

SERIE RESEARCH MEMORANDA

Understanding electronic commerce from a historical
perspective

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Research Memorandum 2000-38

December 2000



UNDERSTANDING ELECTRONIC COMMERCE FROM A HISTORICAL PERSPECTIVE

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Abstract:

The aim of this paper is to examine the macro-level phenomena associated with electronic commerce (EC), and it is mainly being informed by a study of the history of commerce. Commerce in its modern form first appeared in early 13th century in Italy where the political conditions were conducive for it. Trade facilitated the **exchange** of **goods**, thereby enhancing the efficiency between production and consumption. Even more important than this was its role in the creation of many modern business practices and institutions. Trade also raised the level of human capital, and promoted the spread of ideas and information, and with them people's attitudes and modes of behaviour. Traders formed an important source of information for military conquerors like Genghis Khan.

The current historical context favorable to EC is globalization. The emergence of network organizations has provided many of the practices supporting **business-to-business** electronic commerce. EC holds the potential to reduce time and transaction costs. However, the most profound implications of EC are likely to be beyond this; they are likely to be at the macro-level or socio-institutional level. Some implications are already around while others are in the process of formation. History also suggests that there is a need to pay due attention to intervention at the socio-institutional level in order to reap the benefits of EC.

Keywords: e-commerce, history, economic institutions, societal implications

1 INTRODUCTION

E-commerce can be perceived as a business activity concerned directly with trading of goods and services and other related business activities in which the electronic medium plays a central role. These activities are in the communication of information, the management of payment, negotiating and trading of financial instruments, and the management of **transport**, etc. As an economic activity, EC represents an **inter-play** of physical resources, human resources and societal resources. Physical resources refer to natural resources, technologies and physical infrastructure. **Human** resources refer to human **labour**, knowledge and skill in the broad sense of the words. Societal resources refer to resources residing in moral and ethical systems, institutions, culture, **language**, social harmony and community spirit. EC operates within the constraints of these three resources while at the same time it also influences and **moulds** them. These three resources have much in common with human capital, physical capital and natural capital in a model used by the World bank (2000) to investigate growth and development.

The call-for-paper raises a question: “What macro-level phenomena need to be measured and how should economists and policy-makers measure these?” It is the aim of this paper to contribute to a meaningful and well-informed examination of the question. A related question posed by the call-for-paper is, “Are there solid theoretical or conceptual frameworks that can guide research?” The reply is “Yes”, based on a study of history of commerce. Using history to inform inquiry into the various issues related to societal effects of technology-related innovations is a rewarding approach used by many researchers, e.g. **Drucker (1965)**, **Rosenberg (1976)**, **Freeman (1987)** and **Sapiro and varian (1999)**.

What can we **learn** from history of commerce? First is the importance of societal context. **In** Italy we witnessed a community of traders within a greater society undergoing **profound** cultural, economic, social and political transformation (Braudel 1985). The political **freedom** in Italy was conducive to lively commercial life and innovations, and the **subsequent** societal conditions ushered in the Renaissance (Hale 1993; Roberts 1996; Finer 1997). Trade and division of **labour** were closely intertwined. And trade and business **operated** on the basis of existing technology, culture and within the constraints of government policy (Bimie 1952).

Traders conduct their business on the principle of making a profit in the process of buying and selling goods. Their activities have the effect of **directly promoting** efficiency between production and consumption, and indirectly **promoting the utilization** of resources. These may be termed the first order effects. But scholars of economic history have recognized that the economic repercussions of trading activities went well beyond efficiency in the use of resources in the trading activities themselves (Bauer 2000). These activities **left** behind much more than specific markets for specific products. They helped to create commercial institutions and practices and to raise the level of human capital, which proved to be of great utility to the entire economy in the ensuing era of rapid industrialization (Price 1989). These repercussions represent the higher order effects which have greater social implication when viewed from a broader and longer perspective (Bauer 2000). This phenomenon has been observed to be present too in the history of technology (Malone and **Rockart** 1991).

With the benefits of insights **from** history of commerce, we proceed to study the historical context of EC, and the first and higher order effects of EC. The current historical context favorable to EC is globalization. The emergence of network organizations has provided many of the practices supporting **B2B** electronic commerce. **As** the first order effect, EC holds the potential to reduce time and the transaction cost, thereby promoting the efficiency in the link between production and consumption. Some of the higher order effects are already around, some are in the process of formation **while** others represent potentials for institutional changes. They are: (1) EC releases resources such as **labour** and capital from inter-mediating activities into the production of goods and services, thereby exerting a deflationary effect. (2) The wider market open to EC can stimulate and satisfy an increasingly widespread demand, thereby encouraging expansion in industry and global trade. (3) EC increases the degree of inter-dependency among business players; it also creates a demand for rating agencies. (4) New business models are challenging the logic and assumptions of the traditional business models. (5) The new business environment stimulates some business players to engage in areas hitherto alien to them, and possesses promising features of enhancing the process of innovation. (6) Just like its predecessor, EC is transforming the financial sector, and has potential impact on the role of central bank and international financial system. (7) With electronic

commerce becoming part of normal business practice, we examine in brief its impact on government.

The emergent trends confirm our historical experience that the far-reaching consequences of EC are likely to be at the level of social institutions. History also suggests that there is a need to pay due attention to intervention of socio-institutional structure in order to reap the benefits of EC.

Our approach has some affinity with that taken by Choi et al (1997). They correctly observe that electronic commerce goes beyond the mere adoption of new Internet technology for conducting business according to traditional practices. “Electronic commerce operates in a new electronic marketplace where the very players, products and processes are fundamentally changed (*ibid*:463).” The approach in this paper is different from Choi et al in that their emphasis is at the micro level such as copyright protection, product choice and discriminatory pricing. We do overlap with them in the areas of electronic payment system, business and policy implications of EC. However, our emphasis is more on the macro level. We look at the effects of EC on the existing business institutions and the formation of new business institutions and practices. By its very nature, a new institution does not emerge like Minerva **from** Jove’s forehead. Typically, it is the outcome of countless modifications of some earlier practices through the acquisition of practical experience. Successful formation of institutions is never just a matter of armchair theoretical exercise. The nature of such social process implies that we can observe the impacts of EC at macro level only after a time lag. Learning **from** history of trade does not mean that we can predict the future course of such impacts. But it can help us to anticipate and watch out for such higher order effects of EC as and when they emerge or are in the process of emerging.

