Traders

An Essay in the Sociology of Financial Markets

Olivier Godechot

Partial translation of Olivier Godechot, 2001, *Les Traders, Essai de sociologie des marchés financiers,* Paris : La Découverte, by Susannah Dale

(Introduction and Chapter 3)

Table of contents

* In bold, the translated chapters.

Introduction

A path lined with buildings seven or eight storeys high – angular and futuristic, distinct but architecturally harmonious – ends at the headquarters of a bank, as if to emphasise its scale. The bank, which we shall call Universal Company, is formed of protruding towers built symmetrically along a vertical axis and arranged around a low-standing, thicker central tower. It all conjures up the myth of modern business, and a few striking scenes from the film *Brazil* come to mind. Today, Tuesday 7 October 1997, I am making my way to one of the derivatives rooms to negotiate my position as an "observer" with the man we shall refer to as Osman, head of securities lending.

In the entrance lobby, I walk towards six pretty, young receptionists over to my right. They flash a smile at me as I approach and hand over a magnetic swipe pass with my name on. At the other end of the lobby, men in dark suits stand unsmiling, supervising those entering and leaving. Armed with my pass, I have to make two attempts to open the electronic barrier, unlike the other more regular visitors who are barely slowed down by the obstacle. There is a lift dedicated for the sole use of the market rooms and related departments, and it whisks me up to the sixth floor where a hostess greets me. She calls a third member of staff who leads me through two more security doors into the derivatives trading room, a large open-plan area that takes up half of the top floor of the central tower. No major panics or bursts of euphoria in here; none of those collective movements that fill both mythological and serious books about the stock exchange[1]. There is a routine, everyday feel to the place. The

[1] Cf. GALBRAITH, *Brève histoire de l'euphorie financière,* and Michael KLAUSNER, "Sociological theory and the behavior of financial markets", *in* ADLER and ADLER, *The Social Dynamics of Financial Markets*. The detailed bibliography comes at the end of the book.

room quietly hums: a stochastic, sonorous regularity punctuated by the occasional loud voice. Most of the people working in the room seem busy with minor tasks: one woman is writing a report in Word, someone else is making calculations in Excel, many employees are on the phone or sit with their eyes glued to their screens, where news and prices scroll across. Clearly, not all of these young staff are working – some are talking about the weekend, sport, cars and leisure, comfortably settled in their armchairs, unconstrained by their austere suits, feet up on the table. Through the glass partition – transparency is a requirement – employees can be seen out in the ambulatory, lingering over a cigarette and a coffee. I am not yet familiar with the position and function of each of them, and given that the division of work is not really marked by any visible division in their working space, attire or instruments, as is the case in many professional organisations, I do not yet realise that behind this apparent lack of order there is a separation and partition of financial activities: traders, market makers, sales people, marketing staff, financial engineers, R&D engineers, middle office managers, back office heads, heads of desk, heads of room, legal experts, quants, secretaries… French, American, European, Asian markets… cash, over-the-counter, forwards… lending and borrowing, bonds, listed options, warrants, OTC options, structured products, basket trading…

The person I am speaking to runs through the different options for my observation. It quickly becomes clear that the only acceptable way to observe the dealing room is as an intern. And so I join the army of interns employed in the dealing room to do all kinds of work at very little cost. My degree from the National School of Statistics and Economic Administration (ENSAE) is supposed to have equipped me with a great many skills that will be useful and highly valued in the dealing room. From 1 December 1997 to April 1998, I thus find myself working as an intern on the securities lending and borrowing desk, assigned to creating macros in Excel Visual Basic, a programming language of which I must quickly acquire a rudimentary knowledge for the cause. A position in securities lending and borrowing means working on the

fringes of the financial markets: above all, this market sector lives mostly off international tax credit trading. Here, there is none of the speed of arbitragers in the computerised markets or the technical expertise of those who design complex products. No esoteric knowledge or bold speculations steer the decisions made on this desk. If I had to think of an advantage to my role – which was more the result of the randomness of social networks than of my having chosen the best possible place to observe – I would say that it allows me to come into contact with a large number of different market segments.

It so happens that on Monday 26 January 1998 I have the chance to go to an open outcry trading session in the old Palais Brongniart. I stand under the peristyle to wait for Damien, a securities lending trader from Universal Company, who has come to oversee the conclusion of transactions on the monthly "repo" market. Outside the gates there is no crowd of stockbrokers, proxy holders, clerks, minions or those "sharks of finance" depicted in countless old photos, paintings and novels. The computerisation of the stocks and bonds market has taken its toll. Now and again, a few lone individuals walk purposefully across the empty square, present their passes to the two security guards standing beneath their booth, climb the palace steps, assert their rights once more to the inner security guards and reach their dealing rooms. The telephone operators, flashers, boxmen, filing clerks, brokers and individual traders who employ their talents in the MATIF and MONEP open outcry sessions do not have the austere, respectable appearance of stockbrokers of the past. Jeans, trainers, jumpers and men with ponytails are not uncommon, and their youthfulness is reminiscent of the market in which they work. On the other hand, if we take a closer look at the repo traders (called "liquidators")– who, to reach the repo trading room, walk around the outside of the central room filled with computer screens and LED display panels where the CAC contract is being quoted on the former trading floor – we can instinctively reconstruct those inverted population pyramids to which we have grown accustomed in modern societies. The liquidators, who often

wear mismatched suits and sometimes, confidently, a moustache and stout build as well, had the chance to work as clerks in open outcries before the system was computerised. Now working as CAC sales traders or back office managers in brokerage firms, they happily reunite for this monthly open outcry morning. A few securities lending traders – young men and sometimes slim, carefully coiffed young women in functionally elegant, matching suits – join them to oversee operations.

The repo market is housed in a large room, dilapidated and characterless, in the northern extension of the palace just behind the stock market museum room where the former dealing room has been reproduced for visitors' pleasure. The room is divided into three sections. On either side of an oval pit where gold market open outcry sessions take place each morning, there are two symmetric quotation groups and two semi-circles of counters and bar stools facing a platform over which the share-price blackboard hangs: to the west, French securities from A to N included; to the east, from P to Z, as well as foreign securities.

The repo market is an open outcry monthly settlement securities lending market: those who cannot or do not want to settle their monthly transactions at the end of the month can borrow on it, either shares to secure sales made, or cash to secure purchases made. In his novel *L'argent* (*Money*), Zola presents this repo session as a bitter struggle between two camps – the bearish camp and the bullish camp. Today, however, the atmosphere seems calm, almost warm. Conversations flow and a dense hubbub mixes with the wreaths of brown tobacco smoke, which the auctioneer from group A to P, a paunchy man, thinning on top, has trouble dispersing from his platform as he calls out the name of the first shares ("Accor"), in his stentorian voice, to the forty-odd liquidators who are deep in discussion.

Observing and describing an open outcry is no easy task. The author of *Les Rougon-Macquart* used an orchestral metaphor for his novel about the Bourse,

amusing himself by contrasting the "deep bass" of Jacoby, the old proxy holder who, over time, becomes the broker for the bearish camp and the Jewish bank, with the shrill voice – compared to "the strain of a flute" – of Mazaud, the young heir carrying out orders for Saccard, the head of the Catholic bank and the bullish camp. For the visitor in the 1990s, the polyphonic outcry is more reminiscent of the complex, subtle divisions of the young serialist avant-garde of the 1950s than the stereotyped duets of late-nineteenth-century French music; and yet, repo regulars have no trouble making sense of these series of shouts, duets, transactions, volumes and prices. Those seeking to borrow securities (or lend money) shout with their arm raised, palm facing in, waving their fingers like children asking for sweets from a grown-up, who takes pleasure in handing them out – "*Je me reporte!* [Mine!]" – while those wishing to lend securities (or borrow money) shout with their arm raised, palm facing out and finger pointing towards the person with whom they are seeking to close a deal – "*Je me fais!* [Yours!]". When the auctioneer announces the rate[2], bilateral transactions are concluded between the first and the second:

> "I carry over!"
> "Alain, I've got 96,540! Interested?"
> "No! It's 15,750!"
> "OK for 15,750!"

After these deals, if there are shouts of dissatisfaction from one of the two camps – securities borrowers or lenders – the auctioneer raises or lowers the price, running the risk of undoing the fragile deals finalised earlier. For most securities, this trial and error method enables the repo price to be set quickly, but sometimes, for some securities on which traders try to make significant bear speculations, things becomes more heated and can last more than five minutes. If the tick size is irregular and inconsistent, it encourages flipping (from borrower to lender and vice versa), causing prices to move in a direction

[2] The rate determines the price of the transaction. It pays the money lent in exchange for securities borrowed. The quotation also starts off at the money market rate and gradually decreases until it becomes negative: this is known as the borrowing fee, the extra amount that borrowers of shares have to pay for shares they borrow.

that does not comply with the proceedings and forcing the auctioneer to use his authority as leverage in order for liquidators to keep quiet about their dissatisfaction and come to an agreement. Calls to order usually take the form of a joke, banter or sarcasm. The auctioneer readily alludes to the limitations of the imminent process of computerisation ("that machine's gonna blow"), while the liquidators call him by the nickname "state employee". No one is left out in the shouting game. A petite trader of Asian origin, whose high-pitched voice contrasts with the rest, attracts a large number of nicknames and dubious jokes in reference to his ethnic origins: "Southeast Asia's falling" and "None of your oyster sauce for us". These jokes do not only serve as calls to order; they also mark the boundary between members and outsiders, who can neither make nor be the butt of jokes, and thereby lend a very specific form to this sociability – that of a male, fraternal, rough community.

Around midday, the two groups of liquidators gather to determine the "cash rate". Nearby, five or six older brokerage clerks, far more dignified with an air of true Bretton Woods survivors, take their place around the small central pit for the daily quotation of the price of gold. As I walk back out, a few young negotiators and local traders can be seen observing each other in the CAC 40 arena on the ground floor. Lunchtime has calmed things down, but from time to time there is a sudden increase in prices, transactions, shouts and gestures.

On 2 June 1998, open outcries on the MATIF and MONEP and, on 27 July, on the repo market as well, were done away with for good, replaced by electronic trading systems. By mid-1999, only the small gold market was still traded by open outcry.

These two environments – the open outcry repo market and the derivatives trading room – seem to symbolise two different market states: a traditional state dating back to the 19th century, and a modern state, which became dominant in historical terms during the 1970s and 1980s, when the financial markets underwent a major transformation. This brought profound changes to

the world of finance and the economic world. Even the uninitiated, those furthest away from the stock market, were confronted by the changes. In the early 1980s, the stock market for them was a distant universe, separate and secret, an activity reserved for a limited group of professionals not unlike that of lawyers. Today, for most people, the financial markets have become strangely familiar. Every day we are reluctantly exposed to stock market news presented by the various media (France Info, France Inter, Le Monde, LCI, TF1, France 2 and, over the past few years, even Libération) – a kind of modern-day litany, which we hear with no surprise and little attention. The bizarre, monotonous chants of these exegetes would have us believe that the financial markets are now the new Gods, commenting on and altering the course of men's lives by handing down daily verdicts from the summit of their Mount Olympus: they welcome a measure, applaud an event, sulk over an election result, sanction an economic policy. Politicians, replaced by economists, play their own part in this deification of stock market activities through their debates on the thorny issue of the morality of these exchanges. One minute they are praising the markets to the skies, exalting their perfect rationality and admiring the harmony they bestow; the next minute they are deploring the havoc they wreak and castigating them for their profound irrationality. The markets are understood in religious terms, whether as a benevolent, supervisory God or a Moloch bringing devastation.

The sociological field study proves disappointing. It does not lead to an encounter with supernatural beings said to dwell in the financial "temple". Once inside the world of finance, there is not a single irrational idol-worshipper or perfectly rational homo economicus to be found! Within these human institutions populated by mortals, there is a community of ordinary economic agents at work, with their careers, hirings, social lives, hierarchies and conflicts; they are ordinary except for the fact that they are caught up in an environment in which the quest for profit is unusually intense. The pressurised

organisation of financial work and a community that is built around market values compel the individuals who enter it to "think profit".

Carrying out a sociological observation of economic institutions and behaviour, that is, engaging in economic sociology, calls for a dialogue with the economic sciences – and, increasingly so, with the branch of financial theory – which have long since established finance as a scientific subject and produced results that help provide an understanding of both the functioning of the financial markets and their role in the overall economic system[3]. The economic sciences are less concerned with the specific practices and institutional methods of reproducing the strange business of the financial markets than they are with the moral and political issues of these institutions (efficient or inefficient, moral or immoral). Most of the economic statements made recently, whether favourable towards the markets (neo-classical economics, in which the rationality of actors leads to market efficiency) or against them (neo-Keynesian economics, in which the rationality of actors results in bubbles and economic crises), give a vital role to the rationality of actors. The term "rationality" must be understood according to a very strict definition: for economists, it does not refer to the ordered, logical nature of a collective phenomenon, its intelligible nature or its morality (as may be the case in the political and journalistic expressions "rationality of the markets" and "irrationality of the markets") but instead to a very particular type of behaviour that the economist attributes uniformly and unilaterally to the actors in his theoretical model. This model assumes that the actors can, depending on the constraints of the action, instantly calculate the maximum level of their "objective function", which means profit for businesspeople and "utility" for consumers[4]. One area of the social sciences does indeed take on the

---

[3] For an introduction to this literature, see Patrick Artus, *Anomalies sur les marches financiers*; Michel Aglietta, *Macroéconomie Financière.*

[4] Progress made in the field of economic science has even led to a rise in the calculation capacities attributed to the actors of these models: classical homo economicus, with his parametric rationality, would only determine the maximum level of his function on the basis of a combination of prices; homo economicus of "game theory" adds to this a

establishment of this model (particularly the current of methodological individualism), but the sociology and anthropology of deterministic inspiration see thought and reasoning, whether economic or not, more as a product that can be schematically characterised as a temporal series – more or less ordered – of associations that are structured according to language, symbolic referents and values. These currents challenge the unrealistic nature of the economic conception according to which the decision is the result of an instantaneous plan and calculation, outside of time and outside of a world of meaning. Admittedly, economists are almost all prepared to accept that their conception of rationality is unrealistic. For them, however, the "realism of the hypotheses" is of little consequence as long as everything happens "as if". The quality of the economic model is assessed primarily for the properties and forms it creates, and its relevance is judged by the validity of its forecasts measured thanks to econometrics.

