ETLA
**ELINKEINOELÄMÄN TUTKIMUSLAITOS**
THE RESEARCH INSTITUTE OF THE FINNISH ECONOMY
Lönnrotinkatu 4 B 00120 Helsinki Finland Tel. 358-9-609 900
Telefax 358-9-601 753 World Wide Web: http://www.etla.fi/

# Keskusteluaiheita – Discussion papers

No. 772

Teemu Haukioja* – Jarmo Hahl*

## THE EMERGENCE OF THE NEW ECONOMY, AND ITS CHALLENGE TO FINANCIAL INTERMEDIATION AND BANKING: A SURVEY**

* Turku School of Economics and Business Administration

** Financial support from The OKOBANK Research Foundation is gratefully acknowledged. We are indebted to Paavo Okko, Mika Widgrén and Ari Hyytinen for their valuable comments.

ISSN 0781-6847 01.11.2001

**HAUKIOJA,** Teemu – **HAHL**, Jarmo, **THE EMERGENCE OF THE NEW ECONOMY, AND ITS CHALLENGE TO FINANCIAL INTERMEDIATION AND BANKING: A SURVEY.** Helsinki: ETLA, Elinkeinoelämän Tutkimuslaitos, The Research Institute of the Finnish Economy, 2001, 30 p. (Keskusteluaiheita, Discussion Papers, ISSN 0781-6847; No. 772).

**ABSTRACT:** Technological progress and knowledge-based innovations have more important role in economic growth and development than ever. This conjecture is often called the new economy, referring to economic growth that is strongly associated to the development of information and communication technology. In order to understand this ongoing process it is important to separate short and long term as well as micro- and macroeconomic aspects of the new economy.

Financial intermediation and banking are under constant structural change due to new technologies and deregulation. Despite that, the basic functions of banks do not change. However, in the changing environment banks have to manage the potential threat of disintermediation, i.e., structural change from indirect to direct finance. As an example of the new challenges, banks are forced to create an online strategy in order to survive the ever-increasing global competition.

**KEYWORDS**: new economy, globalization, information and communication technology, technological development, economic growth, financial intermediation, banking

**HAUKIOJA,** Teemu – **HAHL**, Jarmo, **Uusi talous ja sen haasteet rahoituksenvälitykselle ja pankkitoiminnalle: katsaus kirjallisuuteen.** Helsinki: ETLA, Elinkeinoelämän Tutkimuslaitos, The Research Institute of the Finnish Economy, 2001, 30 s. (Keskusteluaiheita, Discussion Papers, ISSN 0781-6847; No. 772).

**TIIVISTELMÄ:** Uusi talous viittaa informaatio- ja kommunikaatioteknologian kehitykseen vahvasti liittyvään taloudellisen kasvuun. Teknologisella kehityksellä ja inhimilliseen pääomaan perustuvilla innovaatioilla on tärkeämpi merkitys taloudellisessa kasvussa ja kehityksessä kuin koskaan aiemmin. Meneillään olevan kehityksen ymmärtämiseksi on tärkeää tehdä ero talouden lyhyen ja pitkän tähtäyksen, kuten myös mikro- ja makrotaloudellisten tekijöiden välillä.

Uuden teknologian ja sääntelyn purkamisen myötä rahoituksenvälitys ja pankkitoiminta ovat jatkuvassa rakennemuutoksessa. Siitä huolimatta pankkien perustehtävät eivät muutu. Muuttuvassa ympäristössä pankkien pitää kuitenkin ottaa huomioon toimialaliukumien yleistyminen ja siirtyminen epäsuorasta suoraan rahoitukseen. Yksi esimerkki uusista haasteista on se, että pankit ovat pakotettuja luomaan omat strategiansa suhteessa verkkopankkitoimintaan selviytyäkseen yhä kiristyvästä maailmanlaajuisesta kilpailusta.