Only a third of American manufacturing **firms** are using the Internet for procurement or sales; and e-commerce accounts for only 1% of total sales in America, but it is growing rapidly (**Woodall** 2000). The Internet is approaching 50% penetration in America 30 years **after** it was invented and only seven years since it was launched commercially in 1993. Research conducted now, relatively early in the evolution of EC, will foster a better understanding of emerging issues at the institutional level and business practices and enable more effective intervention to realize EC’s potential. Research at this time will

also reveal areas of economic concern, such as the effects of EC on productivity, business cycle, taxation, competitive environment, market structure and industrial structure.

The paper is organized as follows. Section 2 reviews very briefly some important social and economic consequences of trade. Section 3 proceeds to examine some higher order effects of EC. The implications of our approach are discussed in Section 4, which concludes the paper.

2 INSIGHTS FROM ECONOMIC HISTORY

The beginning of last millennium witnessed a gradual transformation of towns from being administrative seats of the bishop or a fortified place into the most vital part of economic life and a quickening presence in politics in Europe (Lopez 1976; Finer 1997). When the kingship was powerful, a coherent political system was in effective operation. Where it was weak, the kingdom dissolved into a collection of petty principalities, free cities, and even city republics. Italy was perhaps the most extreme case of the disintegration of such political arrangement. This proved to be favorable for cities like Venice, Florence and Genoa to bloom and grow. They were economic as well as cultural engines. They drove and expressed new aspirations and ways of thinking directed to material purposes and more, and they created new social behaviors. Venice was a great commercial centre, and it was here that banking for the first time separated itself from the changing of money (Roberts 1996). Florence was the focus of the most intense and influential cultural activity in the whole of Europe. From 1350 to 1450, more scholars, artists, scientists, architects, and poets lived and worked in Italy than anywhere else in the western world. Many of them came from other countries to participate and contribute to the great unplanned historical happening known later as the Renaissance. "Europe went, as it were, to school there. (Roberts 1996: p. 193)"

In the background of such intellectual vitality, the flourishing commerce brought with it a chain of institutional innovations. The Bill of Exchange appeared in the 13th century along with the first bankers. Limited liability was known in Florence in 1408, and marine insurance was available before that (Roberts 1996). Double entry bookkeeping evolved to meet the needs of merchants (Bodie and Merton 1998). By 1500, Italians had invented new credit instruments for the financing of international commerce. The

forerunners of present-day manufacturers were the merchants who adopted and refined the *Verlagswesen* or the putting out system (Heaton 1948; Braudel 1968; Clough and Cole 1968). The Amsterdam stock exchange was established in early 17th century (Braudel 1968). The 19th century saw the regular market being replaced by continuous trading, purchase by sample, the rise of shopkeeping, and replacement of fairs by produce exchanges or bourses. While commerce exerted tremendous effects on the wider society, it could only operate within the societal framework. For example, it depended on the transport technology available and it functioned within the commercial policy of the governments. The development of commerce was both a cause and an effect of industrialization (Birnie 1952). Capitalism was conceived and took shape in the womb of trade. Commerce also acted as a channel for new ideas, religions and information as well as a source of information for military conquerors.

The contribution of traders to the establishment of banks is well documented (Summer 1971 ; Clough and Cole 1968). "Banks began when men saw from experience that there was not sufficient money in specie for great commerce and great enterprise (Summer 1971, p.200). In Europe, banks were established in centers of great foreign commerce such as Venice, Amsterdam, Hamburg and Nuremberg. We have financial instruments such as letter of credits and bills of exchange which were innovated to meet the needs of commerce. It was "merchant capital which created markets, financed manufactures, floated the American colonial economies and launched banking and insurance (Grassby 1970: p. 106)." Even today, we still see the role of traders as modest providers of credit to peasants and farmers in developing countries. In emerging economies the activities of traders promote not only the more efficient deployment of available resources, but also the growth of resources (Bauer 1991). With opportunities for exchange, there is scope for division of labour and the emergence of different crafts and skills. It may be argued that traders play a role in helping to transform subsistence economy to exchange economy. Trading activities are thus productive in both static and dynamic senses.

Traders are risk taking creatures who under the right conditions underwent a metamorphosis to become financial capitalist and industrial capitalists. The instruments of capitalism were invented in the course of turning the wheels of commerce. Suffice it here to mention two examples, namely, limited liability and putting out system. The

practice of limiting the liability of passive partners made it easier for companies to attract investors to participate in new business ventures. It provided an efficient means for entrepreneurs to pool together financial resources of the public by selling them shares on the stock exchange. It is an instrument of sharing risks and profits that proves to be crucial in the growth of capitalism.

The putting out system was an organizational device used by merchants who identified and seized new economic opportunities beyond their role as buyers and sellers. The system was known to be in full swing in Italy and some other parts of Europe by the 13th and 14th centuries (Braudel 1968; Clough and Cole 1968). Under the system, there was a *Verleger* or wealthy merchant who put out work. He provided the artisans with the raw materials and part of the wages, the remainder being paid on the delivery of the product 'which he then sold. Its distinct feature was that it was done on a large scale by hired labour, that the workers did not own the raw materials and often not even the tools, and that the merchant controlled the whole process from start to finish. This marked the dawn of industrial capitalism.

