
An Internet-Based Economy?

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Abstract

What are the effects of the internet on the economy? In contrast to earlier suggestions the paper features the following findings: Firstly, e-commerce is not replacing but gradually completing traditional marketplaces. Secondly, the exploitation of internet-based technologies mainly takes place within the framework of regular sectoral processes of restructuring—with great sectoral differences. Thirdly, new internet-based markets and cooperations do not fit the neoclassical model of perfect competition and horizontal relations but are characterized by significant concentration processes and unequal power relations in favour of established enterprises. And fourthly, especially in science-based industries and in industries characterized by a complex division of labour, the internet doesn't dissolve traditional locational factors in favour of global industrial networks.

In this short paper based on the presentation I did at the 4th Annual IAS-STC Conference 'Critical Issues in Science and Technology Studies' in Graz in February 2005 I will revisit and discuss some common speculations about the impacts of the internet on the economy.

To begin with, one has to recognize that the internet is no longer merely a playground for sub-cultural communities or scientists. Since the end of the 1990s at the latest, the internet has become more and more intertwined with the economy: commercial websites, internet-based retail and electronic marketplaces as well as net-based communication systems and collaboration structures within and between companies are of growing importance and characterize the recent development of the net.

This raises the question as to how far-reaching the repercussions of the new technological opportunities on the structural change of the economy really are. What challenging effects does the internet have on the markets, on the actors involved, and on the patterns of cooperation and competition? One prominent answer is that the internet changes everything. In this early perception a rising internet economy leads to more transparent

markets with perfect information and fierce competition, a decentralization of industries, a decline of power asymmetries between enterprises, an easier entry of new firms into the market, a shift of power to the consumers, and finally a death of distance and a blurring of geographic boundaries (Cairncross 1997; Litan & Rivlin 2001; Wamser 2000; Zerdick et al. 2001).

Meanwhile, however, an economic reality has emerged that diverges substantially from these predictions. I will give some empirical findings and contribute to four conclusions.

E-Commerce

First of all, in terms of commerce, we are not on the threshold of an internet-based economy. All available empirical findings confirm the assumption that—despite remarkable dynamics—new patterns of electronic commerce will successively complement but not replace traditional ones.

This is crucial for e-commerce between business and consumers (B2C). Today, only 2% of the total turnover in the retail sector accounts for e-commerce sales, both in Germany and the US. This will probably increase up to an estimated 5% at the end of this decade. Only in a few sectors the share of e-commerce sales is significantly higher; this can be found in particular in the mail order business, the music and book trade, the travel business and the computer industry. Besides these few success stories of retail e-commerce it seems that the consumers prefer to use the internet mainly as a source of information about products they still want to buy in the store (Hagen & Preissl 2004; Riehm et al. 2003; US Census Bureau 2003).

Of course, this is not the whole story about e-commerce. Contrary to public perception, e-commerce happens primarily between enterprises, in the business-to-business area (B2B). About 90% of all e-commerce sales take place between businesses. In this case electronic commerce—for instance e-procurement or the e-based management of supply chains—is not a completely new phenomenon. Since the 1980s, manufacturers and suppliers in particular have amassed a wealth of experience with electronic data interchange systems, and these have been gradually and successively replaced since the late 1990s by internet-based follow-ups.

Unfortunately, the available data on business-to-business e-commerce is scrappy, but today approximately 10 to 15% of all procurement sales between businesses are conducted somehow via the internet, and these are above all standardized products and components (Auer & Heymann 2003; US Department of Commerce 2004).

There is no doubt that internet-based e-commerce is gaining in importance. But this is an uneven process which—in the majority of cases—is not leading to radical changes in the patterns of commerce and market configurations. More typical are evolutionary patterns of change: step-by-step integration of e-commerce applications into existing markets and structures, procurement systems or supply-chain management systems.

Sectoral change

My second point concerns the internet-driven sectoral change, and my argument is that the effects of the internet vary significantly between different industry sectors.