This approach seems appropriate as long as we are dealing with an ideal-typical construction, recognised as such, which explores the order of ideal-typical possibles and seeks above all to answer political and moral questions[5]. However, the discrepancy between the supposed practices and those of ordinary agents gives rise to a far more significant epistemological problem when their authors claim to summarise the "economic reality" as accurately as possible. Thus, some neo-classical economists of the new economic history can, in order to establish a model for the behaviour of seventeenth-century farmers, solve profit maximisation models consisting of Lagrangians[6] one century before Lagrange was born. When the paradox is pointed out to them,

---

combination of his alter-ego strategies; and homo economicus of "rational expectations" also takes into account the combination of the economic theories of his associates.

[5] The question, "With what conditions of possibility are agents' plans mutually compatible?" has remained one of the fundamental questions of political science since Hobbes; it runs through the entire field of political economics and the Arrow-Debreu model provided an answer to it with the formalisation of general equilibrium theory.

[6] Lagrangians are a mathematical technique – widely used in microeconomics – invented by Lagrange. They can determine the constrained maximum of a function of several variables.

they reply that it is only an approximate model of the probable decision-making methods used by their actors. In doing so, they are overlooking Lagrange's role and that of all the advances made in mathematical formalisation in economic history. This new economic history – which, for the establishment of the model, presupposes a rationality that is always already there, without history, no matter how the productive forces develop – only ever pushes, in a paradoxical form, the ahistoricism that is inherent in neo-classical economics[7].

Certainly, when studying transformations of the productive forces and modes of production, neo-classical economics uses the categories of progress and innovation[8]. These advances and innovations, which may be extremely varied for economic science, are nonetheless distinct from the exercise of rationality. The constraints and frameworks are modified, but the optimisation mode remains unchanged. The neo-classical analysis thus cuts itself off from the analysis of economic phenomena on which the generally high level of development of economic reasoning, according to place, period, context and social group, has an effect[9].

As we shall see, the financial markets are unusual in that they have experienced innovations, in historical terms, that have altered not only their constraints but also a more optimal method for agents to price options: for example, the adoption of the Black-Scholes formula for estimating the price of options[10] brought radical changes to the calculation method and price of these

---

7 Marx compared some of the constructions of Smith and Ricardo with Robinsonades, which forget the historical nature of the economic properties that emerge. Cf. Marx, *Grundrisse*, Pelican Books 1973, p.83

[8] Joseph Schumpeter distinguishes five types of innovations: the production of a new good; the introduction of a new method of production; the carrying-out of a new organisation; the opening of a new market; and the conquest of a new source of supply of raw materials or half-manufactured goods. Cf. Joseph Schumpeter, *The Theory of Economic Development*.

[9] While remaining part of a strictly economic framework, economics would benefit from taking account of these phenomena by introducing into optimisation programmes the more or less high probability of being at optimum level.

[10] An option is a financial derivative that gives the right, but not the obligation, to buy (or sell)

assets. Furthermore, the myth of a separation between the exercise of rationality and innovation can no longer be sustained, even from an economic point of view.

This field of study requires the static notion of rationality to be abandoned in favour of the dynamic notion of *rationalisation*. This notion was introduced by Max Weber in order to analyse the historical process of the development of capitalism[11]. This concept of rationalisation is not actually defined as such in Weber's work[12], but it can be characterised on the basis of Weber's definition of rational behaviour: "Action is instrumentally rational when the end, the means, and the secondary results are all rationally taken into account and weighed. This involves rational consideration of alternative means to the end, of the relations of the end to the secondary consequences and finally of the relative importance of different possible ends"[13]. This notion of rationality enabled Max Weber to construct ideal types, in different fields, against which discrepancies with reality can be observed. In *General Economic History*, Max Weber conceives the specificity of Western capitalism as the realisation of this ideal-typical form of rationality in very different fields:

> "Drawing together once more the distinguishing characteristics of capitalism and its causes, we find the following factors. First, this institution alone produced a *rational organization of labor*. […] Only the occident knows the *state in the modern sense*, with a professional administration, specialized officialdom and law based on the concept of citizenship. Only the occident knows *rational law*, made by jurists and rationally interpreted and applied. […] Furthermore, only occident possesses *science in the present-day sense of the word* […]. Finally, western

---

a specific asset on a future date and at an agreed-upon price.

[11] See in particular Max Weber, *General Economic History*. The work of Max Weber, specifically his concept of rationalisation, can be considered an attempt to resolve the conflict of methods which pitted the German Historical School against the Austrian Marginalists: the neo-classical concepts of rationality can, for Weber, take on a certain consistency under specific historical conditions; the concept of rationalisation allows for an explanation of the socio-historical origin of those conditions.

[12] Jean Molino and Emmanuel Pedler, "Préface" in *Max Weber. Sociologie de la musique* [*The Rational and Social Foundations of Music*, Southern Illinois University Press 1958]*,* p. 20.

[13] Weber, *Economy and Society*, University of California Press 1978, p. 26. The rationality of neo-classical economists constitutes a specific case of Weberian rationality.

> civilisation is further distinguished from every other by the presence of men with a rational ethic for the conduct of life…"[14]

It is precisely the notion of rationalisation that allows the discrepancy between the model and reality, and its development, to be highlighted. It may be seen as the process that ultimately leads towards rational actions and, as a result, as an advancement in the implementation of the conscious linking of means and ends[15]. The type of rationalisation therefore depends on the field in question[16].

Rationalisation is not a transcendent movement that establishes itself uniformly without a single contradiction or potential resurgence of irrationality[17]. When applied to the financial markets, the concept of rationalisation does not, therefore, imply a more efficient and advantageous functioning of the markets for the economy as a whole: it enables a characterisation of the particular tendency to reflectively reconcile ends and means, which in this case is essentially the major factor that drives both the organisation and people's minds towards profit. Under certain specific social conditions, concrete reasonings – those temporal, structured sequences of mental associations – can generate results that are similar to those produced by economists' rationality. In order to produce this rationality, it is necessary to be present in a sociotemporal context that enables and incites it; to possess the necessary cultural competences; and to have available materials to record it, entries (generally formal) and, particularly so today, computing machines.

Studying the rationalisation of practices on the financial markets therefore provides an understanding of the modification and transformation of calculation methods within that environment, and allows us to avoid the

---

[14] Max Weber, *General Economic History,* Courier Dover Publications 2003, p. 312-314.

[15] Certainly, Weber recognised the multivocality of the notion of "rationality": "we shall return several times to the multivocality of the concept of 'rationalisation' of the activity" (Weber, *Economy and Society,* vol. 1 p. 63).

[16] As Jean Molino and Emmanuel Pedler comment, "Préface" in Weber, *Sociologie de la musique* [*The Rational and Social Foundations of Music*].

[17] In *The Rational and Social Foundations of Music,* Max Weber sees the melody as a figure of the irrational that resurfaces periodically to confront the advances of harmonic rationality.

alternative, which would be the clash of paradigms (which, incidentally, is posited only by upholders of methodological individualism) between "all is calculation" or "nothing is calculation", in other words between methodological individualism and holism. For all that, motivation towards profit does not only have an effect on each individual mind; it also leads to the more collective adoption of methods of coordinating individuals' action – particularly the division of work – that are increasingly focused on profitability. Over the last thirty years, therefore, the transformation of market practices and the transformation of organisation have not only taken place simultaneously but have also largely triggered one another.

Describing rationalisation should not simply come down to a juxtaposition of two different states representing two levels of rationalisation of financial activity. This characterisation is necessary but does not resolve the issue of the transition from one state to another. Max Weber, to explain this transformation in the case of Western capitalism, draws on religious causes. Seventeenth-century Calvinists, he explained, led an ascetic working life in order to avoid signs of their own damnation, which led them to save and make calculations[18].

Pierre Bourdieu and his associates proposed a general model of rationalisation and the emergence of economic calculation:

> "Against the ahistorical vision of economics, we must, then, reconstitute, on the one hand, the genesis of the economic dispositions of economic agents and, especially, of their tastes, needs, propensities or aptitudes (for calculation, saving or work itself) and, on the other, the genesis of the economic field itself, that is to say, we must trace the history of the process of differentiation and autonomization which leads to the constitution of this specific game: the economic field as a cosmos obeying its own laws and thereby conferring a (limited) validity on the radical autonomization which pure theory effects by constituting the economic sphere as a separate world. It was only very gradually that the sphere of commodity exchange separated itself out from the other fields of existence and its specific *nomos* asserted itself – the *nomos* expressed in the tautology 'business is business'; that economic transactions ceased to be conceived on the model of domestic exchanges, and hence as

[18] Cf. Weber, *The Protestant Ethic and the Spirit of Capitalism*.

> governed by social or family obligations ('there's no sentiment in business'); and that the calculation of individual gain, and hence economic interest, won out as the dominant, if not indeed exclusive, principle of business against the collectively imposed and controlled repression of calculating inclinations associated with the domestic economy"[19].

According to Pierre Bourdieu, in order to understand rationalisation one must first break down the stages of socialisation, and especially the set of dispositions developed by individuals in the family, at school and at work (known as *habitus*); the characteristics and constraints of the competitive environment (known as *field*) in which they function, and the resources they possess with which to face competition (known as *capital*)[20]. In this case, rationalisation is not envisaged as an inevitable trend that becomes dominant regardless of the configurations, nor in a moral way, as any form of progress or regression[21]. Rather, rationalisation is the product of certain particularly real competitive configurations, both internal and external, for the accumulation of a highly calculable and economic asset: pure profit (with no market interface). Indeed, the financial firm, functioning in an especially competitive environment, must constantly strive to preserve or increase its profit, if only to survive. This general constraint produces competition within the firm between different agents who conceive of solutions that are supposed to increase the company's profit and their individual power. In trading rooms, this general constraint produces a systematic organisation and reorganisation of work, people and the method by which profit is accrued. It produces a competitive space within itself, a small *profit society*, which *thinks profit* in a highly advanced manner, certainly, but in differentiated and incomplete forms.

---

[19] Bourdieu, "Le champ économique" Published in English in "*The Social Structures of the Economy*", Polity Press, 2005, p. 5-6.

[20] Cf. Bourdieu, "La société traditionnelle. Attitude à l'égard du temps et conduite économique" [Translated in English as "Traditional Society's Attitude towards Time and Economic Behaviour"] and Bourdieu, "L'économie de la maison" [The Economy of the House].

[21] The use of this term in the world of work and of the sociology of work may have moral connotations (in the context of debates on Taylorism).

The survey method

This study is based on voluntarily differentiated materials accumulated over the course of one year of research undertaken for a university degree. There are three types of primary materials: a participant observation carried out during an internship of four-and-a-half months from December 1997 to April 1998 on the securities lending desk in a dealing room of a major French bank, referred to here by the pseudonym Universal Company; a questionnaire survey carried out in the room, which provided standardized responses that could be subjected to quantitative analysis[22]; and around ten in-depth interviews with people from other financial institutions. More periodic observations were made in other markets or dealing rooms. Bibliographical work and historical documentation completes these materials.

For the sake of convenience, this study frequently makes functional divisions and separates what is linked. In the prologue, on the basis of an essentially bibliographical work, we endeavour to retrace the main stages of an institutional and social history of the markets. Thus armed, it becomes possible to consider the process of rationalisation as it unfolds in dealing rooms today. The first part is devoted to studying the organisation of work in the context of a collective motivation towards profit. The second part tries to understand how this process expresses itself in individuals, and analyses, through their relationships, the concrete forms of calculation and the scope of the market environment. The exceptional nature of this dealing room environment, focused relentlessly on the methodical accumulation of profit, raises the following question from the field of economic sociology: Under what social and economic conditions of possibility do economic individuals become homines economici?

[22] 94 people responded to this questionnaire (of 196 sampled), giving a response rate of 48%.

Chapter 3. The Bazaar of Rationality. Towards a Sociology of Concrete Forms of Reasoning

In many academic disciplines such as philosophy, sociology or economics, rationality is a debated concept and gives rise to many definitions. A common feature of its various uses in economics, rationality – whether it be parametric or strategic, perfect or limited – is a behaviour attributed to man a priori[23]. Rationality is therefore a causal category (as it enables economic models to be established with "micro-economic" foundations in particular), but rationality is itself without causes. This unilateral and uniform attribution of rationality is justified by an instrumentalist "as if" which generally does not measure the difference that is introduced along with the concrete behaviours of actors. Studying rationality from a sociological point of view involves, on the contrary, not affirming dogmatically "all is calculation" or "nothing is calculation", but trying, inductively, to give an account of the ordinary reasoning of ordinary people. For such a program, it is necessary to endeavour, insofar as is possible[24], to describe the diversity of forms of reasoning and seek to identify their possible social determination[25].

