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## Some General Questions About Markets

*Hélène Tordjman (tordjman@poly.polytechnique.fr)*

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Approved by  
Giovanni Dosi ([dosi@iiasa.ac.at](mailto:dosi@iiasa.ac.at))  
Leader, *TED Project*

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## Abstract

Markets are central institutions of Western societies and their main mechanism of coordination; however, we do not know much about their functioning. How are prices formed? By which ways do buyers and sellers meet? What kind of rules are necessary for markets to function? The purpose of this paper is to analyse some aspects of market functioning, and try to isolate mechanisms by which this functioning may be determined by diverse institutional forms. A comparison of some markets for perishable goods and some financial and commodity markets allows to identify sets of rules controlling their functioning. A preliminary result of this comparison is the characteristics of the traded good.

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## **About the Author**

H. Tordjman is from CREI, Department of Economics, University of Paris XIII.

# Some General Questions About Markets

*Hélène Tordjman*

## 1. Introduction

Markets are central institutions of Western societies and their main mechanism of coordination; however, we do not know much neither about their functioning nor about their emergence. How are prices formed? By which ways do buyers and sellers meet? What kind of rules are necessary for markets to function? A second set of (related) questions concerns the history of markets, how they did emerge and by what mechanisms they are evolving. A third group of issues is about the embeddedness of markets in other formal and informal institutions (North (1990)) like general regulations, codes of behaviour and collective representations.

The purpose of this paper is certainly not to pretend answering those questions but more modestly to analyse some aspects of market functioning, and try to isolate mechanisms by which this functioning may be determined by diverse institutional forms. A second section tentatively defines markets and the difference between market and non-market transactions. In a third section, an analysis of empirical studies of market functioning shows the diversity of markets' organizations. A comparison of some markets for perishable goods and some financial and commodity markets highlights the relative independence between the formal organization of the market and the traits of the traded good. Instead, this organization seems to depend on institutional features and social relationships. This conjecture will be explored in section IV. Section V concludes.

## 2. Tentative definition of what is a market

It is a commonplace that economic theory has very little to say about the functioning of a real, true market. As De Vroey (1990, p. 68) ironically notes, if the little prince of Saint-Exupery had encountered an economist and asked him to draw a market, the resulting drawing would have been that of the intersection of a supply and a demand curve. By what mechanisms these curves actually meet we do not know exactly, but before examining this problem, let us try to go a little further than this image. By considering what happens on a market, one may be able to circumscribe the domain of markets and distinguish between market and non-market exchanges.

### 2.1 The market as a locus of repeated exchanges

The term "market" is most of the time associated with the one of exchange: "a market is a setting within which exchanges may take place" (Loasby (1994, p.1); "a market is a locus of encounters aimed at barter or buying and selling" (Polanyi (1944, p. 87). In most modern microeconomic textbooks, markets are defined as the loci, real or virtual -e.g. foreign exchange markets- where aggregate supply of a good meets aggregate demand for the same good. Note that these definitions, however general, all describe situations where there are many exchanges. Indeed, the idea of continuity in time and of repeated transactions is one of the utmost importance in any institutionalist view of markets.

First, even if we do not have for the moment very precise definitions about what we mean exactly by economic institutions, it is not too far-fetched to consider they entail some kind of formal structures and sets of rules which orient and/or constrain the behaviour of agents engaged in economic activities. This is particularly true concerning markets: as different markets are characterized by different rules and organizations, it is possible to isolate such sets of rules and see what different set of behaviours they implies. For instance, on some markets, agents are allowed to buy and sell simultaneously whereas on others they have to choose on which side to intervene: such a distinction has important consequences on the strategies agents can play (e.g. speculation is impossible on a market where individuals are either buyers or sellers; I will come back to this point in section IV). These institutional settings and rules,

whatever the way they emerge, are usually slowly constructed and modified; formal rules such as the "buyer or seller" one may also be changed by law. Their dynamics is much slower than the one of agents' behaviours, and this property may generate regularity and inertia in individual behaviours. Thus, the temporality of markets settings is much longer than the temporality of a single transaction.

Second, as shown for instance by Kirman & Vignes' results on the Marseille's fish market (1992), coordination of agents on a market (i.e. the intersection of aggregate supply and aggregate demand) necessitates some kind of norms or conventions, common representations which enable sellers to propose an "acceptable" price and buyers either to accept it or to bargain it down. There seems to be a great inertia in the representation agents have of a "fair" price, a pound of sardines will generally never be sold one day ten times the price it was sold the day before. As noted by Loasby (*op. cit.* p. 10), "markets [are] populated by regular traders, whose bids [are] based on long experience (including experience of each other)". This idea of "fair" prices and "normal" volatility gives a continuity in time to behaviours and expectations. Agents can make plans and thus behave in a quite regular and stable manner, which can be an explanation for why quite "well-behaved" aggregate demand curves are observed (e.g. on the fish market studied by Kirman & Vignes). The importance of such stable shared representations of the "state of affairs" was already highlighted by Keynes (1936) in his analysis of the functioning of financial markets: he labelled them conventions. Studies of hyperinflation or financial market crisis tend to confirm this fundamental role played by the stability of these collective representations about market functioning: without the continuity in behaviours they allow, markets face great troubles such as liquidity crisis (e.g. 1929, 1987), and, as in the case of hyperinflation, they eventually collapse.

Hence, it seems that only a continuity in time, a repetition of exchanges can make a "real" market function. Note that standard microeconomics has started to realize the importance of such temporal aspects in the functioning of the economy, as shown for instance by the flourishing literature on the role of reputation and trust (e.g. the work of Kreps in a framework of repeated games). A more systematic exploration of the ways coordinating devices such as collective representations, norms and conventions help shaping both supply and demand and their interaction is one of the priority of the agenda.

These reflexions about the different temporalities involved in market organization and in agents behaviours, and the importance of the continuity of market operation for regulating mechanisms such as conventions to emerge, definitely lead to consider a

market as a locus of repeated exchanges. Hence, a single and isolated transaction, even if it belongs to the sphere of economic activities, does not suffice to define a market.

