency to adopt the neoclassical view
- « Synonymous »
- More an exercise of semiology than a calculation of equilibrium between conflicting influences


Morning meeting
Favorite Prices
Economic Analysis
Charts
Maths
Desks
Jobs
Diplôme / sexe
Seniority
Fixed Salary
Father's class
Charts for Speculation
Japanese Candlesticks
Charts learned by oneself
Points&Figures
Moving Average
UseChart/Works
ForRightMoment
Eliott Waves
Resistance Line
UnexpectEvol
DipAbroad
Trading Europe
Stagnation
Fall
TraderOther
Options Brokerage
Mouse Click B&S
UseEcon/Works
Trader
8to15years
Learned/MMSpeach
HighVolatility
Modify Black&Scholes
CadPri
Pop. Class
WeakVolality
Bac<4
Engineering Desk
Demonstrate B&S
BO Staff
Assistant
UnemployHetero
BusinessMan
Engineer
Sometimes
ChartUseful
ForSelfConfidential
SummaryUseful
Interpret B&S
AGEFI
DontUseEcon
EcoUnuseful
LittleEngSch
Man
Never
TraderFrance
SummaryUnuseful
Engineer
<250KF
BigEngSch
EcoUseful
>500KF
ForEvolPrices
ChartUnuseful
Bac+5
Bac+4
DebtOrtho
WallStrJ
UseEcon/Scientific
Trainees
CadPub
Middle Class
Sale France
Dismissals
<1year
Women
Reuters
Nomination
Rise
DontUseChart
LittleBusSch
DebtHetero
UnemployOrtho
FusionAcquis
TribuneEchos
DontUseComplexMath
TakeOverBid
Sales
UseChart/AllDoesIt
Always
Lending&Borrowing
Sectors
Direction
BigBusSch
MondeFigaro
Sales Exotic
Lib. Prof.
Sales Europ
UseEconBecauseAllDoIt
Charts learned in school
Axe 2
2
1,5
1
0,5
0
-0,5
-1
-1,25
-0,75
-0,25
Axe 1
0,25
0,75
1,25

Dynamic confrontation

- Geometric data analysis.
- Structure of rationality follows the structure of taste and distaste.
  - Logic of demarcation
    - Valuing/justifying your own method
    - Demarcating from illegitimate methods
  - Logic of imitation
    - Recognizing legitimacy
    - Trying to grab a little bit of the legitimacy of the other method

Mathematical arbitrage & Technical analysis

- Mathematical arbitrage against Technical analysis
  - Technical analysis premises are false (the past predicts the present).
  - Chartists are socially despised
  - More respect for statistical arbitrage although the latter may share the same premises.
- Technical analysis against Mathematical arbitrage
  - Mathematical arbitrage is respected (because dominant). Tendency to imitate mathematical arbitrage sophistication via introduction of formulas and arbitrage consideration.
  - But chartists proud to beat mathematical arbitrage in terms of P&L
  - Blame Mathematical arbitrage for incapacity to make predictions.

Technical analysis & Economic Analysis

- Very classical debate
- Economic analysis vs Technical analysis
  - Technical analysis foolish. No reasons for patterns in prices.
  - The only reason why it should work is it self-fulfilling nature.
  - Technical analysis leads to short term overtrading and no durable success.
- Technical analysis vs Economic analysis
  - Respect for economic analysis at a long term level.
  - Fundamentals don't drive short term prices.
  - Economic information comes too late and is already in price

Mathematical arbitrage & Economic analysis

- Economic analysis vs Mathematical arbitrage
  - Too schoolish, too knife-grinder.
  - No in depth understanding of the Market
- Mathematical arbitrage versus Economic analysis
  - Discussable premises : information not used in the prices
  - Discussable and imprecise knowledge. Lack of scientificity.
  - Too many parameters too take into account. Cf. Rozan and the dollar-mark and conference of the Plaza.

Financial rationality as a social process

- Markets is neither charts, nor fundamentals nor B&S pricing but people discussing, debating, quarrelling about what is the market.
  - The issue of this debate: constructing an opinion through diversity (heterarchy).
  - Influence and acquiring followers.
  - Constructing a social identity
  - Constructing a legitimacy.
    - What really makes value inside the firm.
    - What deserves bonuses

Stable and instable markets

- Social diversity, heterogeneous socialization and process of imitation and demarcation creates the market with its diversity. Different opinions makes the market possible: Some buy, others sell.
- Social and intellectual homogeneity. Market unstable. Everybody does the same thing.
- ABS/CDO market. An unstable market ?