---

[23] This theoretical stance is part of a common and more general approach taken in social sciences, which consists in *equipping* the actors with *skills* in order to bring out *equilibria*, *agreements* or *disagreements*, indeed *worlds* with unique properties (cf. Boltanski (L.), Thévenot (L.), *De la justification. Les économies de la grandeur*, Paris, Gallimard, 1991). Although this type of approach has the merit of revealing new configurations, it should not, however, cause us to forget that on another analytical level it is not the researcher's role to attribute *skills* but rather to show how the actors "equip themselves" and to analyse the inequality and diversity of the ways in which they do so.

[24] It is very difficult to take proper account of a thought sequence that is constitutive of an act of reasoning, even if it is one's own thought. Even if one takes a self-analytical approach, one's own reasoning tends to become distorted. At present, it is only possible to work with the signs of reasoning, particularly the declarations of the use of reasoning made by actors. These are formatted for spoken or written discourse and make use of the designations that are already established by the categorisation and codification used in the social world (starting with language categories).

[25] As S. Bouhedja, P. Bourdieu and C. Givry have shown, when an individual house purchase

Very few working environments use calculation to the extent that dealing rooms do: calculation of equivalencies, arbitrage, exchange rates, instant profits, but also of efforts, investments, hits and career opportunities within the dealing room. The dealing rooms are thus a privileged place in which to study rationality sociologically (and not logically), or – more specifically, since the term "rationality", an essential attribute given to man in many disciplines, includes its own perfection – reasoning with its lucky finds, imperfections, short cuts, associations and computations. Moreover, the financial markets are characterised not only by their high level of economic and mathematical calculation, but also by their plurality of winning strategies. Incited to maximise the bank's profits, the financial operators (traders and sales people) do not have a "one best way" but must instead choose one of the winning strategies (or use them concurrently, which is a form of choice). This choice – which may be an addition – is partly imposed by the dealing room, its history, function, the economic situation, or the product. However, as these people are relatively autonomous at work, they can partly avoid those constraints or seek to occupy positions in which they will be able to use the strategy of their heart. One can thus regard the set of winning strategies as a true *bazaar of rationality,* within which people find their way not only according to their position and the associated constraints, but also according to their dispositions acquired during primary socialisation in the family or during secondary socialisation at university or at work. The valorisation of their winning strategy consists not only in making financial profits but also in making its symbolic value both for themselves, for peers and for those in charge of the bank, which means gambling not only its power and share of redistributed profit, but also the construction and confirmation of a professional and social identity, in short, the invention of a position, which remains precarious and illegitimate.

---

goes ahead, house-buying couples only begin calculating their budget and financing options gradually, after key interactions have taken place with the different agents in the property sector, particularly the seller, who is "a kind of living incitation to rational calculus" Bouhedja (S.), Bourdieu (P.), Givry (C.), "Un contrat sous contrainte", *Actes de la Recherche en Sciences Sociales,* n°81-82, 1990.

Within the dealing room of a large bank devoted to arbitrage of equity derivatives[26], three stabilised forms of reasoning, relatively institutionalised, with their own history and tradition of teaching, are proposed to the actors: a method for arbitrage[27] and brokering, *mathematical arbitrage* of options, and two methods for forecasting in order to speculate[28], *economic analysis* and *chartist analysis*. On the basis of these three forms, they develop their own form of reasoning, more or less reflexive and intuitive, which results in a financial transaction.

1. Discovering equivalencies: mathematical "arbitrage" and volatility management

The outlet for scholastic dispositions

There are all kinds of arbitrages. Some are mathematically quite simple (like arbitrage of places or currencies). However, the most profitable arbitrage in recent years is derivatives arbitrage (options, exotic options) according to the underlying securities (equities, fixed income securities)[29], a technique that is based on complex mathematical knowledge.

---

[26] The investigation by observation was done between December 1997 and April 1998 within the dealing room of a large bank we shall refer to as Universal Company (UC). Some interviews were also conducted. A questionnaire was given to members of the room, half of whom responded (94 answers).

[27] Arbitrage is a strategy that consists in profiting from a simultaneous difference between two pricings of a single security (in two different financial centres) or from a loss of equivalence between two securities of the same family (cash and future, share and option). If the opportunity is seized in time and the equivalence is certain, then there is a definite profit.

[28] Speculation is a strategy for buying (or selling) a security based on the anticipation of a favourable trend in the share price, which would then allow securities to be resold at a higher price (or repurchased at a lower price), thereby generating a profit. Profit is thus uncertain.

[29] An option is a security that gives the right (and not the obligation) to buy (or sell) a particular asset, known as an underlying, on a future date and at an agreed-upon price. For example, on 17 March 2000, a call option listed at €9.67 gave the right to buy a France Télécom share at €200 at the end of April 2000. If the France Télécom share price (worth €187 on the same day) were to exceed €200 at the end of April, the option holder would want to "exercise" his option and buy the share at a cheaper price than its listed market price (regardless of whether he wishes to keep it or sell it to profit from the share value appreciation). On the other hand, if it is worth less than €200, he would choose not to exercise it and to carry out his future transactions at the market price: he would only lose

This form of arbitrage was made possible by the discoveries of Black and Scholes. In 1973, they found a general formula for the pricing of options[30]. Because the solution was imperfect due to the reducing nature of the adopted assumptions, this scientific discovery triggered, even within banks themselves, a dynamic of research that sought to improve the formulas of arbitrage and extend this type of solution to other products. Therefore, when the head of the dealing room decided to follow a policy of arbitrage on a given product, the activity was implemented in the following stages: importation and improvement of a pricing formula; adaptation of the formula to the design and legal features of the product; computerisation of the formula; research of the first customers; initiation of the first transactions; routinisation of transactions thanks to the daily reading of parameters permanently displayed on-screen. These various stages in the activity of arbitrage correspond increasingly to the division of labour within the dealing room: the importation, improvement and adaptation of the formulas, as well as their computerisation, is increasingly the domain of engineers, while the marketing of the products is the responsibility of the sales people. The traders only manage the securities portfolio. However, even at the time of my investigation, there were still cases where new activities were being developed and the entire chain was entrusted to the traders.

This method of organising the activity shows several possible uses of mathematics associated with several forms of excellence on the markets. The

---

the €9.67 paid for the option in March.

[30] Naturally, the option price depends on whether or not, on the expiry date, the price of the underlying asset is likely to exceed the exercise price established in the option contract. Black and Scholes sought a solution by developing a risk-free portfolio based on a set amount of underlying assets and options derived from that underlying. After applying complex instruments of stochastic differential calculus (to give an idea, in France today this requires the baccalaureate + 4 or 5 years of mathematical study), they deduced a formula which, although more simple, requires knowledge of a number of high-level mathematical instruments: logarithms, exponentials and, above all, normal laws (baccalaureate + 2 years of study today). The option price depends on a number of parameters: price, expiry date, current interest rate, changes in the price and trend of the underlying assets and their volatility. When an option is sold, this formula makes it possible to determine the right quantity of underlying assets the trader must have in his portfolio in order not to lose money no matter how much the price fluctuates.

importation, improvement and adaptation of formulas are closer to academic mathematical research and require a considerable, maintained scholastic capital. On the other hand, carrying out daily transactions (a fortiori to canvass customers) requires more of a basic understanding of pricing formulas. This knowledge can decrease once these other supporting elements are established, particularly the practical routine of handling the pricing indications shown on the screen. Thus for the first population, the improvement of the arbitrage formula and its replacement by a more powerful one is topical. The others, meanwhile, must know at best what type of errors the formula entails, or even simply consider pricing indicators on the screen as indicators just like any other, some of which they would follow strictly and others more generally.

Therefore, complex mathematics played a historical role and founded the legitimacy of trading positions in the dealing room at Universal Company (UC). However, with increasing computerisation depriving traders of their control over arbitrage formulas, and with greater importance given in the room to the commercialisation of derivatives and to speculation rather than arbitrage, complex mathematics has become more of a moral guarantee than a skill used on a daily basis.

Thus, only 50% of the members of the room answered that they use mathematical relations based on stochastic mathematics. For the majority of them, the use of Black-Scholes is somewhat instrumental, since 13% of the room's members state that it is a "push-button" relation and 26% say that it is a relation whose results they could at best interpret. Those with an advanced knowledge of the stochastic equivalence between financial products, in other words, those who can demonstrate or modify the Black-Scholes formula, make up only 24% of the dealing room. A regression helps us show which properties favour this kind of skill in the room (Frame 1).

Frame n°1: Knowledge of Black-Scholes. A regression model.

Table 1. Regression modelling the probability of having or not having advanced mathematical knowledge[31].

Explanatory variables		Rough ratios	*Ceteris paribus* effect	
All (n=94)		**24%**		
Position	*Engineer*	62%	+31%	**
	Others	19%	-3%	**
Diploma	≥ Baccalaureate + 5 years	40%	+22%	**
	< Baccalaureate + 5 years or diploma unavailable	15%	-8%	**
Gender	Male	29%	+3%	
	Female	13%	-7%	
Experience	> 4 years in finance	21%	+2%	
	≤ 4 years in finance	27%	-2%	
Father's diploma	≥ Baccalaureate + 3 years	20%	-7%	*
	< Baccalaureate + 3 years or diploma unavailable	30%	+11%	*
Father's profession	"Economic" profession (CS 10 to 31 and 38)	13%	-8%	*
	Other professions	32%	+8%	*

According to this regression, it is more the position in the division of labour (objectified by the dummy variable, being or not being a financial engineer or R&D engineer) and the diploma (objectified by the variable possession or non-possession of a diploma higher than the baccalaureate + 5 years) that determine the probability of having such capacities. This result is explained by the degree of the division of labour and by the academic nature of the knowledge used. With statistics on a small sample (94 people), it is not possible to establish very precise results. The principal effect is "absorbed" by the position held or by the diploma, both of which are also the result of social discrimination. While they are not significant at the threshold criteria normally used by econometrics (threshold criterion of 5% or 10%), the parameters do indicate the sense of relation and require further comments and possibly confirmation with a larger study. The positivity of experience in the field, although not very significant, is no doubt more a reflection of the demographic structure of the jobs than a tendency to improve one's mathematical capacities through experience (rather, the opposite is true). Women, poorly represented in both the dealing rooms and in scientific disciplines, are consequently also under-represented among those with a strong grasp of Black-Scholes. Finally, the social origin of the parents plays a rather significant role. It is measured by two variables: having or not

[31] To be understood as follows: 62% of engineers in the room have advanced knowledge, compared with 24% of the general population. Using *ceteris paribus*, in other words holding the effects of other variables constant (diploma, gender, experience, father's diploma or profession), the fact of being an engineer increases the likelihood of having such a high skill level by 31% in relation to the general population. When tested, this difference is significant at the threshold criterion of 5%, shown by ** (*** marks the very significant threshold criterion of 1%, * marks that of 10% and (*) marks the less significant threshold criterion of 20%. When the test of the significance of the difference (compared with the average situation) is inconclusive – in this case, above the 20% threshold – no asterisk is shown). These *ceteris paribus* proportions and the significance tests were obtained on the basis of a logistical regression in which each method is compared to the average situation (and not a reference situation, which is the most common method used in publications, but is less practical for reading purposes).

having a father in an "economic" occupation (farmers, craftsmen, tradesmen, heads of company, liberal professionals and administration executives in the private sector); having or not having a father educated to degree level or higher. The people whose father works in an economic profession have, *ceteris paribus*, a lower probability than others of knowing how to demonstrate or modify complex stochastic relations. Thus even in the world of equivalences between all kinds of prices and products, the conversion of one form of capital into another, of an initial economic capital into cultural capital, comes at a high price. One may note also the negative impact and relevance of a father's high-level diploma on the probability of mastering Black-Scholes formulas. This finding shows that the holders of this cultural capital are more "parvenus" than "heirs" of the school system. Indeed the fathers of members of the room with a high-level diploma (liberal professionals, managers in the private sector) often acquired this diploma more for its economic value that for its cultural value. On the other hand, parents of the mathematical virtuosos, who often work in the public service sector[32], may give relatively greater value to its cultural component that to its economic component even if they often hold a lower-level degree.

Those whose fathers belong to the dominant classes, in particular the economic sectors, are relatively speaking more numerous among sales people and heads of room. These people, although often more highly educated, do not need to know – or no longer need to know – complex mathematical relations. On the other hand, the parents of engineers are slightly more likely (even if the difference due to the sample size is minor) to be from the "cultural" sectors of the dominant classes (such as engineers and especially public office managers and professors) or from the middle or working classes. R&D engineers also have slightly lower-level and less prestigious diplomas (ENSIMAG, Télécom, ENSAE) than the most dominant members of the room, who have often studied at the Ecole Polytechnique or Ecole Centrale. Far from preventing the less highly educated engineers from entering the field of mathematics, this initial difference in mathematical ability seems, on the contrary, to favour it. Power and money are primarily of interest to the dominant individuals in the room: of the students from the Ecole Polytechnique and the Ecole Centrale, those who go in the dealing rooms are those who have the greatest economic dispositions and are most willing to give up their educational values. Once in the room, they thus readily delegate mathematical modelling to lower-level engineers. The principle of the

[32] 33 % of those whose mother was a high-ranking official or who hold a mid-range position in the public sector are Black-Scholes virtuosos, compared with 24% overall.

intellectual interest of these lower-level engineers in complex mathematical relations does not only lie in the occupational structure. In a somewhat more working-class background, it is also to be found in cultural goodwill that guarantees the educational investment enabling this type of acquisition. This educational investment is not limited to its economic aspect but, rather, affects the whole moral being and entails an adhesion to the educational order and its values, all the more so as it is the university that allowed the employees to become what they are. Thus, at UC, the orientation towards financial mathematics, in many aspects, has the same constants as the university field[33].