Contacts through traders are prime agents in the spread of new ideas, modes of behaviour, and methods of production. Early trade opened the first slender means of communication (Mangat 1969). In the 13th and early 14th century the most widely copied and read book in Italy was that of Marco Polo, where practical information on markets interlards the romance of travel (Lopez 1976). Trade not only facilitates the exchange of goods, it also promotes the spread of ideas and information, thereby people's attitudes and modes of behaviour. Some fellow travelers of the traders came along with the explicit purpose to propagate a new faith. Islam was introduced to Southeast Asia as a historical upshot of the commercial activities of the Arab traders. External commercial contacts often first suggest the very possibility of change, including economic improvement (Bauer 2000, p.8). Traders were also used as sources of valuable information by the Mongolian conqueror Ghengis Khan and his successors in their military campaigns (Fairbank and Reischauer 1979).

3 LEARNING FROM HISTORY OF COMMERCE

Globalization has become the most important economic, political and cultural phenomenon of our time (Micklethwait and Wooldridge 2000: p. xvi). It is a process of social change, **characterised** by the globalization of markets, a **shift** towards an economy based on knowledge and information, and the growing importance of technology in everyday life (Castells 2000a, 2000b). The advent of network organizations has provided many of the practices supporting **B2B** electronic commerce, such as supply chain management, just-in-time sourcing, lean production, and inter-organizational information systems. Network organizations have become common both within and across national borders. Together with trade, capital and investment flow and migration, they have become some of the defining features of globalization. Electronic commerce is an economic activity taking place within such historical context. It is being fashioned by its conditions while it is fashioning them at the same time.

Globalization spurs competition and hence innovation, and **speeds up the diffusion** of new technology through trade and investment. In its turn., by reducing the cost of communications, IT has helped to globalize production and capital markets. EC holds the potential to reduce time and the transaction cost, thereby promoting the efficiency in the link between production and consumption. The data available so far suggests a picture of remarkable cost-savings and improved efficiency for firms participating in **B2B** electronic commerce. (See box next page.) For society as a whole, EC constitutes a strong price-deflationary market activity because raising your prices is harder when your customers instantly compare them with everyone else.

From the perspective of history, the more interesting and important aspects of EC are likely to be in its higher order effects. Below are some such effects, parts of them are already around while others are evolving.

The Garner Group forecasts that global **B2B** e-commerce will reach \$4 trillion by 2003, compared with less than \$400 billion of online sales to consumers. The best way to analyze the impact of the Internet on the economy is as a fall in the cost of **input**, in this case information.

B2B e-commerce **can** cut **firms'** costs in several ways. First, it reduces **procurement** costs, both by making it easier to find the cheapest **supplier** and **through efficiency gains**. It is much cheaper to place an order online, and there are likely to be fewer errors in orders and invoicing. That may seem trivial, but **Cisco** reports that a quarter of its orders used to have to be reworked because of errors in its phone and fax **ordering system**. When it switched to online ordering, the error rate fell to **2%**, saving the **company \$500m**. British Telecom claims that buying goods and services online reduces the cost of processing a transaction by **90%** and cuts the direct costs of goods and services it buys by **11%**.

A second possible saving is from much lower distribution costs for goods and services that can be delivered electronically, such as financial services, software and music. The marginal cost to a bank of a transaction over the Internet is a mere cent, compared with **27 cents** via a cash machine, **52 cents** by telephone and **\$1.14** by bank teller. Online commerce also allows more efficient supply-chain management, cutting out layers of middlemen. And lastly, better information reduces the need for firms to keep **large** stocks. Dell Computer's build-to-order model completely eliminates inventories, and is being widely copied.

The **B2B** exchanges being set up by car, steel, construction and aerospace firms will provide a more efficient marketplace for buyers and sellers to exchange products. Such **exchanges** are likely to spring up in most industries. GM, Ford, Daimler-Chrysler and Renault-Nissan plan to move all their business to a joint electronic exchange with a **turnover** of \$250 billion and **60,000** suppliers. According to one estimate, dealing with suppliers online could reduce the cost of making a car by **14%**.

Source: **Woodall** (2000)

3.1 Deflationary and Other Macroeconomic Effects

Electronic markets affect the consumer purchase process in two ways (Turban et al 2000). The first involves the digitization of market mechanism that reduces the search costs for customers such as money, time, and effort needed to gather price, quality and product features. The second way involves the digitization of information product itself and its distribution. These products have a cost structure with increasing returns and minimal reproduction costs. “Digitization also eliminates the need for sellers to maintain an inventory that must be physically shipped to the consumer. A digitized market can be especially efficient when electronic payment methods will become more widely used (Turban et al 2000: 437).”

As resources such as **labour** and capital are released through the practice of electronic markets into the production of other goods and services, their overall supply would go up, thereby exerting a downward pressure on prices. Wallis and North (1986) measured the size of transaction costs that go through the market in the US economy (such as costs associated with banking, insurance, finance, wholesale, and retail trade; or in terms of occupation, with lawyers, accountants, etc). They found that more than 45 percent of national income was devoted to transacting in 1970. Moreover this percentage **had** increased from about 25 percent a century earlier. The importance of transaction activities to American business applies to global business too. Modern international business exhibits a high degree of diversification in its production, production processes and markets. “*Inter alia*, this is revealed by the increasing role of transaction-related business activities. . . .In case of single market firm competing in perfect markets, transaction costs are zero. As firms become multi-activity and markets become imperfect, transaction costs assume a greater significance, and, in some cases, the proficiency of transaction-driven activities may determine the success or failure of an enterprise. (Dunning 1993 : 5)”

The conclusion to draw from this is significant. Though EC would not reduce the transaction costs to zero, it would significantly reduce them. Given the pervasive role of transacting, a very important aspect of EC is that it will improve the efficiency of all parts of the economy. Some studies have tried to quantify the impact of EC at the

macroeconomic level. For example, the Australian Department of Communication, Information Technology and Arts (1999) estimates that the net impact could be a 2.7 percent increase in the level of national output. Another study suggests that the rise of **B2B** e-commerce will in the long run increase the level of GDP by 5 percent (Goldman Sachs 2000). These studies are based on a number of quite restrictive assumptions and their results should thus be interpreted with caution. Figures of these types and anecdotal evidences are not convincing enough to persuade many economists who would prefer to see more evidence before pronouncing this a permanent trend (Micklethwait and Wooldridge 2000). However, there is broad agreement that at least in the USA, Australia, Denmark and Norway, changes in the growth rates of **labour** productivity are related to significant technological changes (OECD 2000a).