## 2.2 What is exchanged?

Another important dimension of markets relates to what is actually exchanged through the interaction of agents. An anthropological perspective on this question may help us to further narrow the domain of markets by differentiating between market and non-market exchanges. If we read more carefully Polanyi's definition, we see that he clearly specifies the kind of exchanges he considers being market exchanges: barter, buying and selling are the sole kind of exchanges mentioned. To other kind of transactions he associates other types of social organizations, highlighting by such comparative analysis the specificity of markets as central coordinating institutions in our capitalist societies. Polanyi (1944) basically distinguishes three kinds of transactions pertaining to the exchange of goods (even if in some cases, goods are only the material support by which messages about values, respective recognition of power, and so on ... are actually exchanged).

\* The gift, which is obligatory followed by a counter-gift (e.g. the system of *potlatch* in Alaska's Indian tribes), consists essentially in an exchange of "politenesses, festivities, rituals, military services, women, children, dances, feasts, fairs of which markets are only one moment and where the circulation of wealth is only one of the terms of a much more general and permanent contract" (Mauss (1923 in 1950, p.151)). The relationships associated to such a system of gift/counter-gift is summarized by Polanyi by the term of *reciprocity*, (as highlighted by Mauss and Polanyi, these relations are between collectivities and not between individuals) and characterized by a symmetry of the institutional structure<sup>1</sup>.

\* The *redistribution* system of exchange is organized around the chief of the tribe (or of a "clique" generally formed around the reigning family in the case of a bigger kingdom) who receives the major part of the wealth and redistributes it along more or less egalitarian principles. The institutional structure is here a centralized one (note that some forms of redistribution still have a great importance in today's economies, e.g. the tax system).

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<sup>1</sup>There are many debates among anthropologists about interpretations of the gift, e.g. Godelier (1996).

\* Finally, there is the market system, where the exchanges follow the rules of "barter, buying and selling", which are typically inter-individual exchanges, and where, contrary to the two preceding forms of exchange, the main purposes of exchange are material (as opposed to symbolic) and stem from individual choices.

In Polanyi's interpretation, the increasing dominance of the market system during the 18th and the 19th centuries is a major historical innovation in human societies, as it is the first time that all relationships are transiting through economic exchange (which was not the case in the two other systems). For the first time in history, almost all social relations are embedded in an economic institution, the market, whereas before, economic exchanges were part of more global relationships grounded on sets of non-economic norms, values and other collective representations.

It has been suggested (e.g. Granovetter (1985)) that a comprehension of the functioning of economic institutions such as markets nevertheless requires an understanding of the more global social links in which they exist. A convincing illustration of this point is made by Garcia (1986), who describes the creation of a new organization in a market for strawberries in a small village in France. Familial links, anterior relationships between producers and buyers, existing networks of commercialisation as well as power relations and collective identification to a project made this creation possible. Hence the necessity, in order to study markets, to replace them in their general social context, and to study economic as well as non-economic networks, relations of power, norms and collective identification to a group and/or to a project.

Whatever the perspective which is adopted on this issue of embeddedness, markets are institutions developed to facilitate repeated inter-individual exchange of goods and services, the latter being not mere supports of symbols and collective relationships (as for instance in the gift/countergift system) but the very objects of transaction. These institutions take diverse forms depending on the epoch, country, history, i.e. their forms are path-dependent and, up to a point which still has to be determined, embedded in social structures. As such, markets are collective and socially constructed objects. This point can be considered as a premise of this study. In what follows, I will study some aspects of the functioning of market from a quite wide inductive perspective: I will not focus only on the usual economic questions about price formation and the "law of demand", but also try to encompass issues concerning organizational and institutional features of markets, as well as their links with agents' representations and behaviours.

### 3. Do the features of the traded good influence market organization?

A first issue to explore concerns the comparative functioning of markets for different goods. It may well be that the features of the exchanged good partly determines the form of the market. An empirical comparison between different markets for the same good however shows that this does not seem to be the general case. On the contrary, as we will see now, many markets for the same good present different organizations.

A distinction which can be of use was made by Polanyi (1944, 1957) between two forms of markets:

\* On some markets, prices are set up by some exogenous instances and maintained more or less constant until a big change in supply and demand conditions occurs which necessitates a change in the terms of trade. For Polanyi, this form of market typically corresponds to pre-industrial societies. Sahlins (1974, quoted by Swedberg & Granovetter (1992), p. 12) makes quite the same point. Swedberg & Granovetter argue instead that one can still find such markets today. It seems that such an analysis could be interesting and is indeed pertinent in the study of some oligopolistic product markets or segments of markets (for instance, in some segments of the Modern Art market, prices are set by a complicated process of interaction between different institutions functioning in networks -see Moureau (1996)). Indeed, the domain of these markets is very large: think for instance of most agricultural products in Europe, whose prices are set by the European Commission.

\* On the other type of market, labelled by Polanyi "price-making market", the price is directly determined by the interaction of supply and demand. Price emerges endogenously from the confrontation of supply and demand and no institution exterior to the market interferes with the formation of prices. General Equilibrium theory was build in order to understand the functioning of such markets, and it is these markets that are the main object of this study.

As an illustration of price-making markets, let us briefly compare the functioning of some real markets, namely markets for perishable goods and especially fishmarkets, asset markets and commodity markets<sup>2</sup>. We will see that the specific features of the

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<sup>2</sup>This choice of markets does not pretend to exhaust organizational peculiarities of markets but is intended as an illustration.

traded good in the case of these markets has much less influence on market's organization than one would believe *prima facie*.

### 3.1 Markets for perishable goods

These markets are the closest ones to popular representations of markets: there is a unity of time (e.g. the Marseille's fish market opens at 4 AM and closes at 7 AM); most of them have a geographical unity as well (they are held in "market places"); and most of the time, buyers and sellers have a direct contact. The reason for this time and geographical unity stems from the main characteristic of the goods: they are perishable and must thus be sold and delivered quickly. However, the unity of time and place is only one feature of the market and is compatible with many different types of organizations.