> Michel is an R&D engineer and graduate of ENSIMAG. His job is to develop derivatives pricing software, and he is fascinated by advanced mathematical arbitrage. On the other hand, he rejects speculation, giving the example of a trading exercise in which, after he had started off speculating in the traditional way, he "realised that he was bored to tears" and instead carried on using arbitrage on the price of call and put options. At work, he goes above and beyond his specific duties as a software developer. During a conversation, he lists historical references in the field of financial mathematics, debates the relevance of the Black-Scholes formula and stresses the importance of adopting an alternative and discrete pricing model (with a Poisson process). He appears to prove that even without carrying out the transactions of traders and sales people, he is an arbitrage professional just like them, while they often perform arbitrage without really knowing what they are doing.

While for the lower-level engineers, promoted from minor engineering schools, the assertion of their mathematical expertise and adhesion to the commercial order of the room seem somewhat compatible, the same cannot be said for those who possess greater cultural capital in its academic form.

> Marc, a former researcher in theoretical physics at the Atomic Energy Commission (CEA), is the "quant", that is, the mathematics expert in the room. After a few years spent at the CNRS, faced with a lack of opportunities to progress within the field of research and finding himself under financial pressure, he chose to move into finance. Given that his academic dispositions go against the commercial spirit of the room, he has an unhappy relationship with finance. Indeed, he does not particularly like the atmosphere in the room or his "mono-configured" colleagues who have "cut all the cables plugged into any outputs" other than money. "Modelling arbitrage relations", he explains, "is like throwing a chair out of the window and trying to model the distribution of the pieces! It can be done, it can become very complicated, but it is quite limited".
>
> What is more, he is only given trivial problems to solve, such as minor improvements and arrangements of existing models in order to price new products. First of all, in 1998, UC's head of room was not interested in developing a real team of mathematics researchers (similar to those employed in Anglo-Saxon banks). And secondly, he is not

[33] Cf. Pierre Bourdieu, 1984, *Homo Academicus*, Minuit.

> given time to implement alternative models to the Black-Scholes paradigm, still in use for modelling prices. He would like to develop alternative models where the volatility presumed constant by the Black-Scholes model would itself follow a stochastic process. However, the traders are not interested, because this type of modelling prevents them from calculating the "marked-to-market" book value (according to the daily prices), and forces them to work blind for a long period before being able to observe whether the arbitrage is winning or losing. He even says that he would like to do "proprietary trading", that is, to have his own securities portfolio in the long run. The aim of such a trading position would not be to find the right formula in order to earn money but, rather, to earn money in order to show that the arbitrage formula is right.

R&D engineers are thus in a position in which they wage out a symbolic struggle with the financial operators (traders and sales people). Even if they are responsible for most of the room's financial profit through the quality of the equivalence relations they establish and the performance of the software they develop, R&D engineers do not succeed, at UC at least, in obtaining a political and economic position that matches their contribution. It is the financial operators who harness the activity and transactions and thus succeed in making others believe that they are responsible for the profit.

In 1998, the power struggle did not favour R&D engineers. While data-processing modelling could still progress and lead to the suppression of some trading jobs, further mathematical modelling does not appear to have been so advantageous. Thus, during a meeting in which the results of the room were presented, an analyst working in modelling questioned the head of room on the advisability of hiring a second *quant*:

> "There's only one quant?"
> "The value added of a new model is falling", answered the head of room.
> "There are some people who believe in Graal and magic formulas!"
> "If the model's bad, we lose money!"
> "If we have a better model, we don't earn that much more than the market!"

Contrary to the opinion of some American banks, which invested heavily in developing teams of research in financial mathematics, UC, formerly at the forefront of arbitrage modelling, now considers that the marginal output of more powerful mathematical models is decreasing. This strategic orientation undoubtedly has a link with the increasingly commercial orientation of the room.

Consequences and limits of mathematisation

The traders who deal structured products[34], in particular the six traders working on the financial engineering desk, are familiar with the mathematical foundations of arbitrage relations. First, they are highly qualified and have chosen to work for the financial engineering desk because it has the highest positions and products in the hierarchy of technicality. Second, they must arbitrate some very complex products such as double-barrier options (the option is activated on the basis of a particular price, and deactivated on the basis of a different price) or capital guaranteed products (such as products that guarantee a 50% return on CAC 40 price increases and 0% on decreases). For that they have to make proper use of arbitrage relations. For this kind of product, the ideal is not so much to deal but to make a few major transactions on which the margin is very high. As they often deal in new products, they ask the R&D team to improve the software used for pricing or sending orders. With this team, they have to explain their needs, and sometimes take part in modelling or supervising it. Thus, the relationship between these engineers and traders is a mixture of rivalry and complicity. The *traders* tend to exploit and adapt *engineers'* mathematical and algorithmic expertise. In turn, the *engineers* acknowledge the skill of traders but nonetheless try to downplay it. It is as if these *traders* and *engineers* share the title of Excellence in arbitrage relations: the *engineers* formulate them solely as a theoretical problem, while *traders* see them as more of a practical-theoretical problem in which skill, the grain of the market and the profits generated all serve to confirm a proper grasp of the theoretical model.

While most of the traders on exotic options and structured products often have in-depth knowledge of complex mathematics, the same cannot be said for traders on more traditional options. Indeed, they work on standardised products for which modelling has already been carried out. They do not really

[34] Structured products and exotic options are contracts that include multiple optional clauses, making them more complex that standard options.

need to ask anything of the engineers or to speak the common language of mathematical modelling. Just as modelling and formulating mathematical propositions allows for an erasing of the memory of all the operations needed to establish each proposition, which allows mathematicians to focus on drawing up their next proposition, so mathematical modelling in dealing rooms currently allows the automation, computerisation and correlative overlooking of all the operations needed in order to have on-screen the optimal price of a particular option and the amount of underlying assets needing to be bought in order to provide protection.

When they have been trained in finance or at engineering school, these traders have a very rough knowledge of the main stages of mathematical modelling, or are at least able to provide the financial interpretation of the principal parameters that result from this modelling. However, it is not necessary to know this in order to be good at options trading. Moreover some traders on warrants (that is, options issued directly by private banks), often foreigners, have no degree and have a working-class background. The trader indeed has a screen in front of him, with the parameters of the formula, *delta, gamma, vega, theta* and indications for profitable purchases and sales. The job then becomes rather "push-button".

> Diane is a business school graduate with a master's degree from Paris-Dauphine University. She is a junior trader and has been carrying out equity arbitrage against arbitrage on convertible bonds. The arbitrage relation is based on the Cox-Rubinstein model, and Diane tries to give me a brief summary of the basics: "Look, it's a binomial model..." She has three screens in front of her – one to place buying and selling orders on the electronic market, an Excel screen to keep track of her position, and another screen with the in-house pricing software. As soon as a counterpart accepts one of her offers to buy or sell, she looks at her pricing software, which tells her how much protection she needs, and then positions herself on the market. She spends most of her time keeping an eye on her position on the list of the best purchases and sales. Her boss also works on the market, and now and again he calls out from his desk, "Good position, there [...]. I'm moving ahead of you." The pace is quick and the atmosphere is much more frenetic than on other desks.

On these ordinary trading desks, therefore, the mathematical side seems to be vanishing under the pressure to buy, sell and protect assets, and

mathematical relations remain as mere parameters on a screen that has become a truly automated interface.

One of the risks of mathematical rationalisation is the elimination of part of arbitrage-based trading, now performed entirely by computers. This is already the case for Ivan, whose job is to set the parameters of the computer, which deals for him.

Competing against less-educated people, beginners and middle office workers[35], trading operators will, on the one hand, boast about their mathematical abilities in order to justify their right to occupy such advantageous positions. On the other hand, faced with the growing importance of mathematical and computer modelling in trading, they try to keep a certain autonomy, for instance by giving more and more importance to speculative trading, in which profit is not guaranteed by a necessary mathematical relationship between two products. To maintain their position and independence, they take advantage of the present imperfections in mathematical modelling. This type of modelling, for instance, does not take sufficient account of developments in the volatility of securities. To arbitrate an option against an underlying security can be regarded as speculation on the development of the security's volatility[36]. Ordinary options traders thus maintain their autonomy by taking advantage of flaws in the model and can carry out a hybrid form of arbitrage that is closer to ordinary speculation.

2. A rather economical economic analysis.

A pragmatic use

Economic analysis is not only an academic type of knowledge such as mathematical arbitrage. It is also part of a general knowledge, which does not

[35] Back office and middle office managers provide administrative follow-up of the deals that are concluded instantly by traders (confirmation, settlement, delivery, compensation, recording).

[36] Some option deals between professional traders are made directly at the volatility point (inverting the option price according to the Black-Scholes formula).

need to be learned at university. In the dealing rooms, many have never studied economics as part of their degrees but nevertheless use basic analysis on a daily basis. Thus, according to our questionnaire, 53% of the guarantors use macroeconomic reasoning. Three categories of positive responses were proposed as a way of distinguishing those who believed in the scientificity of the approach ("Yes, because it is scientific", 10%), those who adopted it for purely practical reasons ("Yes, because it works", 27%) and those who distanced themselves from this type of approach by placing themselves almost within the self-referential framework of game theory ("Yes, because everyone else does", 16%). These responses appear to show the pragmatism of those who use this form of reasoning.

Of operators, who have to develop winning strategies on the market, sales people (89%) use economic reasoning more than traders do (67%). Sales people must canvass customers (fund managers, company treasurers) and offer them derivatives managed by the traders. Therefore, they have to make a sales pitch in which economic reasoning features prominently in order to convince the customer either to try bold speculation or to protect himself from the risks incurred: "With the crisis in Asia, your portfolio is vulnerable. You need to be covered, we can guarantee your portfolio". On the other hand, the traders of a room devoted to arbitrage do not have to predict variations in prices as much, based on the economic aggregates. Nor do they need to explain their choice with clear reasoning. The other categories of personnel, who intervene very little in the market, do not have the opportunity to use economic reasoning and are not interested in this type of analysis (in particular engineers, who are often wary of macroeconomics).

Agents and distribution tools

With regard to stochastic calculation, some agents in the room occupy a structural and functional position in the spread of "economic rationality". Economic reasoning was deemed important enough during the 1980s and

1990s for all dealing rooms to adopt an organisational method with an economic analysis expert (the market economist) and a time frame for the presentation of its forecasts (the morning meeting).

> Ian, the market economist of the room, explains the economic news during the morning meeting and distributes a written summary. He comments on changes in the markets on the previous day and draws his listeners' attention to the figures that are to be announced during the day (inflation, growth, salary level, defecit, etc., as well as government measures in the larger countries). For those figures, Ian reminds everyone of the "market consensus", that is, the average prediction made by the main forecasters, the UC forecast and the expected movement of the markets depending on whether the figure announced is below or above the forecast. During the day, when there is a drop in an important figure such as the unemployment rate in the United States, Ian uses a loudspeaker to inform the room of the new number, the disparity in relation to the anticipated figure and the market's initial reactions, and over the next few hours and days makes comments on how that reaction is developing.

The work of economists does not require a very high level of expertise. In this case, the economist uses neither macroeconomic models nor econometric forecasts. His work consists more in making economic articles produced by the economic services of banks more popular among operators. "The room is only interested in consensus", he says, as an excuse for not taking a greater interest in more theoretical economics.

> During a conversation, I ask Ian if he also takes account of heterodox interpretations of the different macroeconomic sequences. He replies that he also takes a personal interest in far more general matters such as the Keynesian-monetarist controversy, but that it is impossible to take an interest within the context of the dealing room because, here, the room and the market are "only interested in consensus".

As the dealing room of UC is dedicated to equity derivatives and favours arbitrage over speculation, economic reasoning is perhaps given less importance than in other dealing rooms, in particular those which favour speculation over arbitrage and brokerage or those which trade fixed income securities, on which major macroeconomic variables and the economic policy of States have a much greater impact.

The market economist, whose audience is limited, is merely one mediator among others of economic reasoning in the dealing room. Whether or not they listen to the economist, members of the room will keep an eye on news concerning companies' progress, particularly information on mergers and

acquisitions and tender offers (the rate of positive responses for these two subjects suggested in the question, "Do you use economic information with regard to the activity of listed companies?" was 70% and 69% respectively), as well as sectoral developments (49%), far more than for redundancies (29%) and appointments (23%). By reading financial newspapers on a daily basis and referring continually to Reuters and Bloomberg (62% of respondants) or reading *La Tribune* and *Les Echos* (52%), they fill their mind with information, advertisements, rumours and even ready-to-use economic reasoning.

Although less visible, their working tools also contain condensed economic reasonings. These may be assumptions for pricing algorithms or economic forecasts integrated in their databases, fuelled by a division of the work done by economic analysts. The success of the activity of buying and selling stock therefore depends largely on the correct forecasting of payouts made by companies. Although Damien, a trader on the same desk, may start his day reading *La Tribune*, he goes on to trade according to profit forecasts made by financial analysts, which are included in the database and automatically incorporated into the price calculated by the pricing software, which restricts the actual work he does in the area of economic forecasting.