The development of the Internet and e-commerce could also modify some feature of current economic cycle. E-commerce facilitates more efficient stock **management**, leading to lower inventories as a ratio of sales and thereby modifying the stock building pattern. This point has profound implications for the business cycle. Since the late 1980s inventories have been falling sharply, relative to sales, all over American manufacturing. A report for the US Department of Commerce (2000) calculates that this has saved American companies some \$10 billion a year cumulative \$115 billion since 1988. Moreover, leaner inventories should reduce the ferocity of any future downturn. In the past, when demand grew a bit more slowly, inventories would **often** fall, amplifying a mild deceleration into a recession (Cairncross 2000). Moreover, increased price competition in product markets may allow the economy to sustain more jobs without stoking inflation for a period of time. These features work to modify the usual process of inflation and thereby the responsiveness of inflation to business cycle (OECD 2000a).

Another important development to follow is that by exposing firms to global competition, the Internet might also expedite progress towards implementing product market reforms (OECD 2000a: p. 17).

3.2 Potential to Create a New Market

The wider market open to EC has the potential to stimulate and satisfy an increasingly widespread demand, thereby encouraging expansion in industry and foreign trade. Peet

(2000) suggests that there will be a major winnowing of e-commerce firms to a small numbers of giants, probably led by those who can best solve the problems of fulfillment. This view applies well to companies competing with traditional retailers. But there is another possibility, which is just as significant. There is an immense opportunity for companies whose competitive edge is specialization. The global reach of the Internet means that the local neighborhood is not defined by physical geography but by specialty. “For goods and services that can be ordered and delivered over the network, the Internet is truly a global marketplace (Choi et al 1997:501).” Companies which cannot possibly survive in a major city can do a brisk business serving a world market. New businesses in cyberspace would appear. An example of this is on-line publishing of books and journals that would have been too expensive in a traditional form. There are opportunities for a myriad smaller players providing special interest news and services. Where new businesses have to depend upon the postal services for fulfillment, the delivery cost is relatively high. The challenge is to develop the market and expand the sales. As the volume of such business grows fulfillment specialists and other services would arise to support them, reducing the delivery costs.

With global **B2B** e-commerce, there is a need for worldwide trade information to help enable organizations to improve their global sourcing, procurement, supply chain visibility, order commitment, transportation management, and collaboration capabilities.

EC means **24-hour**, 365 days a year availability of services covering the globe. It is translated into a skewed advantage for global firms. It will improve the competitiveness of global firms and will give customers greater convenience and flexibility. One common strategy to achieve global reach is through merger and acquisition. But this may not be the preferred path of the more agile and successful corporations, given the high rates of debacles in cross border merger and acquisition (Micklethwait and Wooldridge 2000). How firms go about tackling this challenge is certainly worth watching

3.3 Inter-Dependency between Business Players and Need for Rating Agencies

Competitive advantage is often gained by integrating supply chain activities at a lower cost than competitors (Kalakota and Whinston 1997). Increased competition has driven business firms to look for cost reduction and efficiency in coordination and integration of

the supply **chain**. Isolated business activities such as marketing, material **procurement** and stock management, manufacturing, and distribution are reorganized in order to function in tandem. To maximize the efficiency of online procurement companies must tie **together** their inventory control **systems** with the web-based exchanges. Online sales need to be linked to order entry systems and customer **relationship management**. **What is important** here is that the process of **integration** is not **limited** to **an individual company**, but **across all firms** in a supply chain – **from supplier through** to the customer (Kalakota and Whinston 1997). Such trend deepens the coordination of processes and the integration of data. The upshot of **this** is that a business **firm** may be conceived as a node in a **complex network** of business activities. To borrow a term of Hanson (2000), **network can be perceived** as a form of social technology.

EC increases the degree of inter-dependency of business players. The degree of integration among network organizations currently obtaining is gradually becoming more common among business organizations. This calls for rethinking in business ethics; it pays to play fair.

Trading in the cyberspace has its risk. The risk refers to the sense of uncertainty associated with lack of relevant information that matters (Bodie and Merton 1998). This kind of risk is pretty similar in nature to the risk involved when our ancestors in the nascent industrial society began to buy goods produced by strangers. Before the Industrial Revolution, they would buy shoes from the shoe smith whom they knew directly or whom they knew from their friends in the community. In the new business environment associated with the Industrial Revolution, they had no such direct knowledge, and brand emerged as an innovation to serve such needs of customers buying things from “stranger” producers.

There are interesting parallels in the new trading environment in the cyberspace. For **example**, there is a demand for rating agencies whose main function is to monitor and grade on a regular basis the quality of goods and services, and to rate the ability of buyers and sellers to meet their commitment. Electronic market supports an efficient use of information dispersed among economic agents. It provides a concrete case of a rational economic order, perceived from the position of Hayek (1945). He argues that the economic **problem** of society is a problem of the utilization of knowledge not given to anyone in its

totality. “The peculiar character of the problem of a *rational economic order* is determined precisely by the fact that the knowledge of the circumstances of which we must make use never exists in concentrated or integrated form, but solely as the dispersed bits of incomplete and contradictory knowledge which all the separate individuals possess. (emphasis added, *ibid*, p.5 19)”

Related to this is the need for some business party to guarantee or insure the quality of products customers are buying, e.g. in electronic auction. From the seller’s point of view, there is a new need for him to be guaranteed that the buyers would pay. A business is in fact created for banks with global spread, to offer a service that has some parallels to letter of credit.