#### *(i) Marseille's fishmarket*

The wholesale Marseille's fish market is held every day from 4 AM to 7AM on a market place. Because of the high perishability of fishes, transactions have to be done quickly, hence the geographical and time unity. Sellers import their products, commanding the quantities of fishes they desire two days in advance; thus, as noted by Kirman & Vignes (1992), their sole control variable is the price at which fishes can be sold (fishes which are not sold the day sellers receive them are lost). The number of sellers is around 40, and buyers are 300. The latter are wholesale merchants, working with retailers and restaurants. In order to decide how much to buy, they have to expect the demand from these retailers and restaurants. Note that such an expectation is much easier to form when buyers have experience, when they know their clients because they are used to deal with them; this remark holds also for sellers. As buyers and seller have to anticipate the demand that will be addressed to them, it is easy to see the importance of a continuity in market operation for it to function "smoothly".

One important formal rule on this market is that agents cannot be buyers and sellers, they have to choose on which side of the market to operate: hence, a buyer who has made an error in his expectation of demand cannot go back to the market the next day to resell his unsold fishes. More generally, such a regulation forbids the appearance of new intermediaries, as the buyers are, for most of them, already ones. A last remark

about the market setting: goods can be considered as homogeneous because of a very precise official (European) regulation about the different products. The uncertainty about the quality of fishes is thus reduced to the problem of their freshness.

A typical "round" of market proceeds as follows. Sellers expose their products without mentioning their prices. Buyers go shopping around, enquiring about prices proposed by each seller, compare them and eventually enter into some bargaining process. Two types of attitudes were noted by Kirman & Vignes: some buyers played this game of searching for the best prices and bargaining, whereas others, after an initial period of search, became fidel and trustful to one seller, thus economizing search costs.

This market is totally decentralized, transactions are negotiated bilaterally; hence, no unique price emerges, but a distribution of prices for each market round.

*(ii) Other fishmarkets*

Lorient's and Boulogne's fishmarkets are very different from Marseille's one as they are centralized auctions markets (what follows is drawn from Vignes (1990)). In Lorient for instance, which is quite a small market compared to Boulogne, the transactions happens in three stages. First, a small part of the fishes, the "best" ones in terms of quality (very fresh, coming from the area and not from industrial fisheries), are sold at 5 AM before the opening of the official market, in a negotiated way. The sellers are usually local fishermen, whereas the buyers are mainly intermediaries (who will sell the fishes to restaurants and retailers) and some retailers. Then, the auction opens, with the same participants plus the representants of industrial fisheries; the fishes which are sold during this second round mainly come from industrial fisheries and their average quality is lower. Note that during these two first rounds the main buyers are intermediaries and retailers which are in strong competition to manage to buy the best fishes at good prices; the retailers especially are ready to pay quite high prices (because of their high margins and the quality required by their clients). As everybody knows it, the presence of retailers is enough to push prices up. During the third round, which starts a little after 6 AM and lasts untill 10 or 11 AM, the retailers are not allowed on the market anymore. The second and third round are organized as ascending bid auctions, i.e. the higher bidder will get the lot. The auctioneer is supposed to be neutral in the process, he is payed a fixed salary by the Chamber of Commerce, but as he chooses the starting price of the auction, he certainly has an influence on the market price.

Boulogne's fishmarket is also an ascending bid auction market preceded by a round of "over the counter" transactions, but as it is much bigger than Lorient's market and has an international segment, the precise way of how transactions occur is again different. As fish is a highly perishable good, the higher volume sold in a round of market the better. Hence, in Boulogne, there are few auctioneers, not one, each specialized in some species. Such an organization can have an effect on the relative prices, as the auctions for different fishes are held separately. There are many other differences between those markets, especially about what information is diffused and who gets it (for details, see Vignes (1990) and Kirman & Vignes (1992)).

The comparison between Marseille's, Boulogne's and Lorient's markets highlights that these markets are very differently organized despite the identity of the exchanged good (categories and qualities of fishes are defined the same way). In one case, both information and exchange are decentralized, and prices are set by bilateral negotiations. In the others, information and trade are centralized, and price formation occurs via a simple auction.

This can be seen on other perishable goods as well. Garcia (1986) describes how a strawberries market in a small village in France went through a radical transformation, from a negotiated market resembling most of the markets of the region to a computerized auction market. This transformation was motivated by diverse factors, among which the willingness of the producers to get in better position of power towards the intermediaries, who have now the whole group of producers in front of them, and a greater transparency in the formation of price, now formed publicly along clear "rules of the game" common to everybody. As Garcia notes, this radical institutional transformation was possible because of the support of local political instances and the identification of most of the producers to a collective project. This study clearly shows that there is no specific form for a strawberries market which would be intrinsic to the features of the good itself. Instead, the organization of the market is the result of a mix of political decisions, convergence of interest among the group of producers, a past history of conflicts between producers and intermediaries etc... Some of those factors also appear in the different examples of fishmarkets that were just discussed: in particular, the conflictual interests of buyers and sellers on one hand, and among the groups of buyers and/or sellers on the other, seem to be of a first importance. Each precise form of market organization reflects at different degrees the compromises which were found to reduce and control these conflicts.

## 3.2 Financial markets

"Because of the large volume of transactions, the speed with which traders can respond to changes in market conditions, and the large number of potential traders, these markets are often put forward as working examples of the ideal of perfect competition" notes G. Saloner (1984, p. 261) about commodity markets. The same is often said of asset markets, for the same reasons, which are seen as ideal cases of "price-making" markets. A whole literature has been developed since thirty years on their efficiency and their equilibrium condition is explicitly referring to the "perfection" of the organization of these markets, as it is the "no arbitrage" condition, i.e. the impossibility in equilibrium to find any riskless profit opportunity. Such a condition has indeed some empirical implications concerning market organization, as, to be verified, it requires:

- perfect mobility of capital flows (free entry and free exit, no transaction taxes -or equal everywhere)
- perfect substitutability of financial assets (there must be some kind of legal apparatus which certify that, in addition of risk and rentability parameters, the assets are of the same "quality", i.e. some standardization must exist)
- information must be freely and instantaneously available to all market participants

These are the usual conditions of perfect competition, and financial markets may eventually be perfectly integrated if arbitrage is absolutely free. Remember that for arbitrage to be possible agents have to be allowed to be buyers and sellers simultaneously. Certainly, some financial markets, especially the foreign exchange market (interbank), are quite close to this description. However, as in the other classes of markets which were previously examined, there are many difference in the organization of financial markets, even when the exchanged asset is the same. Let us briefly expose the organization of the foreign exchange market (Forex) and that of Paris Stock Exchange.