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Appendices

Sociology of science is redefining its agenda

- The Mertonian approach to science
  - 1973, *Sociology of science*
  - Norms of scientific world
  - Inequality mechanism (Matthew effect)
  - External approach to science
- Bloor, principle of symmetry
  - Sociology, only sociology of errors.
  - Same principle of explanation must be used to study both truths and errors

…science's privilege

- Studies of scientific controversies
  - Conflict between different socio-technical networks
  - Bloorian symmetry : symmetry between truth and error
  - Symmetry between all types of entities: human and non-human
  - Hybrid networks
  - Replacing the "question of truth and non truth by that of success and failure"
- Example: Callon, 1986, "Éléments pour une sociologie de la traduction. La domestication des coquilles Saint-Jacques dans la Baie de Saint-Brieuc", *L'Année sociologique*
  - First success : agencement
    - Scientist believing in domestication of scallops finding results
    - Scallops (speaking) that reproduce themselves are a delegate of all scallops
    - Fisher delegates in the name of fishers accepting to respect experimental fields of scallops
  - Final failure
    - Scientific results not reproduced
    - Scallops don't behave as their delegates
    - Fishers don't respect experimental fields and their delegates

Callon and Latour promote a new ontological agenda in order to unscrew...

1981, "Unscrewing the big Leviathan ; or How Actors Macrostructure Reality, and How Sociologists Help Them To Do So?", in Knorr, Cicourel, *Advances in Social Theory*…

- Hobbes Leviathan problem: How do micro-actors become macro-actors?
  - Inspired by Deleuze
  - Plane of immanence where entities meet. Meeting as a trial of force
  - Generalized symmetry. Entities either human or non-human
  - Series of operation that builds micro-entities in macro-actors: Enrolling / Translating /Representing / setting equivalences / building networks
  - Building a socio-technical network

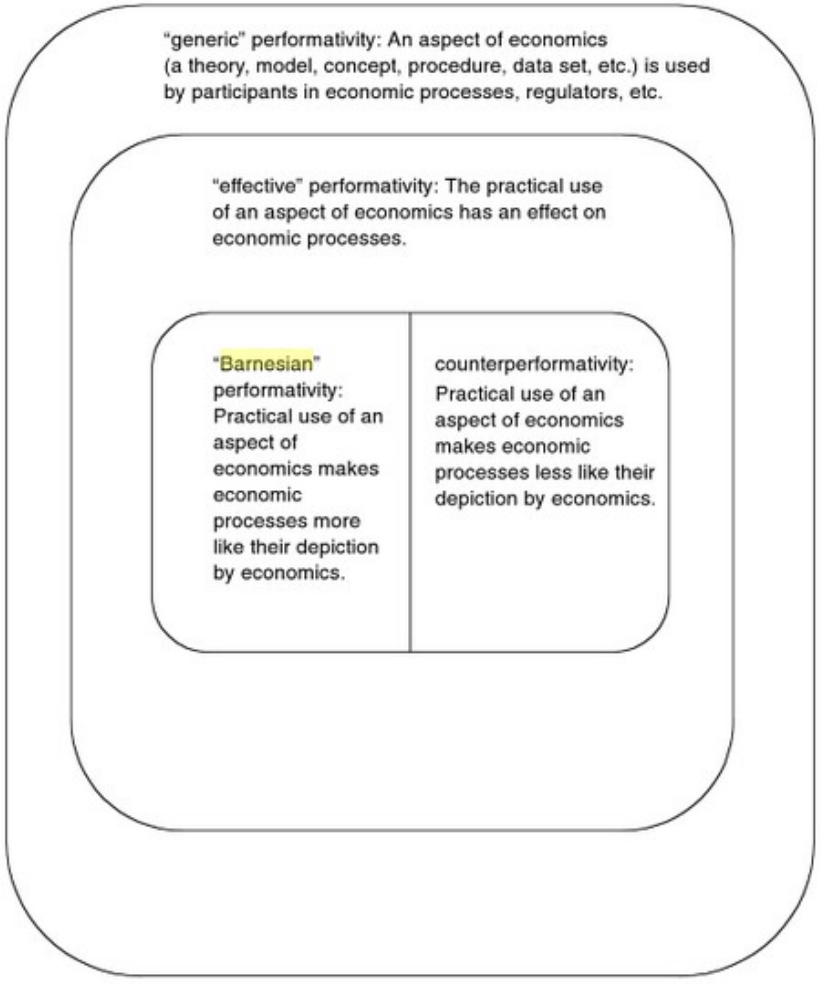

Figure 1.1
The performativity of economics: a possible classification. The depicted sizes of the subsets are arbitrary; I have not attempted to estimate the prevalence of the different forms of performativity.