**AVAINSANAT:** uusi talous, globalisaatio, informaatio ja kommunikaatioteknologia, teknologinen kehitys, taloudellinen kasvu, rahoituksenvälitys, pankkitoiminta

# Table of Contents

# 1 Introduction

*Far back in the mist of ancient time, in the great and glorious days of the former Galactic Empire, life was wild, rich and largely tax free.*

*Mighty starships plied their way between exotic suns, seeking adventure and reward amongst the furthest reaches of Galactic space. In those days spirits were brave, the stakes were high, men were real men, women were real women, and small furry creatures from Alpha Centauri were real small furry creatures from Alpha Centauri. And all dared to brave unknown terrors, to do mighty deeds, to boldly split infinitives that no man had split before – and thus was the Empire forged.*

*Many men of course became extremely rich, but this was perfectly natural and nothing to be ashamed of because no one was really poor – at least no one worth speaking of.*

- *Douglas Adams* (1952-2001)

The fashionable term 'new economy' refers to economic growth that is strongly associated to the development, innovations, and spread of applications of information and communication technology (ICT) in many industrial fields. Based on the experience in the USA many observers thought before recent downturn in stock exchanges that the laws of economic growth have changed fundamentally and permanently indicating continuous growth with high employment and low inflation without a fear of recession. The latest evidence from other OECD countries reveals that ICTs affect on growth performance, suggesting that ICT innovations are likely to have global effects.

The Internet is, as an open network, an important part of globalization. It has been argued that it has remarkably improved the productivity of knowledge-based investments. The Internet is also often said to make markets more competitive, and to affect trade in many ways. In electronic commerce, business-to-business commerce is expected to gain the most, but also retailing becomes more efficient. Markets become more transparent, liquidity improves and transaction costs are expected to fall. Therefore, the Internet is supposed to reduce costs markedly. For example, OECD (2000) estimates that by transferring bank transactions to the net the cost per transaction diminishes 90%. Evidently, finance is one of the most suitable applications of electronic commerce. Nowadays stockbroking is in a large extent online-based all over the world, but in other fields of finance the development has just begun. Scandinavian banks, especially the ones in Finland and Sweden, are pioneers of Internet based online banking with respect to both supply of services and number of active customers.

Even though the development in the ICT sector modifies the structures and institutions of the economy, changes the ways to organize economic activities, and creates new industries while the old ones exit, basic economic laws prevail. The purpose of this selective survey is to review nature and prospects of the new economy, and its implications to financial intermediation and banking. As an information-intensive and transaction-

intensive industry, it is logical that financial services should be affected by ICT developments.

The study proceeds as follows (Figure 1). In chapter 2 we discuss the claim that permanent changes have occurred in advanced economies in the 1990s. That is, technological progress and innovation have much more important role in economic growth and development than earlier. What are those trends and structural changes that give us a reason to suggest that something fundamentally new is going on, and if it appears to be true, how well are we able to understand these features by established economic theory? In chapter 3 we outline how financial intermediation is changing in the new economy, and how technological progress and internationalization change financial markets. Are financial markets developing toward market-based or bank-based finance, or something in between? In chapter 4 we examine how banking is affected by the pressures of the new economy, i.e., how globalization and new information and communication technology affect strategies and fields of activity in banking. Chapter 5 concludes.

