

# Markets for Electronic Markets? The Non-market Preconditions of Electronic Markets

This article addresses two questions. Firstly, which incentive structure is needed if we are to see the emergence of electronic markets and, secondly, which implications follow from this for the idea of open electronic markets. It is proposed to adopt a rather narrow concept of electronic markets which strongly relies on the notion of a competitive price mechanism in order to identify those pre-conditions which are specific to electronic markets as compared to other interorganisational systems. It is concluded that the applicability of this new coordination mechanism is restricted to groups establishing organised markets on the basis of strictly monitored membership rules which implies that there are only imperfectly competitive markets for electronic markets.

The promise that the concept of electronic markets offers is fascinating. First, the limiting factors of time and space seem to have been overcome. Electronic

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markets are ubiquitous and available 24 hours a day [7]. Second, electronic markets seem to be more 'just' and 'democratic' as well as more competitive and decentralized [2, 4]. Following these arguments, electronic markets could be considered manifestations of the neo-classical ideal, reducing transaction costs to a negligible minimum [7]. Thus, it would seem desirable to create as many electronic markets as possible in order to improve economic efficiency and social justice.

However, electronic markets have to be constructed [7, p 468], i.e. someone must be willing to invest resources in establishing an electronic market. If, from a normative point of view, one wishes electronic markets to exist it is therefore important to acquire some knowledge about the incentive structure necessary for the establishment of electronic markets.

## Function of Prices

The normative idea of using markets as a means of coordinating economic activities relies on the ability of prices to guide decisions concerning the allocation of scarce resources. In order to be able to do so, prices must contain information about all transactions being accomplished at a given moment (which, in reality, is always a time span). Thus, if electronic markets are to accomplish this coordination function, they must provide a mechanism which guarantees that prices contain this kind of *non-local* information. Only a price mechanism which meets the following two criteria warrants this kind of information:

- Every market transaction decision must be guided *only* by prices and quantities.
- Buyers and sellers must compete among each other.

A contrary opinion can be found in Klein and Langenohl [3]. They contend that „within electronic markets and inter-organisational systems, a wide variety of coordination or trading mechanisms, such as auctions, offer/accept and matching systems, are used.” [3, p 262]. However, those mechanisms do not necessarily incorporate a competitive price mechanism. If, for example, an offer/accept mechanism is used, prices do not adapt to demand in the short run; matching systems only incorporate a competitive price mechanism if the sole matching variables are price and quantity. Thus, electronic markets which are expected to have the beneficial effects concerning the allocation of resources should incorporate a price-generating mechanism as employed, for example, by stock exchanges.

## Problems

With respect to the possibilities of automating stock markets, Sanford Grossman argues: „Technology cannot solve a fundamental problem faced by market makers or customers who are searching for the best prices. The problem is that a deep liquid market requires firm bids and offers for large sizes. But, anyone giving such firm bids for large sizes is giving the market a free option to hit his bid”. (Grossman 1989, p 15, as quoted in [6, p 634]). This means that, unlike in a bilateral negotiation situation, it is not possible to find out step by step what the maximum amount is that the counterpart to the trade is willing to pay (or, respectively, the minimum amount he is willing to accept), but that one has to make a firm offer and accept whatever the price-generating mechanism will declare as the market price. It is not possible to adapt the offer to this price since the price would not be stable and hence would not be a market-clearing price.

Thus, the designer of an electronic market which functions similarly to a stock market faces two major problems. First, he or she has to make sure that market participants stick to their offers (rendering purely speculative offers designed to raise or dump prices impossible). Sec-

ond, he or she must ensure that offers made inside the market are not used by outsiders to sense maximum individual trading benefit. If a participant inside an electronic market does, for example, make an offer, an outsider can use this offer as an indicator and adapt his own price accordingly without having made a firm offer himself. The outsider will then make a business deal whereas the inside participant will only have functioned as a price indicator foregoing any business deal. Trust and free-riding turn out to be the principal problems of establishing price mechanisms. Mulherin, Netter and Overdahl therefore conclude: „... even as technology develops, rules restricting off-exchange trading can be expected to persist.” [6, p 634]. Thus, the result of our analysis is that strategic behavior and free-riding remain present in any kind of market and that very restrictive rules will be required if markets are to be furnished with price generating mechanisms, which is especially true if price generating mechanisms are automated as in the case of electronic markets.