Often the use of internet applications mainly supports ongoing processes of modernization and sectoral restructuring—with only minor effects on the basic relationships, structures and governance systems of the industry itself. A prominent example is the automotive industry. There is a long and sector-specific tradition in the use of new information and communication technologies—both in procurement and production. The main effects of new internet applications are that they enhance the flexibility of procurement and support the coordination and control of manufacturer-supplier relationships by the big players. Furthermore, the sectoral adoption of internet applications is a top-down process, initiated, conducted and controlled by the large manufacturers and suppliers in the sector. In this case internet-based applications consolidate existing industry structures and first of all strengthen the typical power relations and patterns of corporate governance in this sector (Helper & MacDuffie 2001; Pries & Hertwig 2005).

However, sometimes the internet can also be a major cause of drastic sectoral change with far reaching re-arrangements of industry structures,

markets, patterns of cooperation and competition as well as changes in corporate governance. The music industry is such a case. The internet is—together with new software formats like MP3—a perfect medium for the subversive exchange or the commercial distribution of digital products. Furthermore, it is a perfect medium to destabilize and transform existing markets as well as to obsolete copyright systems. It seems that only the big players of the music industry—especially the major record companies—were not prepared for the drastic effects of the internet on their businesses. In the last few years they have lost their monopolistic position in and total control over the production and distribution of music and are now having to develop new corporate strategies to come back. Furthermore, they are confronted with powerful new players from outside the industry—such as Apple, Microsoft or T-online—who are trying to capture the emerging markets for online music distribution. And finally, the record industry is being forced to develop new patterns of cooperation—with direct competitors to establish promising digital distribution networks, and with soft- and hardware companies to establish efficient digital rights management systems which are able to limit new technological opportunities by new technological (and legal) restrictions (Dolata 2005a; Schaber 2000; Schaaf & Hofmann 2003).

Therefore, my second argument is that one cannot talk of an internet economy with uniform effects and overall new standards of economic interaction throughout the economy. Instead, one has to realize that the effects of internet technologies depend heavily on the distinct sectoral contexts in which they are used. Often internet applications are embedded in existing structures of industry and corporate governance and do not change that much. And sometimes they cause more drastic change (Porter 2001).

New economy, (de-)centralization and market power

My third point deals with suggestions made in the context of the New Economy hype: the assumption of a growing importance of new entrants, of low entry barriers to digital markets, of declining market power and of a marked decentralization of industry.

Of course it is true that the commercial uses of the internet were above all driven by new entrants: by internet start-ups which sprang up like mushrooms in the late 1990s. This is typical of the early stage of new technologies which often develop out of non-specific new opportunities into first commercial applications and success stories through the early initiative and engagement of new technology-based start-up companies (see, for instance, the development of biotechnology; Dolata 2003). Nevertheless, this well-known early-stage phenomenon led to far reaching visions about the rise of a decentralized New Economy with low barriers of entry for new and small firms.

Meanwhile, it seems that these visions have proven false (see in detail: Dolata 2005).

The market for internet search engines, in the beginning a romping place for many newcomers, is now dominated by Google and Yahoo. Microsoft is the only serious competitor left. This is not really surprising: Websites create stickiness (or not). Everybody is searching and surfing with Google, maybe with Yahoo, perhaps with Microsoft (Dolata 2006).

Meanwhile, the retail e-commerce is controlled by large established enterprises—with the remarkable exception of eBay and Amazon. In Germany, for instance, seven of the ten biggest online traders are traditional mail order companies. Even the emerging market for online music is already controlled by big and well-established players: in the US and the UK by the computer firm Apple and its iTunes Music Store, and in Germany by the telecommunications company T-online and its Musicload Store. Among the other competitors in this market are once again Microsoft and the big mobile network providers (Dolata 2005a).

Finally, the new electronic marketplaces in the business-to-business sector are almost completely controlled by the key players of each sector. Either they are controlled by one large enterprise which integrates business partners and suppliers via its own private marketplace or they are controlled by a consortium of big players from a particular sector, which conducts a marketplace open for all participants. Typical of these networks are power-asymmetric control structures. It is especially smaller suppliers that have to provide deep insight into their business calculations, have to work at their own risk, are confronted with fierce price competition, and have to fight for access to the marketplaces controlled by the big players.