Hence, through many different sources (economists, media, rumours, conversations, searches), market operators find themselves immersed in a universe where economic reasonings, which are developed, completed and orthodox to varying degrees, are available – in simple narrative forms that do not require prior theoretical knowledge – for adoption, handling, composition and appropriation.

The mistrustful and the virtuosos

Unequally informed, the members of the dealing room are characterised by their capacity to implement economic reasonings. Some use it as an extra that may be of use, for example, in convincing the customer, but which requires a cautious approach because of its high degree of inaccuracy. Others are true

virtuosos of economic reasoning and connect consecutions of macroeconomic variables to prices with surprising speed.

> Patrick, a salesman at Loan R., has very little faith in economic reasonings, which he considers uncertain:
>
> > "Economists often make more mistakes than chartists. We went to see the economist with a customer who was very exposed to the strong Sterling. And so he said to us, "Well, the Sterling will come down in the next six months, because interest rates are too high. Therefore the government will lower the rates and the Sterling will be at around 9.30". Now, the Sterling costs 10 francs. You see, it is an enormous difference. And so, you see, he was totally wrong. You never know with economists: they always have the right explanations at the right time, but for the future... it is not so easy, and that's only to be expected" (Patrick)
>
> On the other hand, a portfolio manager questioned by Claudine Carluer[37] links fast causal sequences in order to explain why, in period of economic growth, he is more aware of interest rates than companies' results:
>
> > "It's obvious. It's what's happening now in the United States. Fast growth, overheating, a rise in interest rates because of inflationary expectations: that it is the current path".

It is not easy to identify social causes of the use of economic reasonings. It seems to depend on the overall orientation of the dealing room and the local position of economic reasoning within the symbolic hierarchy. At UC, the people in the room whose father had an "economic" profession, such as businessman or liberal professional, use economic reasoning more than others (57% of the first group as opposed to 44% of the second). However, these people, over-represented among sales people, perhaps use it more because of their function than on account of their social origins. In the local context of UC's dealing room where economic reasoning occupies a lower position in the symbolic hierarchy than mathematical arbitrage, those with the greatest cultural capital generally prefer to excel in mathematical arbitrage. Sales people, because of their position and career path, manipulate economic reasoning using the culture of the economic world as just another element in their sales pitch.

In the BPP dealing room, on the other hand, which focuses on speculation on currencies and fixed income securities, economic reasoning occupies a

---

[37] Cf. Carluer (C.), *Le comportement informationnel des gestionnaires de portefeuille. Modèles et croyances*, Doctoral thesis in Information and Communication Sciences, Université de Jean Moulin, Lyon II, 1994.

more significant position and a higher level in the hierarchy of values. At the time of its morning meeting, traders from this room – often very highly educated (Ecole Polytechnique, ENSAE and a qualified philosophy professor) – compete to perform the best economic reasoning, which, in this case, is more complex and closer to academic discourse.

Neo-classical reasoning

In general, when an economic event occurs, it is possible to deduce a number of economic consequences from it, which may be contradictory[38]. Some economists have often pointed out that, when such alternatives occur, the economic reasoning used in the market is generally neo-classical. Some economists have even studied the self-fulfilling nature of neo-classical forecasts made thanks to the financial markets and their belief in neo-classical economics. In her studies of the form of reasoning used by portfolio managers, Claudine Carluer observes that the reference model they use is neo-classical economic reasoning.

A large number of factors contribute to this uniformity of economic reasoning: newspapers, media and official publications which, one way or another, tend to reflect the "Washington consensus"[39]; the fact that neo-classical reasoning is fairly easy and systematic; and, above all, the need to keep pace with the market and to forecast concurrently with it (or, better still, slightly in advance), as well as the need to forecast the actions of the central banks (which usually have a clear neo-classical structure)[40]. One of several

---

[38] As F. Lordon highlights, "immersing the micro-problem of portfolio selection in the macroeconomic system of general interdependences exposes the operators to its ambiguities. Is it not true that disinflation, which allows the erosion of capital to be avoided, maintains high interest rates, which in turn reduces the value of portfolios? Is growth strong enough to make public debt sustainable or, on the contrary, is growth too high, making it vulnerable to inflationist pressures? Is unemployment a factor in social inequality or does it provide a safeguard against the rise in salaries?", Cf. Lordon (F.), "Les apories de la politique économique", *Annales,* 52, 1, January-February 1997, p. 157-187.

[39] Cf. Dezalay (Y.), Garth (B.), "Le 'Washington consensus', Contribution à une sociologie de l'hégémonie du néolibéralisme", *Actes de la recherche en Sciences Sociales,* n°121-122, 1998.

[40] On this point, with regard to the French case see Lebaron (F.), "Les fondements sociaux de

factors that result in an increased use of neo-classical reasoning is its elective affinity with social origins on the one hand (with *economic capital* having greater importance than *cultural capital*) and with the position held (by portfolio managers) on the other hand. Bukharin tried to show that marginalist economics was "economic theory of the leisure class". There is no doubt that this theory, which ignores the specific conditions for the production of academic scientific thought, is simplistic and indeed erroneous, but it may have greater validity for operators who are only half-aware of the consequences of this kind of economic policy. Indeed, these operators usually hail from the more economics-focused sectors of the dominant class – CEOs, managers, liberal professionals, commercial tradespeople – and generally tend to see economics as a juxtaposition of markets in partial equilibrium similar to those in which the paternal company operates. The State is viewed critically; its power is considered disturbing and the fact that it can get into almost limitless debt (at least in temporal terms) is seen as an exorbitant privilege. Keynesian reasoning, on the other hand, is a great servant of the State, almost Hegelian, through which the bureaucrat – by a ruse of reason – uses certain systemic consequences that go against his economic policy and brings about the concrete universal and the happiness of the people in spite of himself.

A witness of this spontaneously neo-classical reasoning, Thierry (an older left-wing trader) had this to say:

> "And then in 1980, when the left came to power, there was a high level of debt and a whole lot of public programmes were planned, which had to be financed. And the State then took the place of everything – normally in economics, only the company should borrow on the capital market and not the State." (Thierry)
>
> "Debt itself, whether we are talking about the debt of a company, a business or a State, is basically the same thing. As Balladur said on TV the other day, subscribers might wonder, "Will we get our money back?". In fact that is not really the issue – you do get paid back, but in Monopoly money, because the States get further in to debt in order to pay back their debts" (Manager interviewed by C. Carluer[41])

---

la neutralité", *Actes de la recherche en sciences sociales*, 116-117, 1997.

[41] Carluer (C.), Le comportement informationnel…, *op. cit.*, p. 190.

In order to test this tendency to adopt neo-classical reasoning, we proposed two alternative forms of economic reasoning in the questionnaire, which were equally plausible. One is somewhat orthodox and the other somewhat heterodox (or at least Keynesian). From 1994 to 1997, the US rate of unemployment was the variable on which the stock exchange market was polarised. The dominant reasoning was inspired by the Phillips curve, which is a "classical" version of some Keynesian forms of reasoning. According to this approach, there is a decreasing relationship between the rate of unemployment and inflation. Any fall in unemployment was interpreted during these years as a sign of a return to inflation and an imminent rise in interest rates, which would entail a fall in prices[42]. After 1997, as this relationship had no empirical verification, the interpretation lost ground. Some even started talking of a "New Era" in the United States – a new economic era of low unemployment, strong economic growth and low inflation.

Table 2. 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[43])	(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 *drop in prices*.	56%
(Ticks both answers[44])	(5%)
No answers	29%

Given that the news regarding the unemployment rate sparked such a reaction in the market, the non-response rate (18%) was lower for this question than for the question concerning the public deficit (29%). While the neo-classical answer was the most popular (45%), the alternative answer was

[42] The basic link between the rate of interest and fixed-rate bonds should be noted. When the interest rate rises, the price of old fixed-rate bonds, whose rate was lower than the new interest rate applicable to new bonds, goes down in order for the interest rate on old and new bonds to be the same. When the interest rate drops, the opposite is true. There is a very strict relationship when it comes to bonds, and also applies to shares, although in a less mechanical way (given the uncertainty of dividends).

[43] Some even specified in the margin, "It depends on what conformists think at moment *t*: don't piss into the wind" (1 person), and "It depends on the market situation" (1 person).

[44] Also "It depends on the market situation" (1 person).

frequently selected (29%), maybe because unemployment failed to have an impact on US inflation. Some (5%), perhaps with a better understanding of economics, ticked both answers and sometimes gave self-referential explanations in the margins.

The question on the rise in public debt was less striking to the members of the room. Apart from Japan, where a public revival of the economy was attempted a number of times, and some of the revival plans could have brought about a rise in the markets, the budgetary revival had not been on the agenda in the OECD countries since the beginning of the 1980s. On the other hand, the disengagement of the State became the standard for good economic policy. The members of the room incorporated this standard because, in their answers, they generally chose the orthodox vision over the Keynesian one.

Table 3. *Proportion of people who expressed an orthodox 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%

To gain a better understanding of what motivates orthodox opinions, we drew up the following table showing the proportion of people who expressed an opinion that was orthodox or in line with the market[45] according to annual salary levels. This proportion clearly increases in line with salaries. Seniority in finance, income and hierarchical positions are quite narrowly correlated. Everything occurs as if the propensity to be "orthodox" increases along with one's integration in the financial world (it is common to see the answer "both" from those earning more than 500,000 francs a year). The answers given by junior empoyees depend more on their preliminary knowledge of economics (the economics taught in school is more Keynesian than that used in the

[45] That is, those who checked both boxes and specified that "it depends on the context".

dealing rooms), or even on their political or ethical convictions. In the ordinary world, any fall in unemployment is thus considered "good" and any rise is "bad". Junior employees may think that what is "good" in the world of politics and economics must be also "good" for the market. With a little experience, they learn that the opposite is true (during the 1990s at least). Initially shocked[46], they eventually get used to such a sequence of economic consecution.

Even if the tendency to use orthodox reasoning is very strong and is reinforced through integration into the financial world, one should not think that economic opinions all are uniform or all neo-classical. It is important to remember that the consensus is all the more difficult to establish because the human group is so large. As Baker showed[47], the larger the group of traders in a pit of options quotation, the more cliques are formed, the greater the dissensus between the cliques and the more volatile the price of the option. Moreover, some economists observed that on many markets, if economic reasoning and future forecasts were identical, there would be no possible transactions. Sometimes, when some anticipated figures are announced, the market has a short period of hesitation. It often heads in one direction and then makes a sudden turnaround. This phenomenon is due to the unequal financial power of people who interpret the figure's impact on the price differently.

Economic reasoning as an unconscious exercise of semiology

As Claudine Carluer explains, even if the types of reasoning are integrated into a stable and homogeneous neo-classical reference model, the particular reasoning of portfolio managers is unstable and multiple[48]. The great variability

---

[46] "*Does working on the financial markets pose a moral problem for you?*" – "No, I wouldn't go as far as that. It's true that when a company reduces its workforce its share price rises. That's quite a strange reaction." (Delphine)

[47] Baker (W.), "The Social Structure of a National Securities Market", American Journal of Sociology, 89 (4), 1984.

[48] Carluer (C.), Le comportement informationnel…, *op. cit.*, p. 224-225 et 252.

of the types of reasoning within the dominant referent is partly due to the cycle of figures selected by the market[49]. This cycle of significant figures also corresponds to a cycle of economic causal reasoning, which at a given time will appear significant, more significant than those underpinned by other figures which no longer move the market.

However, the instability of the reasoning is not due solely to the instability of the market itself, but to the type of reasoning. As Claudine Carluer observes, economic reasoning is relatively simple and unilateral: "They are pronounced in a manner that leaves room for neither doubt nor contradiction, and they are relatively short and simple"[50]. The reasoning used generally consists in either "considering the direct influence of the economic indicator" on the price or "considering its influence through the influence it exerts on an intermediate element"[51] – generally interest rates. This type of highly economic reasoning enables very swift intervention in the markets and allows people to seize profits before they disappear. However, it also favours the formulation of causal chains that can become contradictory.

> In the following example, the portfolio manager almost contradicts himself when he answers two questions in succession on the influence of growth on the stock exchange market. In the first case, the fall in the unemployment rate means economic growth, a rise in interest rates and thus a fall in the markets, and in the second case, a rise in production implies economic growth, profit and a rise in the market.
>
> > *"For stock exchange markets, is a strong increase in job creation a factor that causes an economic rise or fall? Why?"*
> > "Boosting job creation is a factor that causes a rise in interest rates, which implies a fall in the market, and so it means both a rise in interest rates and a fall in markets. I would say job creation is synonymous with

[49] A figure is considered important for the market when the market reacts strongly to its announcement: "It is true that there are statistics that are particularly significant, such as the trade deficit in the United States, the consumer price index, wholesale prices and retail prices, while money supply is not considered so important today. At one time, it was very important. Ten years ago, it was a key weekly figure in New York and the United States. I don't know if you could call it a fashion, but every Wednesday we looked at money supply data. Now, it's the trade deficit [...]. At certain times, you realise that the trade deficit in the United States is a problem that was buried for a long time and then resurfaced. Since some of the banks collapsed, people have understood that it could cause serious problems and started to focus on it". Interview with A. transcribed by Carluer (C.), Le comportement informationnel…, *op. cit.*, p. 324-325.

[50] Carluer (C.), *op. cit.,* p. 235.

[51] Carluer (C.), *op. cit.,* p. 236.