34 **Business Models as Innovation**

New business models are challenging the logic and assumptions of the traditional business models. This is a manifestation of the fact that the new environment presents opportunities for some and threats for others. Though investors and financial traders can argue about the value of **Amazon.com**, there is consensus in the appreciation of Amazon’s business model as an organizational innovation. Business acting as intermediaries between supply and demand of **B2B** markets would become redundant while there are demands for services to smoothen the new emergent EC.

Developing new business strategies and models has now become one of the most important challenges facing organizations in the age of electronic commerce. Bill Gates knows that competition today is not among products, but among business models; irrelevancy is a bigger risk than inefficiency (Turban et al 2000, p.xxvii). Indeed, the inability to overthrow the dominant, outdated business design and thinking often leads to business failure (Kalakota and Robinson 1999). The pressure is now on companies to function in a state of more or less constant transformation. Management at the senior levels has to live with the challenges of earning revenues **from** well-tested practices while be ready to experiment with new ideas which may cannibalize these old practices. It is in essence a problem described as striking a balance between exploration and exploitation (March 1994).

, In the last quarter of 1999 and early 2000, there were lots of excitements in the capital market about dot.com companies, thereby encouraging entrepreneurs to plunge into starting or expanding EC companies. There have been valid warnings from investment analysts who point out the pitfalls of burning money for the sake of increasing market share. However, it is such investment climate that promotes new business models to emerge. For a longer time perspective, the society would benefit even though individual investors may lose their shirts. To paraphrase March (1994):

Successful organizations build a 'can do' attitude that leads people to underestimate risk. Such attitude is likely to be prevalent in young, apparently successful high-growth firms where the environment conspires to induce investors to believe that they know the golden grail of investment. This risk underestimation is a way of inducing investment that may prove to be very costly to the individuals concerned, but it may end up serving the larger society.

In the light of such developments, it would be interesting to reflect on the future shape of competitive strategy as part of new business models.

- (a) The barriers to entry in the world of EC have been significantly lowered. New entrants do not have to invest in time and capital to run their business as their counterparts in the so-called old economy, and they quickly become threats to the incumbents. This is especially so in information related or information intensive business e.g. e-publishers. Moreover competition to a company also comes from players in other sectors as well; for example, telephone companies can offer services that would encroach in the traditional business of banks as financial intermediary.
- (b) Critical and demanding customers in the home market have been seen as an essential factor in sharpening the competitive claws of companies Porter (1990).. With EC, this is not always relevant to refer to the term home market, for the market is global. This is especially so for information related products that can be marketed through the Internet.
- (c) The behavior of the capital market is the last quarter of 1999 and last quarter of 2000, and the response of firms to it reflects one significant point, namely, the influence of financial market with all its sentiments, unpredictability, irrationality and discipline.

Given the trend that companies are relying more and more on **equity capital for funding** (OECD 2000b), top managers have to be shrewd in formulating their strategy and presenting it in a way to boost up investors' confidence or at least to retain it. What kind of love affair the capital market has with e-business would be a key item in such strategy formulation and presentation.

- (d) The emphasis on competition and lock-in as found in Porter (1980) has to be **balanced** with the language of co-operation, trust, mutual benefits and openness. An OECD report (1999) talks of the emergence of openness as a strategy, with many of the most successful e-commerce ventures granting their customers unparalleled access to their inner workings, databases and personnel. What all these add up to lends weight to the view that companies are entering a new ecology of business, and this demands a new way of thinking, acting and new business models.
- (e) The traditional focus on the individual firm as the competitive unit has shifted to the entire supply chain (Gattoma and Walters 1996). Three factors have contributed to this. First, customers are demanding more varied, often individualized value from the supply chain. Second, new information technology makes it possible to obtain an overview of the entire supply chain and to use it to meet the demand. Third, the emergence of global markets and global sourcing have stretched these supply chains over inter-continental distances, and the time lags at a global scale make it more necessary that these long chains be managed well.

3.5 New Business Environment

Electronic commerce is associated with IT as an enabler, facilitator, and even inhibitor of business activities both within and among all types of organizations (Aplegate et al 1996). It is thus creating enormous interest in the world of IT as well as many other industries (Pan et al 2000). There is little doubt that the growth in this area will continue as more organizations are joining the festivities, establishing and cultivating business relationships, performing business transactions, distributing knowledge, and implementing competitive strategy. Corporate life, particularly in America, is being transformed by the Internet (Micklethwait and Wooldridge 2000).

Moreover, the new business environment ushered in by EC stimulates some business players to engage in areas hitherto alien to them. As mentioned earlier, telephone companies can become financial companies by allowing customers to pay for goods and services while putting the charge on the customer's bill. With the advent of Wireless Application Protocol technology, mobile phones can provide customers with direct access to the Internet. This would enable mobile on-line shoppers to use their WAP phones to make purchases without having a credit card.

The new environment increases the efficiency in the **process of innovation** in two ways. First, EC promotes the efficiency and narrows the gap between *supply and demand*, beyond the narrow scope of *production and consumption* affected by commerce. On the supply side, technology has been increasing the range of choices, but on the demand side, adoption patterns have not always been responsive in ensuring the successful diffusion of this technological potential. "In many markets the constraining force on technological advancement is not the ability to produce new goods but uncertainty about consumer demand and the rate at which it will eventuate. (Roberts 2000: 3 1)" Eliashberg, Lilien, and Rao (1997) identify two types of management error that result from this demand uncertainty: managers launch high-technology failures and managers fail to launch products that would have been successful. The former represents supply for which there is no latent demand, while the latter represents latent demand for which there is no supply. In some specific industries, the gap is narrowed by both the supplier and the buyer working closely at the development of new products, e.g. in the automobile industry. Garages from various parts of the world have access to the network designed for them by Nissan and Renault. After repairing and maintaining a Nissan or Renault car, the mechanics key in the details of the replaced components and of the car at the websites, providing feed back information to the two car makers to **learn** from using (Rosenberg 1994) so as to improve the design of their new models. Buyers and suppliers in the industry use computer aided design technologies across firm boundaries to co-design components (Bensaou 1999). In other industries, these difficulties can be partly overcome with closer links to a wider market. One of the strengths of **Internet-based e-commerce** is that it is based on a global network that is accessible all, easy to use and inexpensive and is capable of *communicating product information* to potential