### *(i) The foreign exchange market*

On the Forex market, there is decentralized trade made through telephone, the result of which is instantaneously made public to all the participants (information is centralized by communication systems as Reuters); hence each transaction directly

modifies the price at which new transactions are made and new information is instantaneously reflected in prices. On the side of perfect mobility of capital, 15 years of deregulation have made it quite close to "perfection" too, but asset substitutability is far from being perfect, which has important consequences on price dynamics. Indeed, even if some monies have the same risk and rentability parameters at some instant, they may not be evaluated the same way by investors. This is clear with the dollar, which still benefits from its past special status in the International Monetary System, but also from "safe-heaven" effects, and the like. This is also true, at a lesser degree, for the Deutsche Mark and the Swiss Franc.

The foreign exchange market is mainly an interbank market, as most of the agents operating on it trade for banks and other financial institutions. Individual investors usually go through the services of banks or specialized brokers to make foreign exchange transactions. This market is almost totally integrated from an international point of view: it functions continuously around the clock and traders can intervene when they desire by telephone (the transaction is then confirmed by telex). Informations about spot prices (the price of the last transaction), series of past prices and various economic indicators are instantaneously available to everyone through sophisticated communication systems such as Reuters and Telerate. Certainly, there is privileged information which does not appear on Reuters' screens, and because of the international character of this market, regulation is much more difficult to establish and to enforce on the Forex than on domestic markets like Stock Exchanges. However, prices and volumes of most of the transactions are instantly and freely available to all market's participants: one can thus consider that information on the Forex is centralized.

The transactions instead are decentralized. Like London Stock Exchange, the Forex is a market driven by prices (as opposed to an order-driven market like Paris- the distinction will be made more precise in what follows). On a price-driven market, there is no institution collecting buy and sell orders: when agents want to transact, they have to find a counterpart that is willing to make the transaction at a given price. An important distinction between three types of agents has to be made here: the market makers, the brokers, and the others. In order to buy or sell, the latter will go to see a broker or a market maker who will find a counterpart. The (fundamental) difference between brokers and market makers is that, whereas brokers centralize some orders and try to compensate them, market makers are obliged to provide the counterpart; if they cannot find it, they will have to buy or sell themselves, on their own funds, to be able to meet the demand. On price-driven Stock Exchanges like London, the market makers are few well-known banks and financial institutions large enough to guarantee the

liquidity of the market, and whose status and obligations are strictly controlled by financial authorities. One of the specificities of the foreign exchange market (interbank) is that virtually all participants are market makers, as there does not exist any supranational institution which control its functioning and could decide who would be the market makers.

A typical transaction proceeds as follows. Agent A wants to buy a million dollars against french francs (for a client, or because he has bullish expectations on the dollar,...); he looks at his screen to see at what prices the last transactions occur. He is used to transact mainly with B, C, and D, so he phones B to ask him his bid-ask spread \$/FF, i.e. his selling price and his buying price, without telling him if he wants to buy or to sell. If B agrees to tell A his spread, he commits himself in being counterpart, whatever the side of the transaction. If B does not want to transact, he does not give his spread and A will try with C or D. The peculiarity of such an organization of transactions is that many exchanges are only motivated by the search for counterparts. Indeed, in the preceding example, if B gives his spread but does not have the million of dollars A is asking, he will have to find it and will in turn phone his usual correspondent X. If X tells his spread to B and does not have the million of dollars, X will take his phone and so on... So, the phone call of A may initiate a chain of transactions which are corresponding to a search for counterparts. That can be a partial explanation of the volume of transaction recorded on the Forex, around 1300 billions of dollars per day. Note that such a system can function only if people respect their commitments. Transactions are concluded on the phone but are officialized by telex: B could very well tell his spread to A and then refuse to deliver the dollars by not confirming the transaction. No institution has the power to oblige B to respect his commitment. However, it would soon be known in the small world of Forex traders that B is not trustworthy and B would have to find another job.

Also note that here, like on the Marseille's fishmarket, transactions are negotiated bilaterally. But as there is no rounds of market because the Forex functions continuously, one will not talk here about price dispersion during a round; instead, the price at which each transaction is made is recorded immediately and the price of the last transaction is considered as the spot price: what was dispersion of prices on the fish market becomes here volatility.

*(ii) Paris Stock Exchange*

Paris is an order-driven market, i.e. orders are collected by a centralizing institution which calculates equilibrium prices for each stock. During the 80's, a serie of laws reorganized the functioning of the market. Before, orders were accumulated for a certain time, no information was diffused about these orders, and two or three time a day, a multilateral public auction (double auction) was hold to determine the equilibrium price. The more important auction was the first one held around noon, which was giving reference prices for the subsequent orders (which sometimes would be negotiated over the counter between two auctions). The auctioneer was taking the last quoted price (in the evening of the previous day), seeing if it was still an equilibrium price for the orders accumulated in between, and in case it was not, he was modifying the price considering excess supply or demand. This new price was the opening price of the auction. The reorganization mainly consisted in transforming the quotation system into a continuous one. Orders are now collected by a computer and transactions are made each time a sell order and a buy order compensate themselves. These transactions can occur at the market price, resulting from the continuous auction managed by the computer, or at prices that were prespecified by buyers and sellers (limit orders). Some orders may not find a counterpart, hence there is a possibility of rationing on order-driven markets. There is still a pre-opening session, from 9 AM to 10 AM, to establish the opening prices, and then, orders arrive and are treated continuously by the CAC system (Cotation Assistée en Continu) which is inspired by the CATS (Computerized Automated Trading System) used in Toronto, on some segments of Tokyo, in Madrid, Brussels and in Italy (for more details, see Gillet & Minguet (1995)). With such computerized systems of trading, agents are informed in real time of all the orders arriving on the market, including the accumulated orders from the pre-opening session. Such a system has thus clearly increased transparency, as all agents have (in principle) the same information about the trend of the market and may modify their strategies in consequence at each moment.