> growth. Synonymous with growth means synonymous with inflation, and where there is inflation there is risk... a bit like what occurred in the United States recently, a risk of inflation and so a rise in rates and thus fall in the markets (...)"
> *"For the stock exchanges, is a rise in industrial production a factor that causes a rise or a fall? Why?"*
> "A rise in industrial production means growth; where there is growth there is an improvement in financial results and the markets are quite keen on that."[52]

In this example, the portfolio manager uses the term "synonymous" to characterise the stages of his reasoning. Undoubtedly this is just a manner of speaking, and he could easily have used a more scientific term such as "implies". Beyond the contingency of the terms employed, however, we may consider that by using the word "synonymous", this person is unconsciously telling us the truth about the exercise of economic reasoning in the dealing rooms, where the economic analysis of ordinary operators may be compared to an unconscious exercise of semiology: it is more an investigation into the connotation of the terms of economics or economic policy than a rigorous exercise in establishing macroeconomic sequences.

The spontaneous schemas of interpretation of economic information are added to a vague knowledge of economics. When economic figures are announced, they allow an automatic intervention, without reflection, so as to get off to flying start, as it were"[53].

> Ivan had a small "spiel" portfolio (an authorisation to speculate with the funds of the bank without being covered). But he had to remove this "position" because he faced some losses on CAC 40 futures. He tried to speculate on one of Jospin's important political speeches. Nine times out of ten he won, but at the tenth try he lost everything. He believed that what Jospin had said was bad for the market (thus he sold), whereas it was bullish.

These schemas are organised. Anything that could be interpreted as a *threat* to monetary stability in the economic policy figures or speeches will be interpreted as a factor causing a rise in interest rates and a drop in prices. On the other hand, anything that resembles a *calming* allows a fall in interest rates

---

[52] Interview with C. in Carluer (C.), *Op. Cit.,* p. 352.
[53] Keynes (J. M.), *Théorie générale de l'emploi, de l'intérêt et de la monnaie*, Paris, Payot, 1971.

and a rise in prices. Thus "fall in prices/rise in prices" pair is partly determined by the paradoxical schemas of *tension* and *relaxation*, *threat* and *calming*.

3. A pagan knowledge: charts.

While mathematized arbitrage and economic reasoning are, to some extent, linked to academic knowledge, chartist analysis, on the other hand, also known as "technical analysis", is an indigenous knowledge with no academic extension. It is a relatively old technique. Charles Henry Dow (founder of the Wall Street Journal and the father of the Dow-Jones index) invented it in the late 1880s[54]. It spread in the early 19th century mostly thanks to William P. Hamilton, Dow's successor as editor of the Wall Street Journal, who was able to predict the stock market crash of 1929 thanks to the method. In France, it was not properly adopted until the major transformation of the financial markets in the middle of the 1980s. Dealing rooms organised according to the American model, with their operators often coming from Anglo-Saxon countries, were a more favourable place for the importation and spread of such techniques than the traditional stock broking agency.

The general principle of technical analysis is to try to predict future prices from past prices. Chartists therefore try to detect trends and typical configurations (frame 2). This type of forecast, although used in many academic fields such as economic forecasting – with its time series and econometrics – is regarded by dominant neo-classical economics as being irrelevant in the financial field. According to neo-classical economists, since prices will immediately reflect all forecasts by all financial agents made on the basis of all available information, only new information, and not past information such as the shape of prices, can lead to a change in prices. The result of this reasoning is that it should be impossible from a theoretical point of view to predict prices on the basis of past prices.

---

[54] Nonetheless, it would seem that the "Japanese candlesticks" technique had been used in the rice futures market in Japan since the 13th century. Cf. Tvede (L.), *La psychologie des marchés financiers*, SEFI, "Finance", 1994, p. 67.

Frame n°2: Chartist techniques.

There are several chartist techniques, each of which has its followers and can be used in combination with other techniques: graphic representation techniques such as bars and lines graphs (the most commonly used), Japanese candlesticks, or points and figures; various remarkable figures such as support and resistance lines, head-and-shoulders, V formation, W formation, triangles, inverted triangles, "flag and pennants", ascending channels, gaps; waves forecasting techniques using the Elliott wave principle or the Fibonnaci numerical series; trend indicators such as moving averages, etc.

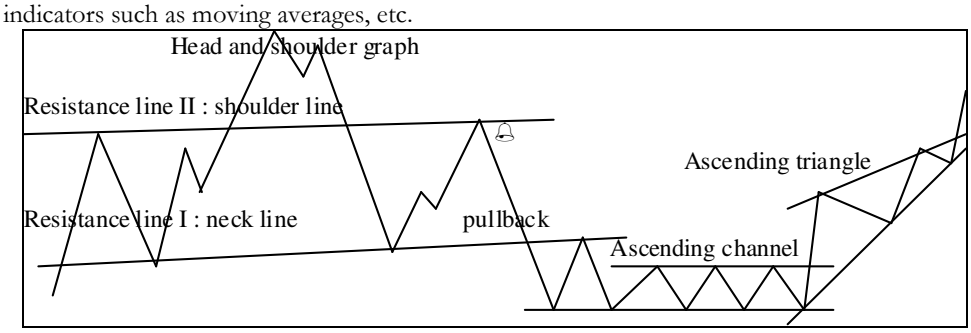

Figure 1. Prices with some basic chartist figures.

The chartist technique of resistance lines is at the origin of many chartist figures. They consist in isolating some maxima (or some minima) and in plotting straight lines between these two maxima. These lines are called "resistance lines" (or support lines), and the price is supposed to bounce against these so-called lines. For example, in the case of an ascending triangle or an ascending channel, the price remains confined for a time between the two lines of resistance. In this case, it is said that the price "tests the line". However, it can just as easily "break the line" (for example at the end of the ascending channel). Technical analysis is used to locate significant points. The reasoning is an either/or type. Either the price tests the resistance line and returns to its previous level, or the price breaks the line and will strongly rise (or fall). For example, the head-shoulder graph serves to identify the major trend reversals (which chartists have done retrospectively for the 1929 and 1987 crashes). When both a neck line and a shoulder line can be observed, showing a kind of head (where the small bell is located on the diagram), it seems to be possible to predict a severe crash after the neck line has been cleared once again.

Elliott waves are a collection of "rules" which are supposed to predict the succession of "waves" (a wave is a price movement consisting at least in a rise and a fall, but may be more than this). It is supposed to be a "philosophical" method. Here are some examples of these very strange rules: "the third wave is never shortest", "the second wave never traces more than 100% of wave I", and so on.

Moving averages are a well-known method of studying time series (in history and statistics) because they have the advantage of smoothing out discrepancies and determining trends. However, chartists' use of moving averages is rather odd. For example, chartists use two moving averages (a 10-day short-term one and a 30-day long-term one) and use sayings such as "when the short-term moving average breaks above the long-term one, it is a sign of a rise" (also called "golden cross"), and "when the short-term moving average breaks below the long-term one, it is a sign of a fall" ("death cross").

To understand its success, one should not, like the neo-classical theorists, reduce chartist analysis to a simple linear interpolation of past prices. Rather, it is a subtle art of interpreting prices based on the recognition of forms and the search for the appropriate saying. The difficulty with technical analysis based

on resistance lines stems entirely from the fact that it is possible to plot a large number of lines, which will eventually become irrelevant. Often, chartists state that they need to have an idea of the market's evolution before checking whether this idea is confirmed graphically by a series of lines.

Like parascientific prediction techniques, it makes it possible to offer two differently evolving scenarios and still convince the other person. Just as brokers reassure their clients while avoiding the risk of being mistaken by maintaining that "prices will rise unless they fall"[55], so modern chartists are experts at offering several alternative scenarios, depending on whether a particular level of resistance is tested, retested or broken.

> Ronan, after finishing business school and obtaining a Diploma of Advanced Studies (DEA) in stochastic mathematics, was hired at UC where his predecessor in the room taught him technical analysis. His principal work consists in envisaging future trends in the markets with the use of chartist techniques, and explaining his forecasts every morning (in English) at the morning meeting.
>
> On 20th December 1997, he made the following forecast for the CAC 40, which had closed at 2822 points the previous day. He envisaged a fall that should either stop at 2812, or at 2784, or in the worst case at 2650, unless prices should rise, in which case it would reach 2857 or 2885:
>
> > "In the longer term, an interpretation of the rise from a low of 2475 still favours the X-wave (min: 2880 already met, norm: 3000, max: 3100). The major downward movement seems to confirm: caution. The risk is a retest of the 2650 area.
> > In the short term, a downward movement seems to confirm: a break below 2812±4 will target 2784±2 then the 2650 area.
> > If an impulsive downward movement is on the horizon, 2857±7 must remain unchallenged. Be aware that a break above this level will target the 2885±3, which, if broken, would invalidate the immediate downward structure."

Even if it formulates several contradictory strategies, technical analysis brings financial profits, because it enables operators to prepare financial orders at key points, which are often important for the market.

A popular technique

In the dealing room of UC, 41% of the population use technical analysis, 16% because everyone else does so, 21% because it works and 3% because it is

---

[55] Roman (A.), *Un grand financier*, Roman (essai d'initiation financière), 1922.

scientific. The majority use resistance lines (26% of the population) and Elliott waves (24%), followed by moving averages (14%). However, exotic methods such as point and figure charts and Japanese candlesticks do not receive many votes. The members of the room generally learned these techniques alone (7%) or thanks to the presentations given by the company analyst (17% of the population). Only 4% of them learned these techniques at university.

The probability of using technical analysis depends on the position held within the dealing room. The traders use chartist techniques the most (63% of them), almost as much as economic analysis. Sales people (58%) also use chartist techniques to develop their sales pitch and convince the customer. Other people who carry out fewer market operations use it very little. The position held does not entirely explain the use or non-use of "charts" (see frame 3).

The position held by an employee does not entirely explain their use or non-use of charts. Depending on their social and academic origins, the members of the room acquire dispositions that encourage or discourage the use of these unscientific, quasi-proverbial formulas, all the more so given that these techniques compete with and sometimes contradict nobler, more legitimate techniques in the academic hierarchy. 50% of the children of liberal professionals and 46% of the children of businessmen use the charts, as opposed to 36% of the children of engineers. The most highly educated people and those from educated families feel reluctant to use such a rudimentary technique in comparison with mathematical arbitrage or economic analysis. On the other hand, people from more working-class backgrounds can make (excellent) use of technical analysis as a way to compensate for their lower ability to carry out more academic reasoning.

Moreover, technical analysis – which is far from being a divinatory, magical or religious art in the sense that it is not holy as such – appears more as a *technique* similar to the rules, proverbs and tricks contained in the almanacs of

the agricultural world. One can understand, therefore, why this proverb-based technology is embraced more readily by those with less cultural capital.

Frame n°3: The use of chartist methods

*Table 4. Probability of using Elliott waves: Rough ratios and "*ceteris paribus*" effects.* [56]

Explanatory variables		Rough ratios	"*Ceteris paribus*" effect	
All (n=94)		**24%**		
Function	*Sales person*	**36%**	+19%	**
	Trader	**42%**	+16%	*
	Others	10%	-10%	***
Diploma	≥ Baccalaureat + 5 years	17%	-3%	
	< Baccalaureat + 5 years and diploma unavailable	29%	+2%	
Experience	> 4 years in finance	**40%**	+13%	**
	≤ 4 years in finance	12%	-7%	**
Gender	Female	17%	+1%	
	Male	27%	-0%	
Father's diploma	≤ Baccalaureate	30%	+5%	(*)
	> Baccalaureate and diploma unavailable	21%	-4%	(*)

A regression model for the use of Elliott waves*, one of the more "philosophical" methods,* enables us to see the determinants of the use of charts. The person's function – sales person or trader – is one of the most significant factors. Being integrated in the financial world, measured by the dichotomous variable "having or not having four years of seniority in finance", strongly increases the "*ceteris paribus*" probability of using Elliott waves. As these techniques are only learned in dealing rooms, it is fairly normal that seniority favours their use. One can also see that the higher the cultural capital, the lower the probability of using "charts". Thus, having a diploma higher than or equal to the baccalaureate + 5 years of study creates very slight discrimination *ceteris paribus* against the use of charts (not particularly significant in the regression model), while the fact that the father holds a low-level diploma (inferior to the baccalaureate) quite significantly increases the gross probability and the net probability *ceteris paribus* of using the Elliott wave principle. Those individuals from working-class families or from a background in which economic capital is relatively more important than cultural capital are capable of showing economic goodwill and therefore adopt the techniques that work easily, even though those techniques are unworthy of people who are capable of cultural goodwill and who are more attached to academic knowledge.

Controversies over the capacity of the charts

One of the characteristics of chartist analysis, unlike other methods, is that people always have a strong opinion on it. It has both its detractors and its advocates. Ronan, the specialist, defends the validity of his technique although he acknowledges that it is a "psychological" phenomenon and that many people in the UC dealing room might deliberately do without it, relying instead

[56] See footnote 9.

on their own very clear intuition. Technical analysis works if people know how to use it, he claims; in that case, there is money to be made from it and so naturally traders use it. He only bemoans the fact that CU favours arbitrage and thereby renders his role insignificant. He would therefore prefer to work in an American bank that implements a proper policy of speculation.