customers in over 160 countries worldwide (Barjis & Chong 2000). But to **narrow** the gap separating supply and demand, we need more openness. This pattern is also noticed by an OECD (1999) study on the economic and social impact of electronic commerce. The open strategy of many of the most successful e-commerce ventures has led to a shift in the role of customers, who are increasingly implicated as partners in product design creation (p.11). What we are in fact witnessing is the penetration of the market governance (Williamson 1975) into the whole web of demand and supply. Perhaps it is time to coin a new to replace the term supply chain, defined by Christopher (1998) as the network of organizations that are involved, through upstream and downstream linkages, in different processes and activities that produce value in the form of products and services in the hands of ultimate consumers. I would suggest the term web ***of supply and demand and innovation***, which is more akin to the notion of dynamic supply webs of Kumar and Christiaanse(1999) than Christopher's. However, my formulation still differs from the former because it explicitly includes the role of web-based e-commerce in reducing wastage and uncertainty in the innovation process.

The second effect comes from the integrated nature of technological innovations (Rosenberg 1976; Sahal 1981). As e-commerce evolves it is likely to follow the 'reverse product cycle', in which process efficiency gains are followed by quality improvements to existing products and then the creation of new products. "Typically it is in this final stage that significant economic growth occurs. E-commerce has the potential to be a platform from which significant new products emerge, many of which will be digital and on-line. New products have a tendency to beget more new products and processes in a virtuous spiral . . . (OECD 1999: 23)."

3.6 Impact on the Financial System

Commerce in our age inevitably involves monetary transaction. It would thus come as no surprise that EC could affect banking in a very fundamental way, and would be affected by the approaches banks take to respond to the new demands. For example, it will further undermine the power of bank branches (Lawrence et al 1998). EC has created a demand for low cost facility for micro payments (Choi et al 1997). Some areas for banks to develop e-commerce products are: to protect EC participants against fraud

arising **from** the misrepresentation of identities, to assist small business entries into EC, to offer electronic billing services, to offer firms the technology for business-to-business electronic commerce (Wenninger 2000). In short, EC may play an active role in transforming banks.

The more profound consequences are in the broader area of financial systems where the Internet serves as the technological platform of all kinds of financial transactions, the so-called e-finance. Here we would touch on two potential impacts. The first is the **function** of central banks in the area of monetary policy; the second is the stability of international financial systems and the modus operandi of national politics. It has argued **that** Internet related technologies could increase the speed of financial operations, which raises the issue as to how interest rates should be set and whether the short end of interest setting needs to become shorter i.e. time units smaller than a day (Friedman 1999). Some economists have even envisaged a world where technological developments emasculate altogether the monetary controls of central banks (King 1999). This could occur if new technologies (and regulators) permitted real time pricing and exchange of goods across the Internet without the intercession of an independent monetary system administered by a central bank. In such an environment the government **earns** no seignorage and would no longer be able to provide liquidity support by printing money.

The second potential impact is in the area of international systems and national political life. Currently, banks are being squeezed **from** both the deposit and payment system side as well as the lending side (Claessens et al 2000). On the deposit and payment system side, many deposits substitutes are emerging and many non-banks such as mutual funds are offering transaction accounts. With Internet banking, consumers no longer have to pay high prices to transfer money **from** one country to another. On the lending side, the technology and deregulation allow non-deposit-taking financial institutions and capital markets to serve many more segments of borrowers including small and medium size borrowers. Transaction costs are lower, information is more widely available and better. We concur with Claessens et al (2000) in arguing that current developments in technology and deregulation are eroding the special nature of what has made banks special. An opportunity presents itself for governments to reevaluate the overall need of a public safety net. In other words, there is an opportunity

for the reinventing the banking systems where the governments are no longer guaranteeing the bank deposits. This step has two very interesting consequences. First, it removes one key factor in moral hazard which is diagnosed to be a cause in financial crises (Eichengreen 1999). So while the modern information technology infrastructure has been an enabling factor in making financial market more volatile, it also provides an opportunity for designing a sounder and more stable international financial architecture. Second, the new setup would take away a powerful lever from the hands of politicians in supplying loans to their pet projects or supporters. The public would have a bigger say in the allocation of the public money. Politicians are then required to persuade the public of the merits of financing projects on the basis of, say, strategic long-term value for the economy, defense, or cultural life. The long-term consequences of this for the countries concerned are certainly very interesting to watch.

3.7 Impacts on Government

As electronic commerce develops, it provides the wider society with a more advanced technological infrastructure (hardware, software, standards and skilled personnel), practices, experiences and expectations for conducting all kinds of business and non-business activities on the web. If we are to go by the history of government, these developments are likely to affect the way government is run (Giddens 1985; Finer 1997).

To some extent we are seeing some fruits of governmental attempts to transfer the concepts and systems from e-commerce to the public sector. For example, one can apply electronically for a tourist visa to Australia when one buys an air ticket and the answer is available in seconds. The avenues for e-government are many, e.g. web-based information services, tax returns, one-stop government, redefinition of functional and organizational boundaries of government agencies, physical relocation of bureaucratic bodies.

It is too early to tell how governments would use the new tools in providing public services. Would they be able to improve the efficiency and availability of services? If they do, would they use the higher productivity to cut costs of public expenditure or to use the released resources to increase the scope of services? The nature of use of IT by government bodies is mixed - both to increase their capacity to cope with the

increasingly complex duties of running a more demanding society and to direct use of IT for social surveillance (Giddens 1985; Dunlop and Kling 1991).

From a longer perspective, the followings may be interesting to watch: new **forms** of co-operation between the government and private sector in using EC tools to provide services; use of EC tools to promote democratic debate of issues of national importance. EC has the propensity to reduce state tax income. Though this figure is small at this nascent stage (OECD 2000a) the issue would become more significant with expanding on-line business activity, with grave consequences on the ability of the state to perform its functions. Other areas to look out for are education, health and government administrations which account for about 20 percent of GDP (OECD 1999). Major cost savings here will have economic consequences, such as releasing more resources to meet the needs of an economy surging ahead.