## Incentives for Organizations

These rules have to be established and enforced. What are the incentives that might create organisations which will take over this task? Mulherin, Netter and Overdahl argue that stock exchanges can be viewed as firms whose products are prices. Thus, in order for them to exist, it is necessary to establish „property rights to price quotes” [6, p 592]. They demonstrate in great detail, how the New York Stock Exchange (NYSE) and the Chicago Board of Trade (CBOT) evolved in parallel with the establishment of property rights to price quotes. One big issue in the history of these exchanges is the impact of the telegraph on their development. The telegraph technology made it possible to use price quotes of the NYSE at the CBOT for trading purposes without implementing an extra price-generating mechanism (and carrying the costs of it). Accordingly, they comment on the Congress plan to establish a National Market System through „communication and data processing facilities” [6, p 627]: „... the proponents of the National Market System beg the question of who will pay for the technology to link exchanges.” [6, p 633].

This discussion demonstrates that electronic markets cannot be assumed to be provided freely. Instead, there must be actors regarding it worth their while to engage in the establishment of an electronic market. Up to now, most stock exchanges, for example, have been reluctant to integrate [6, p 636]. This might cause some authors to think of them as monopolies which try to defend their privileges. However, if one regards stock

exchanges as firms, it is clear that they will compete. On the contrary, their integration would result in a big monopoly. Similarly, electronic markets would emerge in several places simultaneously and initially be unwilling to merge. Only as competitive pressure increases they would integrate horizontally, probably forming a national market. Thus, I agree with Schmid that electronic markets are (or better, can be) open systems *technologically*. However, there are serious *non-technical* reasons, why traditionally increasing computerised exchanges are unwilling to integrate horizontally, forming a 'global, open stock exchange' [7, p 470].

## Conclusion

Thus, we are confronted with a paradoxical finding: If one wishes electronic markets to come into existence because of their superior allocation efficiency, one has to provide a proper incentive structure which will enable actors to organise electronic markets and enforce membership rules. This, however, will lead to

competition among several electronic markets causing the establishment of barriers to market entry between them (via, for example, membership rules). There will be an imperfectly competitive market for electronic markets. ■

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## Coordination Strategy and the Configuration of Inter-organisational Relations

**IOS affect dimensions such as the boundaries of firms, interorganisational division of labour as well as decisions about governance structures and industrial organisation. While there is a strong trend in the current literature to argue in terms of economic logic, such as "the contingencies of the economic rationale determine the selection of governance forms", we want to emphasise the role of strategic calculations with respect to the choice and combination of different forms of governance. Consequently, strategic management should be augmented by coordination strategy which covers the different aspects of the design and maintenance of inter-organisational arrangements.**

Coordination strategy comprehends governance decisions as well as decisions about the design of IOS. It is recognised, however, that the concept of the

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firm is changing as firm boundaries become increasingly blurred. While the firm is regarded as the unit of decision-making and strategic consideration, the boundaries of the firm themselves may become a subject of coordination strategy. On the other hand, new forms of collective strategies, e.g. in cooperative networks are emerging, which suggests that interorganisational arrangements in themselves may become units of strategy building.

Like any other strategy, coordination strategy has to take restrictions and contingencies into account. At the same time, strategy is not only re-active and adaptive but also actively shaping its own environment, i.e. the (potential) impact of strategy has to be considered. In order to depict

coordination strategy rationale, we will discuss the duality of contingencies and impact of coordination strategy. Given the plurality of interorganisational arrangements and the multiplicity of interorganisational relations, we propose a research framework that comprehends elements that at the same time affect and are affected by coordination strategy (see Figure 1, the arrows indicate contingencies and impact of coordination strategy):

1. market and industry structure,
2. governance structures,
3. transaction and relationship attributes,
4. resource base.

Each of these elements encompasses options for strategic design, such as the position of a firm in a network, the selection of governance forms in relation to different business partners, the shaping of different layers of interorganisational relationships and the choice of forms of resource usage and development. 'Configuration' refers to the arrangement of

complex combinations of design options in relation to the four elements of the framework. The research proposition is that interorganisational relations have to be interpreted as complex, multi-layer configurations of organisational parameters.

### Contingencies, Impact and Options for a Coordination Strategy

Coordination strategy is at the same time responding to contingencies of the framework elements and affecting these very elements by the design of interorganisational arrangements and IOS in particular. The description of the framework elements and the analysis of their interdependencies covers three steps. The initial step summarises contingencies of market and governance structure, of transaction attributes and the resource base on the coordination strategy. The second step focuses the reverse impact of coordination decisions on these four elements. Finally, different options for the configuration of interorganisational relations are distinguished.

The hypothesis is that firms form multiple, multi-layer relationships with different partners and groups of companies in order to sustain their competitive position. While, in relatively stable industries, new interorganisational arrangements are emerging slowly, Ciborra [2] has developed the concept of a platform organization, based on a thorough analysis of Olivetti. „The most characteristic quality of the platform organization is its flexibility, movement and transformation ob-