On Paris Stock Exchange, there is another segment known as "le Règlement Mensuel" which is a French peculiarity: it is a future market on one month-term. Stocks are traded during the month but delivered at the end of the month. It is a very active market, as more than 80% of the volume of transaction for French stocks is traded on this segment. Its organization is the same than the one of the spot market just described, but for the delay in the delivery.

Finally, the last segment is an over-the-counter one, which as on every Stock Exchanges tend to grow lately because of the flexibility it allows.

### 3.3 Commodity markets

The markets for raw materials are very interesting to study more closely as their organization for most of them is quite identical to those of financial assets. This is also true for some agricultural products, particularly in the U.S., traded for instance on the Chicago Mercantile Exchange; the CME was founded in 1972 and often serves as a model for the creation of organized markets for financial derivatives. Another example is the London Metal Exchange where aluminium, copper, lead, zinc and others non-ferrous metals are traded. As most of London financial markets, the LME went through a radical reorganization of exchanges in 1987 with the institution of a clearing house. It has options and futures markets for the traded metals, and very sophisticated products to propose to their clients, so as to attract as many investors as possible (again, the same process of product innovation is found on financial markets).

From a more general perspective, one can say that one finds the same kinds of organizational distinctions on commodity markets than on financial ones: order-driven vs. price-driven; organized vs. over-the-counter transactions, active derivative markets with products becoming more and more sophisticated.

These facts are quite surprising, because the characteristics of the goods are very different. Among others, raw materials are sold by tons, transaction and inventory costs are very high and their annual supply quite random (depending on climatic conditions, discoveries of new potential mines). On the contrary, there are no inventory costs on asset markets; transaction costs, especially with the movement of organization of exchanges and the generalization of clearing houses (at least on derivatives), are decreasing and whereas the supply may have stochastic determinants, the latter are totally different from what they are on commodity markets. Albeit these differences, market organization, market participants and agents' strategies are quite similar on these two kinds of markets.

To briefly summarize about the influence of the features of exchanged goods on markets' organization, one could say that the characteristics of the traded good does not seem to have much influence on the organization of markets, but for the perishable

goods which generally entail time and geographical unity. However, as the work of Vignes on fish markets has shown, trade and information can be centralized or decentralized, different mechanisms of price formation can be found. The same holds for commodity and financial markets, where there exists different models of organization too.

## 4. Markets as institutions

As just said, markets are institutions whose main purpose is to facilitate economic exchange. One will neither try to give a precise definition of what an institution is nor discuss the pertinence of talking about the "purpose" of an institution; they are important questions but certainly lie outside the scope of this paper. Let us however introduce some distinctions made by North (1990) which should help to clarify the terminology.

A first distinction is between formal and informal institutions. On the formal side, one finds regulation, law, constitutions; what North labels informal institutions are conventions, norms, traditions and codes of behaviours. Indeed, many institutions are composed of both formal aspects setting the frame for behaviours and a group of tacit codes, norms and values helping to shape individual representations and actions. Actually, markets (but also central banks or Justice) are formed by a set of formal rules usually completed by informal ones mainly pertaining to the codification of behaviours. As the mechanisms entailed by both forms are a bit different, such a distinction may help clarify the issue of embeddedness.

A second distinction is between institutions and organizations. North defines institutions as "the rules of the game in society, ..., humanly devised constraints that shape human interaction" (p.3) whereas "organizations are purposive entities designed by their creators to maximize wealth, income, or other objectives defined by the opportunities afforded by the institutional structure of the society" (p. 73). As in game-theoretic approaches, there is here a clear separation between rules and players. Such a distinction may not be the most pertinent one concerning markets, which share some features of both. Markets are formed by a set of regulations defining the "rules of the game" but are also more and more managed as firms delivering a service. Indeed, there is a whole literature on the design of market mechanisms (e.g. Hamon (1996), Davydoff (1996)).

In what follows, markets will be analysed from a double point of view. A first section discusses the formal rules constraining behaviours (what will be called their formal organization) and their diversity. The importance of codes of behaviours, norms and conventions for the functioning of different markets will be evoked in a second section.

## 4.1 Diversity of formal organizations

The illustrations of markets that were given present some common features (e.g. they are both decentralized) but also many differences (e.g. on the fishmarket, agents cannot be buyers and sellers whereas they can -and indeed they must- be both on the Forex). And again, if one looks at other markets, one finds other dimensions of convergence and divergence. As the few empirical studies of market functioning we have now seem to show (e.g. Vignes (1990); Kirman & Vignes (1992); Garcia (1986); Moureau (1996); Hamon (1996)), these differences stem from specific rules which are part of the more general institutional setting of each market, and only few of these rules are linked with the characteristics of the good. Let us compare the formal organization of the markets which were presented above by examining two sets of rules: the rules of transaction and those pertaining to the diffusion of information.

### *(i) Rules of transaction*

The rules organizing the transactions can be considered as the core of the market: they are the ones which organize the actions which are the very purpose of the institution, namely exchange, or how buyers and sellers interact. Hence, a way to approach these rules is by studying what can be called the interaction mechanism. A broad taxonomy of interaction mechanisms can be found in Lesourne (1991), on which what follows is partly drawn.

First, one has to differentiate between centralized and decentralized markets. As we saw on Marseille's fishmarket and on the Forex, decentralized interaction means that agents meet directly, without the help of an institution centralizing buy and sell orders and they usually negotiate the price at which the transaction will be done: that is why these markets are sometimes called negotiated markets. Instead, on centralized markets, buyers and sellers do not interact directly; an auctioneer or a centralizing

institution which collects buy and sell orders will adjust the price until demand meets supply. On the Modern Art market in Paris (and in London and in New-York...), the goods are sold through an auction process: the auctioneer is publicly offering to sell artworks (the sellers are unknown to the buyers) to the highest bidder. This type of auction is called ascending or English auction, but there are many other types of auctions (e.g. Dutch auctions which are descending-bid auctions; sealed-bid auctions where the potential buyers do not know the existence of each other, often used in public works; for a survey on the different types of auctions, see McAfee & McMillan (1987)). Auctions where one good or one "lot" of goods (e.g. on some agricultural markets) is sold one at a time are not the only form of centralized markets. On order-driven financial markets like the Paris Stock Exchange, there is an institution collecting buy and sell orders made at specific prices. Agents transmit orders of the kind "I am willing to buy 1000 stocks of company X, my reservation price is  $p$  (the highest price agents are willing to pay for a buy order, the lowest price at which agents are ready to sell for a sell order). The institution then "draws" supply and demand curves, calculates equilibrium prices and proceeds to the transactions. Note that part of the transactions can be centralized even on a decentralized market: there may exist some intermediaries who will centralize some orders, avoiding their clients to look for a counterpart (e.g. the brokers on the foreign exchange market).