4 CONCLUDING REMARKS

Studying electronic commerce from the perspective of history allows us to look at the old facts to obtain new meanings and implications. Business and **management** oriented books are right in urging their readers to realize that doing business electronically is more than buying and selling on the Internet. They argue that business itself is largely a process of information gathering, processing and distribution. Making the process digital makes operations more efficient and would yield higher returns for the firms. Our approach looks beyond this. It is alert to changes in the areas of institutions, and the likely implications of e-commerce on business practices, business models, national and international financial systems, business cycles and government.

Electronic commerce is closely connected with changes of what Freeman (1987) calls techno-economic paradigm. Characteristics of this type of change are that it affects the input cost structure and the conditions of production and distribution for almost every branch of the economy. The productivity gains are realized throughout the economy as a result of a process of learning, adaptation, incremental innovation and institutional change. It has been suggested that for a society to benefit the full potential of a technology, there must be a match between the technological system and the socio-

institutional setup (Perez 1983). If the problems of institutional adaptation can be overcome, such techno-economic transformations offer tremendous scope for new employment-generating investment as well as labor-saving productivity gains. “These opportunities arise both in the provision of new and improved consumer goods and services, and in the provision of a new range of capital equipment for all sectors of the economy (Freeman 1987: p.57).” This view is broadly echoed by OECD (1999) which sees EC as an economic phenomenon and part of the broader process of social change. “As both a product and manifestation of such transformations, electronic commerce is being shaped by, and increasing will help to shape, modern society as a whole. Societal factors will thus have a profound influence on its future development. They will also merit attention from a public policy standpoint, both to establish the social conditions that allow electronic commerce to reach its full economic potential and to ensure that its benefits are realised by society as a whole. (OECD 1999: 143).” And this significant shift in the way business is conducted is happening within the new historical context of globalization. Electronic commerce is enabled by it but it is at the same time enhancing globalization.

The process of social institutional adaptation of such scale and scope is not simple and straightforward. The emergence of new business practices and institutions involves a profound restructuring of myriad interests, and it is contingent on a variety of complex societal conditions. Historically, the formation of business institutions represents social innovations of immense significance, based on political, economic, and cultural resources and guided by trial and error in the pursuit of large-scale economic interests. In the process of promoting electronic commerce, key players should tap on existing societal resources and more importantly should contribute to the reservoir of societal resources. This paper aims to contribute to an appreciation of the importance of such process by reviewing the history of commerce and to suggest a possible profile of certain areas to anticipate based on the evolving present.

By way of ending this paper, I would like to cite Peter Drucker (1965). Reflecting on the first great technological revolution in human life seven thousand years ago, he says: “We, therefore, face a big task of identifying the areas in which social and political innovations are needed. We face a big task in developing the institutions for the new tasks, institutions adequate to the new needs and to the new capacities which

technological change is casting up. And, finally, we face the biggest task of them all, the task of insuring that the new institutions embody the values we believe in, aspire to the purpose we consider right, and serve human freedom, human dignity and human ends. (p. 128)”

References:

- Applegate, L M et al 1996
Electronic commerce: building blocks of new business opportunity
J. of Organizational Computing and electronic Commerce, **vol.6**, no. 1, p. 1- 10
- Barjis, J. & Chong, S. 2000
Agent-Based E-Commerce Based on the Semiotic Approach and the DEMO Transaction Concept,
Proc. of Int. ICSC Symposium on Multi-Agents and Mobile Agents in Virtual Organizations and E-Commerce December 11 - 13, 2000, Wollongong, Australia
- Bauer, P 1991
The development frontier: essays in applied economics
Cambridge, MA: Harvard University Press
- Bauer, P 2000
From subsistence to exchange and other essays
Princeton, NJ: Princeton University Press
- Bensaou, M 1999
Electronically-mediated partnerships: the use of CAD technologies in supplier relations
Proceedings of **20th** International Conference on Information Systems, **p.307-323**
- Bimie, A 1952
An economic history of Europe 1760-1939, **6th** edition
London: Methuen & Co
- Bodie, Z and **Merton**, R C 1998
Finance
London: Prentice-Hall
- Braudel, F 1985
Civilization and capitalism volume 2 - the wheels of commerce
London: **Fontana** Press
- Cairncross, F 2000
A survey of e-management
The Economist, November 11
- Castells, M 2000a

- The rise of the network society, revised edition
Oxford: Blackwell
- Castells, M 2000b
The end of millennium, revised edition
Oxford: Blackwell
- Choi, S Y et al 1997
The economics of electronic commerce
Indianapolis: Macmillan
- Kumar, K and Christiaanse, E 1999
From static supply chains to dynamic supply web: principles for radical re-design in the age of information
Proceedings of 20th International Conference on Information Systems, p.300-306
- Christopher, M 1998
Logistics and supply chain management, 2nd edition
London: Financial Times Pitman
- Classens, S, Glaessner, T and Klingebiel, D. 2000
Electronic finance: reshaping the financial landscape around the world
Presented at the joint conference of the World Bank, the *IMF* and *International Finance*
11 July 2000 Washington DC, available at
www.worldbank.org/research/interest/conf/upcoming/papersjuly11/papjuly11.htm.
- Clough, S B and Cole, C W 1968
Economic history of Europe, 3th edition
Boston: D C Heath and Company
- Department of Communications, Information Technology and Arts 1999
E-commerce beyond 2000
Canberra: Australian Government
- Drucker, P** 1965
Technology, management and society,
New York: Harper and Row
- Dunlop, C and Kling, R (eds) 1991
Computerization and controversy
New York: Academic Press
- Dunning, J H 1993
The globalization of business
London: Sage
- Duplessis, R S. 1997
Transitions to capitalism in early modern Europe
Cambridge: Cambridge University Press
- Eichengreen, B 1999

Toward a new international financial architecture: a practical post-Asia agenda
Washington, DC: Institute of International Economics

Eliashberg, J, G L. Lilien, and V R. Rao. 1997.