MacKenzie's performativities

- Generic performativity : an aspect of economic theory is used not just by scholars but by market participants, regulators, etc.
- Effective performativity : the use of an economic theory (data/model/concept) must *make a difference*
- *Barnesian* performativity ==> sociologist Barry Barnes : central role of self validating feedback loops (previously called austinian)
  - If the king says Robin Hood is an outlaw, he is an outlaw.
- Different from Merton self-fulfilling prophecy
  - Exemple: bank run
  - self-fulfilling prophecy as a false belief
  - Performativity is embedded in devices

Collective action for options

- Chicago board of Trade inventing option
  - Facing in the 1960's a difficult economic environment (due to agricultural price regulation)
  - Inventing a new product: options on Equities
  - Pushing for deregulation in favor of the new product
- Results of the norms of the pits
  - Collective action for community reason in instituting the market (Melamed)
  - And providing its early liquidity
    - "There were two traders on the floor," recalls Eisen. "Eddie [O'Connor] and I were running all over the floor making markets." They returned to the floor of the CBT: "We went around and we convinced everybody to come in at least when grains got a little slow, around 11.15, 11.30 . . . and then they'd go back and trade the close in grains"
  - Not fully understood as rational actor behavior
  - Irony of the institution of homo-oeconomicus trader is not due to homo-oeconomicus behavior.

Different views about performativity (1)

- Lazear, 2000, "Economic imperialism", QJE.
- Economics is imperialist (and proud of it)
  - Because three key concepts that give competitive advantage:
    - Rational behavior
    - Equilibrium
    - Efficiency
  - Conquers new territories in other social sciences
  - What about business?

"Economic theory's slow entrance in business was in part a fault of economics itself. Economists, as scholars, have emphasized the positive aspects of economics and eschewed the normative (see Friedman [1953]). Business is in large part normative because the goal of a business education is not so much to explain the world, but to run it. Thus, much of the contribution of economics to both the study and teaching of business has been a result of translating positive lessons into normative ones."

"The impact of economics has not been confined to the study of business. Economics has made its mark on the business community itself. An obvious example of this is the Black-Scholes formula for option pricing. Options are now priced in the market very much in line with the Black-Scholes formula. The fact that people believe that this is the correct way to price options forces market prices to conform to this formula, whether they did so before or not."

Different views about performativity (2)

- Callon and Latour. Criticisms of science
  - Criticism of determinism as a scientific paradigm
  - "I'm the first to recognize the weakness of economic reasoning and the absurdity of its extension to local or biologic domain. But by tying sociology of science to the analysis of capital, I avoid therefore to forget criticizing other sciences while criticizing economics. Shall they fall, they shall fall all together" (Latour, "Le dernier capitaliste sauvage - interview d'un biochimiste", *Fundamenta Scientiae*, 1984)
  - Science creates a world rather than discovers a truth: "It is impossible to pronounce the sentence 'Ramses II died of Tubeculosis' without bringing back all the pragmatic conditions that give truth to this sentence."
- Callon, 2007, "What Does It Mean to Say That Economics is Performative?" in *Do economists make markets?*
  - "My thesis is that both the natural and life sciences, along with the social sciences, contribute toward enacting the realities that they describe"
  - Sciences creates sociotechnical "agencements" (Deleuzian sense) that meet success or failure rather than beeing true or false
  - "We could say that he formula has become true, but it is preferable to say that the world is supposes has become actual"

A large approach to performativity

- Callon
  - Economics at large concerned by performation
    - Both "confined economists"
    - and "economics in the wild"
      - Accountants, traders, regulators
  - Performation's struggles
    - Both within and between those different type of economics
    - "confrontation takes place between sociotechnical worlds that are struggling to exist"
    - "We no longer have to choose between interpreting the world and transforming it"

Or a narrow one

- MacKenzie, 2006
  - Effective performativity
    - Barnesian performativity
    - Counter performativity
      - Behavioral finance
  - A "positivist" approach to performativity
    - Where it clearly makes a difference

- What is interesting (for me) in performativity
  - Finance is largely performative in Austinian sense
    - "Mine !", "Yours !"
    - But this is well known and trivial
  - Finance has been deregulated by states with a neoliberal political agenda
    - But performativity ≠ normativity
  - Performativity is interesting when a statement resembling a constative statement has some effects and makes a difference
  - SSF should not restrict its agenda to performativity