A second type of formal elements characterizing the interaction mechanism, partly overlapping the centralized/decentralized one, have to do with the configuration of the network of interactions. In this perspective, two aspects should be examined. The first one concerns the way agents meet: in negotiated markets, they transact two by two and one talks about bilateral exchange; in centralized markets, things are a bit more complicated: there can be one agent facing a group (in simple auctions), or a group facing another group, in double auctions or in the case of a central institution collecting orders. The second aspect of the network of interaction is often referred to as the local/global property of interaction. In the former one, there is a notion of neighbourhood, whatever the way it is defined; in the latter, agents interact randomly, without having any chance or preference to transact more often with one agent than with another one <sup>3</sup>. Most of the empirical studies on negotiated markets show that

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<sup>3</sup>Models of markets highlighting interaction mechanisms follow this classification: about global interaction, see for instance all the models using Polya urns processes - e.g. Orléan (1991), Dosi, Ermoliev & Kaniovski (1991), and for local interaction, Ising models or the like -e.g. the work of Durlauf (1996).

interaction is local: there are networks of agents always transacting with each other whereas seldomly trading with others outside the network. However, such a property of interaction is not a formal rule in the sense it was given earlier: it is not instituted but results from a) some formal rules concerning information (see below), and b) certain characteristics of individual behaviours such as loyalty or friendship, as shown for instance by Kirman & Vignes (1992) on the Marseille's fishmarket.

*(ii) Rules governing the diffusion of information*

The issue of information on markets is fundamental in many respects. As it was forcefully shown by Akerlof (1971), when the quality of a good is uncertain, incomplete information results in adverse selection and possibly market failure -in this case, a demand function increasing in prices and no intersection with the supply function. Akerlof and others showed that formal institutions such as guarantees, labels, precise qualifications and standards of goods would reduce the uncertainty about the quality of the good. Hence, these institutions are necessary for markets to function. Even for goods whose quality seems simple to evaluate, for instance agricultural products or fishes, such formal rules exist (e.g. European regulation on the standards of agricultural products, but also of manufactured goods). However, for some goods like artworks or monies, the very definition of quality is ambiguous because it results from a collective judgement which is often historically and socially determined<sup>4</sup>. In order to cope with such problems, one needs to understand, among others, how are these collective judgements constructed, which is certainly outside the scope of this paper: I will thus narrow the analysis of informational issues on markets to two questions: what information is available, and who gets it? I am interested here in the explicit rules which are part of the market regulation, not in the way people behave in this institutional framework

Again, many different configurations can be found. First, about the quantity of available information. On decentralized markets, if no obligation is made to the seller to write his prices on his products and if no institution centralizes the results of the transactions, as on Marseille's fishmarket, buyers have only the mandatory information concerning the type of the product, and they have to go around and ask for prices, discuss with other buyers to know at which price they bought etc... Such a market is quite close to the "Bazaar economies" studied by Geertz (e.g. Geertz (1978)), where the

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<sup>4</sup>See for instance Orléan (1991b), Marengo & Tordjman (1996) and Moureau (1996).

search for information occupies the buyer half of his time, the other half being taken by bargaining. At the other end of the spectrum, one finds financial markets, and especially the Forex, where all market participants get spot and past prices, financial and economic indicators as well as all sort of news from all over the world in real-time through their screens. In the middle, there are for instance computerized simple auctions, where the sellers are in one room, the buyers in another one and everybody can follow the bidding by looking at a big screen where current bids for each lots appear (e.g. the strawberries market studied by Garcia (1986)).

What is more interesting about the content of available information concerns the anonymity of exchanges (Vignes (1996)). In centralized markets, agents do not know with whom they trade because intermediaries, be it an auctioneer, a broker or a central institution, warrant the anonymity of exchanges. Such an anonymity forbids any type of collusive behaviour. In public auctions, the anonymity is asymmetric: the seller (in bidding auctions) sees who buys his lot of fishes or his antique, and has some ways to manipulate the bidding. It is well-known that for instance in some artwork auctions, some friends of the seller are in the room to make the bids get higher. That is why, in the strawberries market of Garcia, buyers and sellers are in two different rooms and cannot communicate during the transactions: as the only information agents have are current bids for each lot (without knowing to whom the lots belong), no collusion is possible. The same precision in the design of the market place is found in most of financial markets, where each workplace is filmed and each telephone call is recorded, to avoid the use by some traders of privilege information.

Nevertheless, the effect of anonymity of exchanges is ambiguous: in some kinds of market organizations, non-anonymity helps to reduce transaction costs. Indeed, it allows for personal relationships to emerge, along with reputation effects, loyalty and the like, and eventually leads to the formation of privileged relations and networks. As already noted, the existence of such networks is well-documented on many decentralized markets and is easily comprehensible: search costs on negotiated markets are very high and stable relationships between buyers and sellers, grounded on loyalty, trust, or simply habit, may greatly reduce these costs. Non-anonymity is thus a necessary condition for the emergence of networks, i.e. for local interaction.

## 4.2 Behaviours and institutions

The formal organization of the market constitutes a frame which constrains microbehaviours, usually by way of a legal apparatus of enforcement. The latter will not be detailed but some specific constraints will be evoked in (i). A second section will highlight more subtle orientations of behaviours through more informal institutions.