The reasons for this remarkable process of concentration and renewed market power are manifold. First of all, today the big established companies have recognized the benefits of the internet and invest heavily in commercial applications and networks. They do not only have the money to do so, but have many years of experience with earlier forms of e-business (and mail-order systems as well). Secondly, new electronic marketplaces both in the business-to-consumer and in the business-to-business area are successful and profitable only when they achieve a critical mass of participants, when they represent a convincing product portfolio, and when they are able to integrate the leading enterprises of the sector. To establish a new marketplace requires large investments and advanced coordination competencies. Taken together this constitutes high barriers of entry for new firms.

Therefore, my third argument is that far from a multitude of interchangeable participants, decentralization and disintermediation, concentration and renewed market power are the characteristics of the commercial use and application of internet-based technologies and e-commerce throughout the industry. Apart from a few very successful exceptional newcomers—such as Google, Yahoo, eBay or Amazon—well-established enterprises from the old economy dominate electronic commerce and electronic marketplaces.

A death of distance?

A final remark has to be made concerning the death-of-distance argument (Cairncross 1997; Willke 2001).

It is obvious that new information and communication technologies bring the world closer together. They are basic technological requirements to coordinate supply chains internationally and to allocate the division of labour over great distances. However, this does not lead directly and in general to a death of distance. In many sectors, both in production and in services, spatial proximity is not becoming obsolete.

In fact the effects of the internet (and other information and communication technologies) on spatial proximity are multi-layered (Gehle et al. 2001; Schaaf 2004).

New sectors of high-tech mass production (like today's semiconductor or computer industries) which are characterized by highly standardized and modular products and components, show an increasingly global division of labour, organized in international networks of contract manufacturing (Borrus & Zysman 1997). Here, new information and communication technologies are the indispensable technological backbone of globally allocated production and cooperation structures.

In contrast, highly science- and research-based industries with complex divisions of labour and unique products (like the pharmaceuticals industry and the biotechnology sector) also operate on an international scale but are clustered worldwide in a few regions and lead markets (Fuchs 2003). In such cases the nearness of leading academic institutions, the presence of research-intensive start-ups to cooperate with, the necessity of face-to-face commitments in collaborations or the exclusive availability of qualified and unique labour are strong reasons for spatial proximity. Long-distance communication and coordination via internet and other communication technologies cannot compete with them.

This leads to my fourth argument: the internet opens up new perspectives on long-distance communication, collaboration and competition throughout the economy. But once again not in a deterministic and uniform way. The concrete structures and dynamics of the spatial division of labour and spatial proximity are in the first instance influenced by the distinct patterns of research, development, production, and markets, that is, by socio-economic and socio-technical peculiarities that characterize each sector in a specific and unique way.

Conclusions and further research

In general, it seems that it is never very helpful to operate with big buzzwords like 'internet economy' (or 'telephone economy', 'biotech age' and so on). These are hip and momentary characterizations of ongoing and in most cases gradual patterns of change. Instead of periodically proclaiming a new age with completely new rules, it would make more sense to analyze in a more detailed way how internet-based technologies

become integrated into existing industry structures and what specific effects this set of new technological opportunities has on market structures, corporate strategies and governance, patterns of cooperation and competition, and sectoral change.

For this purpose it seems necessary to focus further research more specifically on the sectoral level. The internet is an all-purpose technology—but with remarkably different effects on different industries. Comparing case studies on the sector-specific patterns and impacts of internet applications, electronic commerce and marketplaces may be the right way to get a deeper understanding of the co-evolution of technologies, sectoral systems, institutions, and corporate governance.

Furthermore, despite the fact that the internet changes a lot of things, beware proclamations of radical change. This happens, of course, but often the step-by-step integration of new tools and applications into existing structures, which means variations of gradual change, are more typical.

Last but not least, there are lots of internet start-ups even today (as in biotechnology, too). But this fact alone does not constitute a new economy. Far from it. Old economy and big business are at the top of the story. And to begin with, it is this story that has to be told.

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