> Some, like Patrick, who can be characterised by his economic goodwill, are fascinated by the forecasting capacity of charts. They are prepared to work hard in order to learn an economic technique that enables them to make large sums of money, in spite of its dubious foundations.
>
> > "In fact, it's true that people do listen to the chartist, because the fact is that he's good! [...] He's very good and I must admit that I listen to him as well. Well, I used to listen to him, but he died not long ago. He was very, very good, and everyone listened to him. He was right 70-75% of the time! That's huge! When he used to say, "OK, so this goes like this, and afterwards it'll go back up...", and you knew that nine times out of ten he was right. So everyone listened to him and everyone used to go and see him. Sales people as well as traders. They'd go and say, "Look, what do you think? I'm exposed here, I've got this client, should I wait?" He was really good... [...] It's true that when you look at charts, you think that they may even be too powerful. You could almost forget about economic analysis and only trust chartists' analyses, because they are so powerful".

Others, like Thierry, categorically refuse to use charts and restrict themselves to the techniques they can use with great precision.

> Thierry's situation is ambivalent. In a way, his social origins and career in the financial markets are conducive to the use of charts and even to his developing real expertise. However, Thierry started working in the world of finance well before charts were used (in France). He developed great skill in economic analysis and, in a way, is proud of his superior knowledge. Switching to charts would be tantamount to invalidating his field of expertise. Despite everything, he is not entirely confident about the legitimacy of his knowledge and, as an authoritative argument, he puts forward the "clear opinion" of an engineer who graduated from the École polytéchnique/ENSAE and who is said to know about the legitimacy and validity of the methods of economic forecasting. Thierry's position is rather like that of the old workers who refuse to use new work tools. He is also slightly disappointed that the young Quentin – a qualified philosophy professor with whom he could have established a kind of alliance in the room, based on their shared opposition to the engineers, and to whom he passed on a great deal of knowledge – has also switched to using charts, albeit sporadically.
>
> > "Doesn't the chartist's presentation at the morning meeting get on your nerves?"
> > "Yes, especially as he's always the last to arrive, right when I want to leave."
> > "I know!"
> > "Yes, it annoys me. But I'm not the only one. Basically, no one listens. I think people are kind of half-listening!"
> > "And is he any good?"

> "Yes, I suppose he is... In the end, charts are just... well it's like looking in the rear-view mirror. I've seen him say, 'Yeah, we've broken above this point, we had a bad closing' and it's just bad luck, nothing happens or the market keeps going up anyway or starts to pick up again... But it's OK, there's no problem. There's nothing we can do about it. Quentin was looking at the charts."
> "I know!"
> "Well in his case, he doesn't really believe them either. He's one of those people who look at them anyway because he tells himself he's used them sometimes. Good for him."
> "Doesn't it annoy you that he's gradually switching to chartist analysis?"
> "I don't like it much [...]."
> "Have you ever used moving averages?"
> "I remember a trader, a friend, who said something to us about the US market one day, and we had a good laugh. "We've broken above the 50-day and 200-day moving averages, it's chaos". And eight days later, the market went up three points. And he lost a lot of money because he'd gone short. And we'd broken above the moving average. The moving average is a bit like looking in the rear-view mirror as well. It's useful when everyone is looking at it, a bit like with charts. If people say 'We've broken above this moving average and that's going to take it up'... people sell. So they drive the market down.'"

Those who have the most cultural capital defend their use of charts but are aware that they are in a similar situation to that described by game theory, and so they also explain why they look at them despite everything. Quentin, therefore, in order to distance himself from chartist technique, gives a theoretical presentation that enables him to state that charts are a stupid, sheep-like method but that they do work: he believes this is a false rationalisation that frees people of the responsibility of making decisions, because the fact that they are adopted by a large section of the market gives them a self-fulfilling nature.

> "Chartism is being introduced at the BPP at the moment. The tradition [at the BPP] is to make fun of it, but to look at it anyway because you have to. In theory everyone finds this absurd! But at the same time, you can't deny the self-fulfilling nature of the charts, and so we look at them. For example, I don't think anyone at BPP is stupid enough to sell because the charts say to sell. On the other hand, most of those who want to sell will wait for a point on the chart before intervening. I'd say it's tactical. But that's not going to make you buy or sell. It's really just to reassure you. No one is fooled, apart from the company chartist. It's a question of pretending to believe him, whether or not he holds his own. After all, everyone makes his own charts. The further you move along the curve (I was protected, in a way, because I was on short rates and the central banker doesn't follow chartist logic), the further along you move and the less ground there is. People are asking, 'Are US rates 6% or 5%?' Honestly, no one has a clue. And everyone admits that when you buy or

> sell, you have a 50-50 chance of winning or losing. To a certain extent, everything comes down to chance. Charts are one of those false rationalisations that enable people to make a decision. It's completely psychological. And there's a mass effect behind it; for example, imagine I want to sell if I know there's a point everyone's watching. If I sell at that level and the point has sunk, I could get out quickly if I've understood that it's not going down even though everyone has done the same thing as me. So I'd lose less if I sold for less. That sort of thing. And of course, it's incredibly foolish, because all the guys who've sold at that level know that if it's broken above that level then they have to get out, and that has a snowball effect. So I'd have lost a lot of money. But I wouldn't have lost so much if I'd traded blind, knowing that it had broken above that point and that I'd sold earlier, that despite everything there's some air and I can get out higher up. Of all the different forces that make up the market, only traders look at charts. In other words, if I'm an insurer and I've had cash flows and want to buy some ten-year US options, I'll go ahead and couldn't care less if I buy at 6.01 or 6.005 or 6.015. It's nothing to do with the investor [...]. But that's not a BPP tradition. There are banks where it's vital. If there's a BPP tradition, it's more about [economic] analysis".

For operators who do not like this technique and for economists who study finance, the fact that charts work is rather mysterious. It is not enough to simply denounce the stupidity of the technique. It is also necessary to be able to provide real reasons as to why technical analysis works on the basis of bad reasons. Some will explain charts by their self-fulfilling nature. Others will explain why there are trends. Others will say that some chart figures work because of insiders' action (for instance, movements such as an ascending channel), etc.

> Maël believes that charts are merely the graphic expression of an idea people have of the market, and he thinks it is more important to understand why people have a particular idea of the market rather than trying to reassure oneself by plotting resistance lines.
>
> Rémi, a trader and head of desk at BPP, believes that some economic trends encourage the formation of trends in stock prices. He explains that the central bankers' decisions to lower rates are not stochastic but rather are made on the basis of major trends, and that those major price trends can be identified through chartist analysis.
>
> Ludovic likes charts and finds them entertaining. He explains that charts often work because of insider trading. When there is an ascending channel preceding a sharp rise (see Figure 1), he claims that it is due to the fact that someone has information and is systematically bringing in securities while being careful not to make prices rise too high. When the information is made public, a very sharp increase follows.

It could be said that economists have not completely solved the reasons behind the power of technical analysis. The economists who developed the assumption of efficient markets denied it had any validity and considered that

money made from technical analysis is simply due to a random distribution of profits. Many economists are not so categorical today, and heterodox economists, thanks to financial successes brought about by technical analysis, denounce the empirical fragility of neo-classical theories. In general, heterodox economists consider that technical analysis is a self-fulfilling phenomenon, the simplest model of which is the "rational bubble". We cannot doubt that most of the success of technical analysis comes about from this kind of mechanism. And if ever astrology, recently introduced on the financial markets, manages to be so successful, we will see a confirmation of the possibility of self-fulfilling phenomena. The problem, however, is that "conventionalist" theory cannot explain how people adopt this technique and why some individuals on the market will use some techniques that are very rare. As shown here, there are social reasons that promote the adoption of such techniques. A dialogue between economists and sociologists would help to reveal more about the reason for such an adoption.

There are no doubt social, historical and cultural reasons – some of which we have already highlighted – that encourage people to adopt these techniques. There may also be economic reasons, other than self-reference, which explain the relevance of charts. The techniques of fixing orders, bracket management and the common practice of buying then getting out at a lower price then buying back at a lower price and reselling a little higher all encourage yo-yo trends and perhaps provide the support lines plotted by chartists. Some chartists even claim they can predict past price trends retrospectively (those of the South Sea Company, for example), from an era when chartist techniques did not exist. If this is true, financial economics could try to bring to light other reasons for using charts (if any exist) apart from self-fulfilling prophecy alone. If the economic sciences were to make this kind of clarification it would allow a better understanding of the social reasons that promote the use of these pagan techniques.

4. Between Reflexivity and Feeling: Hybrid and Non-Stabilised Forms of Reasoning

The limits of reflexivity

In economics, it is common to believe that market players take account of the strategy of other players when formulating their own strategy. Formalised in the framework of game theory, the players are supposed to calculate the point of equilibrium (i.e. the Nash equilibrium) of other actors' strategies and take these into consideration. This belief tends to attribute the actors with a capacity to calculate and totalise that is out of touch with market practices. While it is not incorrect to say that players do take account of other players' strategies, most of the time traders ascribe rather limited reasoning ability to the partners they imagine to be operating in the market. Patrice, for example, sitting in front of his screen, lacks information (in this market, unlike in others, there are no identification numbers enabling him to recognise those who are offering to buy or sell) but after a year in the field he is able to recognise his competitors' strategies fairly easily: "The guy's accepted... he's going to list", he exclaims while looking at the price field, thereby implying that there is a lone "guy" manipulating the market. This is his way of making sense of a series of buy and sell orders, transactions and prices, and to identify a single source of action and to ascribe a true intentionality to this alter ego with whom he has built up a kind of virtual social connection.

With calculation, one does not go as far as one would in a balanced game theory and, in general, the imagined game partner is seen as a rather limited individual. This imagined "other" is usually indistinguishable, collective, somewhat sheep-like and limited, but potentially an insider[57]. When describing others who operate in the market, a plural term such as "the guys" is often

[57] Rose (A.), "A Social Psychological Approach to the Study of the Stock Market", *Kyklos*, 19 (2), 1966, p. 267-287 wrote: "There is one topic of conversation which is constantly returned to, and about which much rumor develops. This topic is the myth of 'They' and what 'They' are saying and doing. 'They' are supposedly the insiders, but just specifically who 'They' are, no one ventures to say".

used, indicating both a lack of distinction and a male-centred view. In order to highlight their sheep-like, stupid or incomprehensible nature, it is very common to make a comparison using "like" followed by a derogatory term, for example "like crazy" or "like idiots":

> "The bastards have gone and sunk the market"; "Some jerk's gone ahead of me" (Patrice): "There's a rumour that people have lost it over Paribas warrants" (Etienne); "People have gone short like crazy on Disney" (Damien); "You idiots can just buy or sell or do whatever the hell you want"; "I knew they were gonna sell like morons"; "They're gonna sell like jackasses" (Quentin); "People sometimes go crazy buying or selling" (Trader interviewed by Nicolas Thomadakis and Zakaria Benjazia).

Without doubt, the systematic references to idiocy, madness or any other defect that limits people's ability to reason serve as a means of representing all the types of behaviour that prove impossible to predict, in order to provide reassurance and to better understand them. Despite the important role played by chance in price movements and therefore in the winning and losing of money, the financial world is pictured as a game, a joust, in which one must be the strongest – in other words, the "most intelligent", with "the best reasoning" in order to "make forecasts before everyone else does":

> "I think that one of the challenges I face on a daily basis is how to be more intelligent than the rest. When I win (in other words, when I succeed in getting someone else's money), I tell myself that I was more intelligent than the others" (Trader interviewed by N. Thomadakis and Z. Benjazia).

For these players, taking into account the strategy of others, as proposed by game theory, leads to an abyss. How can participants be scrutinised, categorised and described? What behaviours should be attributed to them, and what capacity for calculation? Far from Nash equilibrium calculations, the reflexive reasonings of the actors bear more resemblance to a kind of "literary" and impressionistic commentary on the market's behaviour, for which they invent – as support points for their reasoning – these limited social figures with a simple, unilateral form of behaviour. However, in many cases, the reflexive invocation of the self-referential nature of the market is nothing more than a regulatory horizon, a kind of statement of intent that is taken no further in the

reasoning. Traders, usually ready to acknowledge the self-referential nature of the market, nonetheless easily make the leap from one framework of reasoning, in which this trait is vital for implementing their strategy, to the entirely different framework of mathematical arbitrage, economic reasoning or, even more so, of chartist analysis, where it no longer has any practical impact[58].

The ambiguity of feeling

In practice, when predicting the strategy used by other actors or the future movement of the market – that great single and collective entity – traders often rely on a sense of the market that they themselves refer to as "feeling". Far from mere intuition, this feeling is an imprecise blend of various forms of reasoning – from heterogeneous sources – as well as market habits, knowledge of market configurations and more "tangible" intuitions.

Although we have distinguished between the different winning strategies and presented, as polar opposite cases, the virtuosos of each of the very different techniques, we should not, however, think that these techniques are incompatible and that some people remain impervious to the forecasts made by one or other of them. In fact, in the everyday environment of dealing rooms, the different approaches merge together. The very structure of the morning meeting – in which, one after the other, the economist gives a presentation, the traders provide a summary of their desk's activities and, finally, the chartist presents a technical analysis – forces the traders, whether directly or indirectly, to take into consideration all opinions on the market and to successfully settle on an average opinion. Similarly, during the day, by reading the many different financial newspapers such as *Les Echos*, *La Tribune* and *The Wall Street Journal* as well as the information provided by Reuters, Bloomberg and other computerised information systems which, themselves,

[58] If we attributed the adoption and validity of charts to the power of the assumed self-fulfilling prophecy alone – as many economic models tend to do – we would be ignoring certain elements of the adoption dynamic. For example, how can one explain the fact that some chartists focus on the rarest chartist techniques?

give a summary of some of the judgments made by opinion-makers, traders are forced to form their own view or adopt one that has already been put forward in the market.