### *(i) Formal rules constraining behaviours*

Let us briefly examine some formal rules constraining the strategies of agents. Some rules were already mentioned under the heading of information; as information is an important input for decision making on markets, some rules pertaining to the availability of information also act as constraints on individual behaviours. The most obvious concerns the anonymity of exchanges which precludes collusive behaviours, and the interdiction to use privileged information to avoid insider trading. But some other formal rules which may seem less constraining and more neutral on agents' behaviours appear instead to have great consequences on behaviours and strategies. This is particularly true for the rule "buyers or sellers/buyers and sellers". Indeed, the modification of this rule can change the whole configuration of the market, and this through two channels.

The first one concerns the set of strategies available to the traders. If agents can be simultaneously buyers and sellers, and if the good can be stocked for while, agents can speculate, i.e. buy now in order to resell later because they expect an increase in price (or the reverse, sell now in order to rebuy when prices will be lower). The overall effect on the market is generally an increase in the volume of transaction as well as a higher volatility in prices, the latter becoming more sensitive to expectations<sup>5</sup>. Similarly, if the good can be transported (which exclude for instance real estate), agents can play on geographical disparities in prices, buying where it is cheaper and selling where it costs more -as long as the transportation costs are lower than the difference in prices. By doing so, arbitrageurs contribute to lower the initial difference in prices and reduce market imperfections. As there will exist riskless profit opportunities until both prices are equal (forgetting transportation costs), agents will continue to arbitrage until this point. By following such a strategy, they contribute to push the market towards equilibrium (the acceptance of the latter here is respect to the "no arbitrage" condition).

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<sup>5</sup>There are however many controversies about the stabilizing or destabilizing effect of speculation. Seminal contributions to the debate are Keynes (1936), Kaldor (1939) and Friedman (1953).

The Forex is one market where the "no arbitrage" condition is verified, i.e. prices are unique all over the world. Two reasons for that: transportation costs are nul and information is quasi-perfect (and of course, there are no national taxes on international capital flows). Speculation and arbitrage cannot occur on markets where agents are either buyers or sellers, like on the Marseille's fishmarket; by forbidding such strategies, the rule "buyer or seller" generates a price distribution instead of a unique price.

The second channel by which this rule contribute to the configuration of the market is by controlling the number of intermediaries. On a market where one can be either buyer or seller, one cannot by definition be an intermediary of this market, i.e. help the supply to meet the demand one way or another. Intermediaries, like brokers on financial markets, buy and wait somebody to ask to buy the good or the asset: by doing so, not only they avoid search costs to their clients, but they also contribute to smoothe the demand (and the supply). Of course, they have a cost, they take commissions which increase buying prices and lower selling prices. But if their net effect on costs is undeterminate, it is not the case on the institutional structure of the market. Make a thought experiment and allow agents on Marseille's market to be intermediaries on this market (on the retail market, they already intervene as intermediaries). What would happen? There are different possibilities but they all entail a change in the formal organizational structure of the market.

From a more general and theoretical perspective, one can evoke two related questions pertaining to the relations between interaction mechanisms and agents' behaviours:

When analysing these questions, should one take behaviours as given and consider solely variations of the interaction design? (which is the way most of interaction models proceed). Or, on the contrary, should one set interaction rules as given and study behaviours within this fixed context? In an *embeddedness* perspective, the latter is much more satisfactory, as it considers agents' behaviours oriented and constrained by existing rules, i.e. it introduces some idea of social relations into economic transactions.

Are interaction rules fixed or are they allowed to evolve under the pressure of individual behaviours? Certainly, interaction rules can be modified by individual and collective behaviours. Empirical examples of real markets show that instituted rules usually have to be modified because agents are finding their ways into "holes" in which they can avoid regulation; all the recent history of deregulation on financial markets is full of such examples; see also Garcia (1986). The impact of behaviours on interaction rules should thus also be taken into account. Hence, one should talk about co-evolution

between behaviours and rules of interaction. However, an important qualification has to be made: institutional rules are much more inertial than behaviours and strategies, and these different speeds in adaptation processes should be emphasized in dynamic analysis of markets.

*(ii) Oriented microbehaviours*

As for any feature of an institution, market's organization helps orienting the behaviours of individuals acting within the institution. In this perspective, different questions can be asked.

\* First, does the way markets are organized orient the aims pursued by agents? I would tend to say no, as market exchanges are essentially done for two main purposes: procuring oneself the necessary goods for subsistence or production activities ("economic" purpose), and exchanging in order to make a profit out of the transaction ("speculative" purpose). Of course, these two motives are often mixed in a transaction, but, depending partly on the nature of the good, one can find some purely speculative transactions (e.g. on financial markets, art market or real estate). However, most economic agents engage in exchange because they need it, for consumption and/or production purposes; they usually do not go on a market, look at the organization, and then decide what kind of transaction they want to make. The causality may instead be the other way round, i.e. agents wishing to speculate will try to find markets where these operations are possible. Then, certainly, markets' organization plays a role, as the specific organization will have properties, in terms of liquidity for instance, which will make speculation possible or not. But the primary aim of agents is determined elsewhere: agents choose (or are obliged) to play some social roles depending on their history, their preferences, their social origin and so on.

\* Second, does the way markets are organized orient the behaviours and strategies of economic agents? One can easily give a positive answer to this question, and show that these influences happen at least through three channels:

First, as just evoked, there are formal, explicit rules which forbid some behaviours. For instance, on fish and strawberries' markets, as well as on some segments of the modern art market, one cannot be buyer and seller simultaneously, one has to choose a role (which in turn forbid arbitrage and speculation). On financial markets, there are many laws concerning the definition and use of privileged information, in order to avoid disloyal competition from "insiders".