Minimizing Technological Oversights: A Marketing Research Perspective.

In Technological Innovation: Oversights and Foresights. Eds. R Garad, P
R Nayyar, and Z B Shapira. New York: Cambridge University Press, 2 14-230.

Epstein, S R. 2000

Freedom and growth the rise of states and markets in Europe, 1300-I 750
London: Routledge ; [etc.]

Fairbank, J K and Reischauer EO 1979

China: tradition and transformation

London: Allen & Unwin

Finer, S E 1997

The history of government, volumes 2 • 3

Oxford: Oxford University Press

Freeman, C 1987

Information technology and change in techno-economic paradigm

in Freeman, C and Soete L. (eds.) Technical change and full employment; Oxford: Blackwell

Friedman, B 1999

The future of monetary policy

International Finance Vol.2, no.3 p.321-338

Gattorna, J L and Walters, D W 1996

Managing the supply chain

London: **McMillan** Books

Giddens, A 1985

The nation-state and violence

Cambridge: Cambridge University Press

Golden Sachs 2000

The shocking effects of **B2B**

Global Economics Paper no.37

Grassby, R 1970

English merchants capitalism in the late seventeenth century

Past & Present, vol. 46, p.87-107

Hale, J 1993

The civilization of Europe in the Renaissance

London: Harper Collins

Hanson, W 2000

Principles of Internet marketing

Cincinnati: South-Western College Pub

- Hayek F.A. 1945
 “The use of knowledge in society,”
American Economic Review, vol. 35, no. 4, (Sept), 1945 p.519-530.
- Heaton**, H 1948
 Economic history of Europe
 New York: Harper & Brothers
- Kalakota R and Whinston, A B 1997
 Electronic commerce: a manager’s guide
 Reading, MA: Addison Wesley
- Kalakota R and Robinson, M 1999
 e-Business: **Roadmap** for success
 Reading, MA: Addison Wesley
- King, M. 1999
 Challenges for monetary policy: new and old
 Paper prepared for the Symposium on New Challenges for Monetary Policy
 Jackson Hole, Wyoming.
- Landes, D S. 1966
 The rise of capitalism
 New York: Macmillan
- Lawrence, E et al 1998
 Internet commerce
 New York: Wiley
- Lopez, R S 1976
 The commercial revolution of the middle ages, 950-1350
 Cambridge: Cambridge University Press
- Malone, T W and **Rockart**, J F 1991
 Computers, network and the corporation
 Scientific American, Sept 199 1
- Mangat, J S 1969
 A history of the Asians in East Africa, 1886-1 945
 Oxford: Clarendon Press
- March, J G 1994
 A primer on decision making process
 New York: Basic Books
- Micklethwait, J and Wooldridge, A 2000
 A future perfect
 London: Heinemann
- North, D 199 1

Institutions, institutional change and economic performance, 3rd reprint
Cambridge: Cambridge University Press

OECD 1999

The economic and social impact of electronic commerce – preliminary findings and research agenda

<http://www.oecd.org/dsti/sti/it/infosoc/>

OECD 2000a

E-commerce: impacts and policy challenges

Economics Department Working Papers no.252

OECD 2000b

A changing financial environment and the implications for monetary policy

Economics Department Working Papers no.243

Pan, S L, Hsieh, M H and Chen, H 2000

Managing knowledge in electronic commerce era: a case study of on-line learning centre

Proc. Of 4th Pacific Asia Conference on Information Systems 1-3 June Hong Kong

Parker, W N 1984

Europe, America, and the wider world essays on the economic history of western capitalism

Vol. 1: Europe and the world economy.

Cambridge : Cambridge University Press 1984

Peet, J. 2000

Shopping around the web – a survey of e-commerce

The Economist, 26 Feb 2000

Perez, C 1983

Structural change and assimilation of new technologies in the economic and social systems.

Futures, vol. 15, p.357-75

Porter, M 1980

Competitive strategy

New York: Free Press

Porter, M 1990

The competitive advantage of nations

New York: Free Press

Price, J 1989

What did merchants do? Reflections on British overseas trade 1600-1790

Journal of Economic History, vol.49, p.267-284

Roberts, J H 2000

Developing new rules for new markets

J of Academy of Marketing Science, vol28, no. 1, p.3 1-44

- Roberts, J M 1996
A history of Europe
Oxford: Helicon
- Rosenberg, N 1976
Perspectives on technology
Cambridge: Cambridge University Press
- Rosenberg, N 1994
Exploring the black box
Cambridge: Cambridge University Press
- Sahal, D 1981
Patterns of technological innovation
Reading, MA: Addison Wesley
- Shapiro, C. and Varian, H 1999
Information Rules: A Strategic Guide to the Network Economy
Boston: Harvard Business School Press
- Summer, William G (ed.) 1971
A history of banking in all the leading nations volume 1
New York: Kelley Publishers
- Turban, E., Lee, J., King, D. & Chung, H.M. 2000
Electronic Commerce: a managerial perspective
Prentice Hall, New Jersey
- U. S. Department of Commerce
Digital Economy 2000
<http://www.esa.doc.gov/de2k.htm>
- Wallis, J J and North, D C 1986
Measuring the transaction sector in the American economy, 1870-1970. In S L
Engerman and R E **Gallman (eds.)** Long-term factors in American economic growth.
Chicago: University of Chicago Press
- Wenninger, J 2000
The emerging role of banks in e-commerce
Current Issues in Economics and Finance, vol.6, no.3, p.1-6
- Williamson, O E 1975
Market and hierarchies
New York: The Free Press
- Woodall**, P. 2000
Survey - the new economy
The Economist 22 Sept
- World Bank 2000
The quality of growth

<http://www.worldbank.org/html/extdr/quality/>