In using the term "feeling", traders merge and syncretically present a number of techniques that have in common the fact that they are relatively intuitive and inexplicit. In addition to the natural recognition of chartist forms of activity, the use of economic information read but already forgotten and the art of manipulating a market in order to increase or reduce prices, we find the semi-intuitive prediction of what others and the "market" are doing, which enables traders to anticipate a sell-off:

> "You're aware of something. It's not enough to be well qualified. You have to feel the market! You have to feel it when people want to buy, you can feel it when there's going to be a sell-off."
> "*How do you feel it?*"
> "Well, it's a kind of force, and earlier, the prices dropped then went back up a bit and we could sense that things were about to pick up again. And they did. Now, there are things that drive the market; you've got sellers placing orders, for example, who say, "I'm going to limit the damage at this point", and so he places some stop orders. He's a seller, so he places a stop order. And when the market gets the better of him, the market goes up when his stop order is executed. Those orders drive the market up even higher. That's what you feel, sometimes you can see the market... You know that the market moves tick by tick, then suddenly it shifts by seven or eight ticks and no one knows why. Well it's because a stop order has been executed and that always brings in other buyers. And these are noise trader markets [...] You know, you've got people behind their screens saying, "Well if it goes up I'll buy some".
> "*Do you do that?*"
> "Yes, I do it as well. Of course I do. But I take a more basic position." (Thierry)

As far as Louis is concerned, "feeling" is a means of combining more solid blocks of reasoning, whose consequences are potentially contradictory, and to draw a conclusion from them:

> "There is a discretionary power which is common sense, "feeling", experience or know-how. Let's say that to start off with you always have a certain idea about the market. Then you cross check with the expert systems to see if your idea is confirmed or not. And depending on that, you either go ahead or you don't. For example, I know the dollar has fallen a lot over the last few days. People have been wondering if it was going to break through. And I looked at my technical indicators [i.e. charts], but none of them told me that the dollar was going to fall. As I'm not bearish on the dollar, I said we're not selling the dollar."

For traders, following their "feeling" is also a way of asserting their autonomy and protecting their discretionary power from the growing influence of technology and mathematics. Indeed, if the winning strategy is easy to grasp, it can be disseminated and passed on to other traders, which means the inventor of the strategy loses his monopoly over the technique and, once it has been passed around, there is a chance that the strategy will become less effective. Worse still, if a model can be developed from it, the technique could become computerised, in which case it would be the computer rather than the person that would make money. Just as older workers are reluctant to disclose their techniques to the engineers overseeing the work, so traders can, in order not to reveal their methods, attribute their winning strategy to "feeling":

> "Once again, it's not a question of knowing whether or not it works. They are indicators we use to make a decision. I'm the one making the decision. Is my decision-making process the right one? If you ask me if I've developed a kind of expert algorithm or Martingale system, the answer is no." (Thierry)

5. Overview.

A description of the various forms of reasoning and of winning strategies shows that, despite the option of using them in combination and despite traders' frequent changes of strategy, they are relatively differentiated. It is therefore possible to describe the dealing room as a competitive space for the appropriation of economic and symbolic profits, which, in this world, are almost entirely mixed up. The following multiple correspondence analysis gives an overview of the orientation of operators in this true bazaar of rationality.

Frame n°4: The space for winning strategies

In this multiple correspondence analysis, the answers to the following questions were used as active variables: attending the morning meeting (always, sometimes or never); the usefulness of presentations given by economists, chartists and colleagues; the use of charts; the chartist techniques used; the reasons for their use (speculating, forecasting price movements, finding the right moment, seeking reassurance); the means by which these were learnt (presentations, university or self-study); the use of economics; the orthodoxy and heterodoxy of opinion on the effect of debt and unemployment on prices; the type of economic information used; the use of complex mathematics; favourite type of prices.

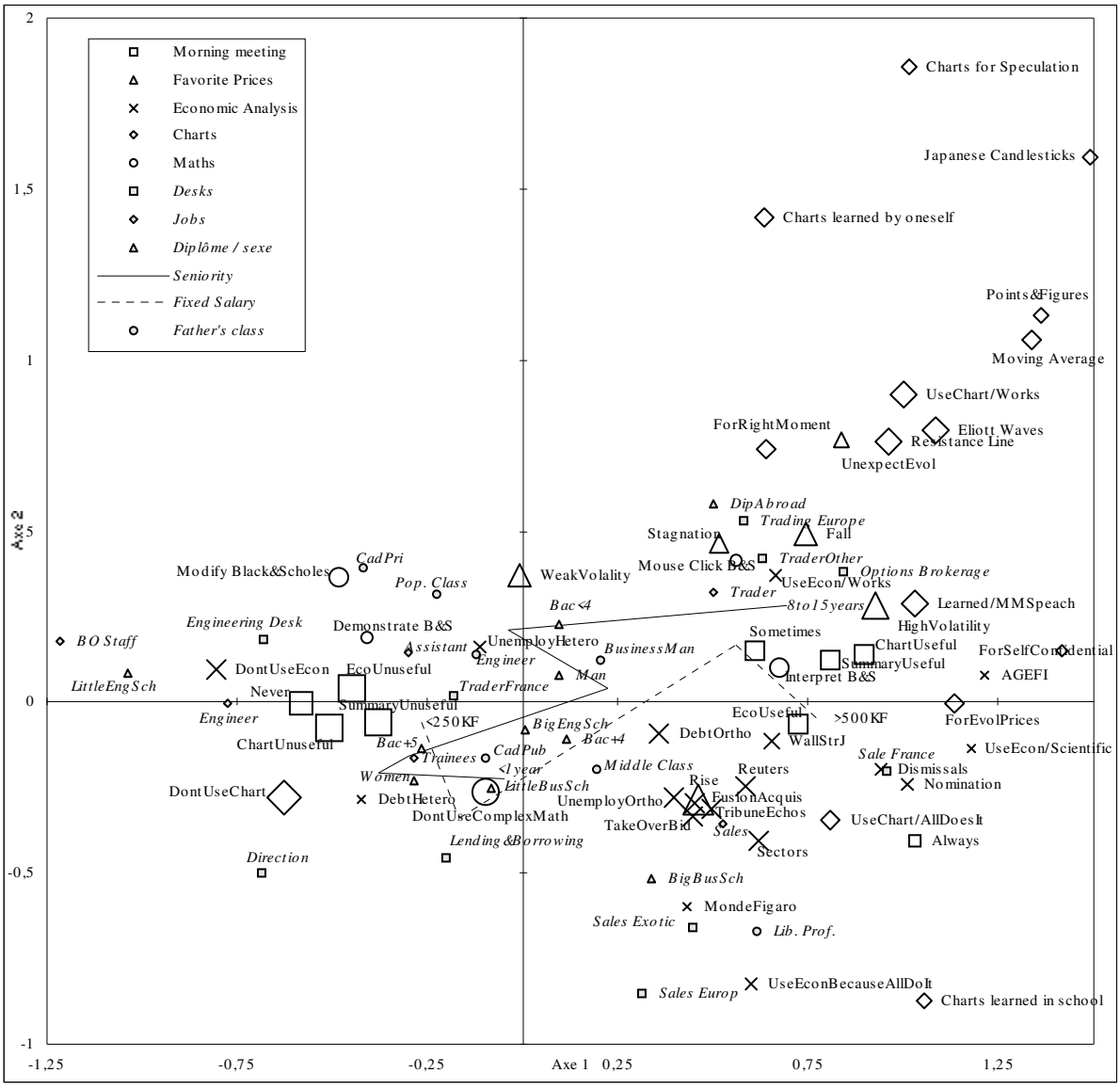

Figure 2. Multiple correspondence analysis of the winning strategies[59].

In this multiple correspondence analysis, axis 1 contrasts the most integrated on the right with those who are least integrated on the left. Axis 2 contrasts various forms of strategies, technical analysis and mathematics at the top, with economic analysis or the absence of any method at the bottom. In fact, this multiple correspondence analysis allows four areas to be quite clearly distinguished. In the northwestern area are the mathematics virtuosos who can demonstrate or modify Black-Scholes relations. These technicians of volatility can use fine arbitrage so well that they are able to confront the low volatility that brings smaller profits. Like those in the southwestern area (who do not use mathematics at all), people in the northwestern area use neither charts nor basic economics. They do not go to the morning meeting, and they find the presentations made in the morning meeting to be of no use. They tend to have a heterodox opinion on the impact of public debt and unemployment on prices.

[59] *Active variables are in black; supplementary variables are in italics.*

In the northeastern area are all the experts of chartist techniques. Those who use the rarest techniques such as Japanese candlesticks, points and figures, and moving averages are generally self-taught and use them to speculate. These chartists can make money under difficult conditions such as stagnation or a fall. Even if they do not seem to know much about economics, they also use economic analysis because it works. They use mathematical relations as well, but they only can interpret relations or use them in a push-button way. In the southeastern area are those who use economic reasoning. Some would say they use economic reasoning because it is scientific. They can give orthodox answers to macroeconomics questions and are interested in all kinds of economic information such as take-over bids, dismissals, etc. They are informed about all the possible techniques through Bloomberg, Reuters, newspapers, and so on. If they use charts, it is rather because they say that everybody else does so. They are structurally rather bullish.
The study of supplementary variables allows us to see the good juxtaposition of working positions and desks with the different winning strategies. To the far left of the first axis are employees in less dominant positions, such as back-office staff with no real access to the market. In the north-west, we see engineers, often from minor engineering schools, who work on the engineering desk. In the south-west are those who use almost no methods, such as heads of desk, women or the securities lending desk (which remains closer to economic analysis). Most of the traders and trading desks are in the north-east, as well as the sales desk for listed options products (made up of former open outcry traders), whereas most of the sales desks and sales people are in the south-east. The hierarchies according to seniority and salary are projected along axis 1.

A principle of orientation in this bazaar of rationality could be the search, whether conscious or unconscious, for lower costs, since operators tend to use the techniques for which they have the greatest affinity, *capital* and dispositions. Rather than the initial amount of *capital*, it is the *total investment amount* that seems to govern orientation in the dealing room – investments that can confirm the initial *capital* or convert it into another type of *capital*. Thus, those who follow mathematics and charts commonly differ from followers of economic analysis by their lower amount of *capital*. However, they could also be contrasted according to the nature of their investments. Some, often from a slightly more "cultural" background and more likely to make a cultural and academic investment, express *cultural goodwill* (here scientific), and seek to extend their academic experience by holding positions in which mathematics is required (structured products traders, financial engineers or R&D engineers). Others, who either come from a more working-class or lower-middle-class background, in other words from a more modest background, express *economic goodwill*, invest themselves academically only if their studies lead to a profitable position and seek the most profitable positions and techniques at work. Those from the wealthiest social background (in this case the sales people, although

this is not necessarily the case in all banks) are the most predisposed to using economic analysis more than others. The opposition between traders and engineers on the one hand and sales (or users of economic analysis) on the other does not lie solely in the degree to which they make use of economic analysis. Traders, engineers, chartists and arbitrageurs, to some extent, all remain attached to the technique that enables them to be what they are, because of the cultural and legitimate value of mathematics for some and because of the "counter-cultural" value of charts for others. (Often, traders from the lowest social background, therefore with less knowledge of the legitimate hierarchies, take the most pride in their illegitimate techniques.) Sales people and "historical" traders today working as heads of room, from higher social backgrounds and with relatively lower capital, have more successfully internalised the requirements of economic domination. They see techniques as economic techniques alone, which they measure only according to their profitability. They use one technique or another indifferently provided that it works, but are able to maintain a kind of "axiologic neutrality". For this reason, they find it much easier than most to "leave the market", contradict the fundamental values of the market (dealings, volatility), and hang back in "juicier", more political positions such as head of desk or head of room.

At a time when the profession is trying, with difficulty, to establish a legitimate position for itself in society, everyday conflicts over hierarchy and legitimacy in the market and in dealing rooms reinforce the positioning that is already influenced by economic and cultural investments made before joining the market.

Rationality, innovations and investments

The jumbled, motley, colourful stalls of this bazaar of rationality are perplexing for anyone used to the orderly shelving of the rational action theory. However, much like those in Moroccan towns, this bazaar has its own coherence, organisation, and economy. The advantage of this diversity of

forms of reasoning used in the financial world is that it presents us with a case in which the sociological theories of socialisation do not lead as usual, via different routes, to conclusions similar to those of the most rationalistic economic theories[60]. Such a case invites us to question economics.

Neo-classical economics thus makes a clear disctinction between rationality – a decision-making process – and innovation – a transformation of the production process. Just as rational decision is clear and distinct, certain and flawless, optimal and systematic, so innovation is fragile, uncertain and its stochastic succession. This *homo economicus* is a curious individual with a limitless capacity to make the right decision but an extremely limited capacity to innovate properly. Could economics, too, not enrich its analysis of the decision-making process by considering individual rationality not as a timeless phenomenon but as a practice to be acquired, comprised of discoveries and innovations and requiring capital and investment?

[60] P. Bourdieu often highlights the fact that the theory of rational expectations leads, for the wrong reasons, to similar conclusions as the theory of habitus. As O. Favereau rightly pointed out in a speech given at the Paris Dauphine University seminar entitled "Sociology and Economics" on 17th October 2000, this criticism scarcely disturbs (and may even bolster) the most orthodox version of neo-classical theory, so attached to Friedmanian instrumentalism, for which the real process is of no importance as long as everything happens "as if".