Second, different markets' organizations have different properties which can modify the behaviours or be exploited by agents. Stock Exchanges are organized such as to warrant the liquidity of the market, for instance by instituting a market maker (if it was not the case, it would be difficult to find agents ready to invest their savings on twenty years, especially when the environment is uncertain -see Keynes (1936)). This property of liquidity allows agents to play speculative strategies, as they can buy in order to resell in very short periods. Another property of markets' organizations which has interesting implications in terms of agents behaviours is the one of anonymity of exchanges (see Vignes' papers). In most of centralized markets, buyers and sellers do not know each other. In some cases of decentralized exchange, when there is unity of time and place and/or when the number of buyers and sellers is not too large, repeated transactions lead agents to know each other, and some more personalized relationships may emerge. This in turn modifies agents' behaviours and strategies, as it introduces elements such as fidelity to a seller and trust in the quality of the goods which are sold: as shown by Kirman & Vignes (1992), Weisbuch et al. (1996)), after a while, buyers stop searching for better prices and qualities and stay with their sellers, a strategy which economizes search costs and can explain the observed price dispersion. The same type of effect, on a much broader scale, is highlighted by Geertz (1978, in GS (1992)), in his studies of what he calls "Bazaar economies". These examples show that in negotiated markets, i.e. price-making markets where interpersonal interaction is a prominent feature of the organization of exchanges, subjective aspects of personal relationships and historically-formed networks may "parasite" the formation of price. One could thus say that the "law of supply and demand" is socially and historically constructed and may take different forms depending on the kind of interpersonal and social relations which are dominant on the market.

Third, many implicit rules stemming from the organization of the market codify the way one has to behave. In other terms, what is allowed and what is forbidden, plus the experience of the day-to-day practices on a market, may generate something like collective representations and "deontological" norms of behaviours which will "fill the holes" and permit the translations in actual behaviours of the formal rules previously evoked. For instance, on a decentralized market like the Forex, there are some implicit rules of behaviours which are nowhere written but nonetheless crucial for a good functioning of the market (as the fact to be obliged -even if no central controlling institution exists- to accept to make the transaction when one has announced one's spread). One can find the same kind of code of behaviour in the market for diamonds in Antwerp or New-York, where the incentive to conform comes from the pressure of the

group and the threat to be ostracized if one deviates (which is also another consequence of the non-anonymity of transactions).

To finish by a more general argument, let us examine a proposal made by Revest (1996) which consist in establishing a correspondence between the two logics of actions defined by March & Simon (1993) and the organization of exchange. The *logic of consequence* is associated with market exchange, while the *logic of appropriateness* is concerned with non-market forms of exchanges, such as reciprocity and redistribution, because individual choice had not much importance in these pre-industrial forms; the main thing was to do what was appropriate to the situation. Things may be more complicated. Both forms of action may be present in both form of exchanges. It is true that deliberation (the logic of consequence) must intuitively be more present in an individualistic society, where agents are endowed with some freedom of choice. But it can also be very easily imagined in a reciprocal system, where what is exchanged has meaning in terms of social recognition and power: agents can deliberate and think strategically in such social systems too, because the stakes are high and the fascination for power is not a novelty in human history. It can also be found in redistribution systems: think about all the intrigues and manipulations that constituted the day-to-day life in the circles of power surrounding the king (re-read for instance Stendhal's *Chartreuse de Parme*, even if the period in which the novel takes place -the very beginning of the 19th- is a bit late to be considered as really pre-industrial). Symmetrically, pattern recognition, knowledge acquired from experience (such as expert knowledge) and other expressions of the logic of appropriateness are not less important now than what they were in non-market societies. It may even be possible to argue the contrary: as individuals have to make choices more and more often (choices that were before made by others, by the social codification of behaviours), they have now to develop tools to facilitate decision making. Appropriateness could be one of these "tools", like heuristics: they are means by which we manage to take decisions in uncertain and changing environments.

## 5. Concluding remarks

As way of conclusion, let us emphasize the following points. First, the diversity of formal organizations of exchange has to be emphasized; there exist totally decentralized markets; decentralized markets where, through intermediaries, some transactions are

centralized; centralized market with one agent facing a group; others where groups are facing each other by the intermediary of a central institution; markets with and without intermediaries, with or without networks of privileged relations. Despite the relatively low number of empirical studies of specific markets, one sees that forms of organization are plenty, and that, altogether, they do not depend on the features of the traded good (but for some special cases). Boulogne's fish market is very similar to some markets for strawberries and some segments of the modern art market (organized as simple auctions). But Boulogne's and Marseille's fish markets have not much in common, and the same holds for Paris and London Stock Exchanges. Why fish markets in Marseille and in Boulogne are so different was not answered here, as it would necessitate a comparative historical study of both markets which has not yet been done.

Second, it seems that the two most important dimensions of markets' formal organizations are a) the centralized/decentralized dimension of transactions and information, and b) the bilateral/multilateral one. These two dimensions overlap but do not coincide strictly. For instance, Marseille's fish market is decentralized (information and trade) and exchanges are bilateral (like the "Bazaar economies" of Geertz), a configuration which leads to non anonymous trades and room for different kinds of personal relationships and possible emergence of networks. One question which could be asked is is this configuration necessary and/or sufficient to have non anonymity? Another one concerns the implications of the rule "buyers or sellers/buyers and sellers" in such a configuration. Indeed it is one of the main differences between the Marseille's fish market and Geertz's Bazaars, and allowing agents to be buyers and sellers certainly enriches the organization (intermediaries may emerge) and the possible strategies (e.g. arbitrage and speculation). A last set of questions concerns the features (among those just mentioned or others) participating to the mechanism of price formation, and the characteristics helping to achieve some desired properties like transparency or liquidity.

Finally and maybe most importantly, we saw that if market organization do not have much impact on the aims pursued by agents (which can be understood only by sociological, psychological and anthropological studies), they actually orient and constrain behaviours and strategies. These influences can be spotted at three different levels. As markets are formal organizations, their functioning can be partly defined by a set of formal rules which states what is allowed and what is forbidden. The second level concerns the properties of specific market organizations, as for instance liquidity, no possibility of arbitrage or anonymity of exchanges, which permit some strategies and forbid others. The distinction with the preceding level is important, as here what is allowed or forbidden is not instituted as such but derives (maybe sometimes

unexpectedly) from a specific organization (it may be an entry point for more dynamical studies of markets, their emergence and evolution). Finally, there is a whole array of implicit rules and "codes of behaviour" deriving and completing instituted rules of organization; and at a more general level, collective representations, norms and values in which behaviours are embedded certainly play an important role which has still to be studied.

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