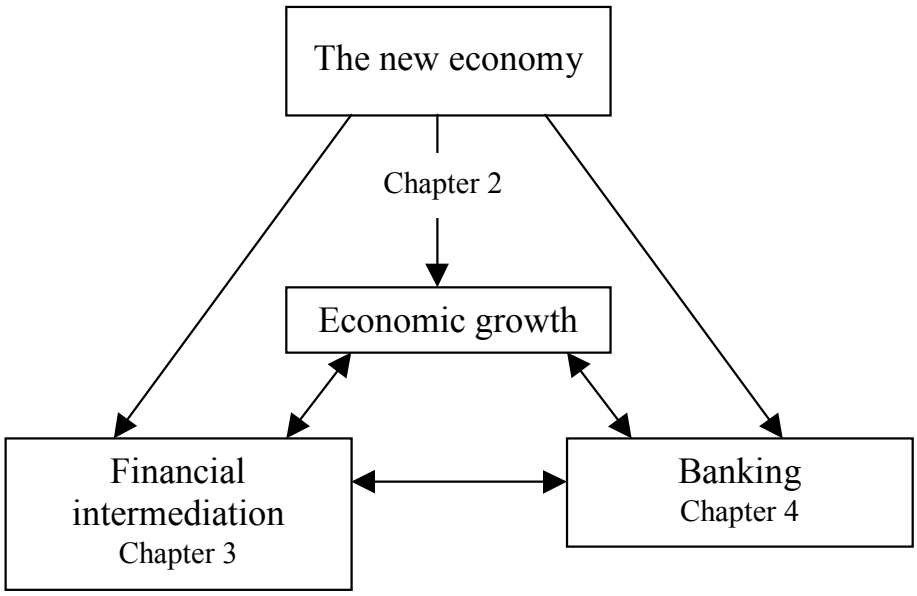


**Figure 1. The outline of the study**

# 2 Economics of the new economy

## 2.1 Short and long term features of the new economy

The new economy has been used to describe the recent evolution of the US economy, especially to argue that the economy has reached a higher level of sustained growth with better tolerance for outbreak of inflation. It is argued that the present restructuring of the US economy is due to high investment in ICT, and it is able to create ever higher productivity. It was even claimed, that stock markets have changed so that share prices could remain higher permanently. Although the origins of the new economy lie in the USA, the phenomenon is becoming global, even though the evidence for this is much weaker outside the USA (Jalava and Pohjola 2001, Pohjola 2001).

The term 'new economy' is unambiguous and not established yet (cf. Quah 2000, Nordhaus 2001a). However, three main characteristics emerge. Firstly, the new economy may imply higher trend growth. Secondly, the new economy may affect the business cycles and, according to most extreme views, even abolish them. Finally, the sources of growth are different than previously due to increasing returns to scale, network effects, and externalities (OECD 2000, 17). Some of the descriptions above include myths but also something real. In order to understand the nature of the new economy it is necessary to make a distinction between short and long term aspects.

Many current characterizations of the new economy involve both short and long term, as well as micro- and macroeconomic issues, and at its worst confuse with all of these dimensions. Traditionally, business cycle is a short term phenomenon, whereas productivity and growth are clearly long term measures. It is extremely important to separate these from each other. In essence, we see that long term issues are most relevant in analysis of the new economy.

To claim that the new economy has eliminated business cycles, is to say that the world, as we have known it, has changed so profoundly that the old laws of short and middle term macroeconomics does not hold anymore. In other words, macroeconomic fundamentals and theory that describe the cause-effect-relations between them should be abolished as useless, because they are not able to explain variation of the real GDP around its trend anymore. Of course, this is an extreme interpretation, but basically, it should be noted that the elimination of business cycles has something to do with the basic laws of macroeconomic fundamentals. What is it in the new economy and new technology that has changed macroeconomic dependencies so profoundly? The standard macroeconomic theory takes technology as given, so the state of technology has nothing to do with short run economic fluctuations[1]. The only possibility for dampening (or widening) of business cycles would be that structural parameters of the economy have changed. In fact, this is very likely whenever conditions and institutions of economies are changing. However, we cannot say without profound economic analysis, whether business cycles are going to be damped or widened. It is quite possible that because better ICTs are used for investment analyses, investors would make less errors in their decisions. This would eliminate some

[1] Still, technological progress may cause demand or supply shocks, or alter steepness of the relevant curves. However, the basic functional relations do not change.

overshooting. On the other hand, ICT also makes possible that herd behavior and speculative bubbles became much wider and severe, which would exacerbate business cycles. Clearly, there is not evidence enough to make any conclusive statements about the nature of business cycles in the new economy. Thus, macroeconomic theory cannot be rejected. On the contrary, even elementary macroeconomics is quite capable in explaining many of the features of the new economy.

In the other extreme, the most critical views question the existence of the new economy altogether. According to Gordon (2000) the current short term favorable business cycle is confused with long term productivity growth by advocates of the new economy (see also Vatter and Walker 2001). That is, growth accounting reveals that computers' role in US productivity gains are negligible. Discussion about the productivity gains is still going on and different results have been introduced. This is partly due to unreliable statistics and measurement problems in growth accounting (e.g. Brynjolfsson and Hitt 2000). Nordhaus (2001a) argues that none of the present measures of productivity growth are consistent with the theoretically correct measure. He develops an index based on welfare theory separating aggregate productivity growth into three factors: pure productivity effect, the effect of changing industries, and the effect of changing employment to aggregate productivity. These new calculations suggest that ICT has made a significant contribution to economy-wide productivity growth in the United States (Nordhaus 2001b, 2001c). Also Jorgenson (2001) finds that the importance of information technology has increased in the US economy.

Despite of ambiguous evidence many economists see that the new economy is in effect, i.e., there may be significant gains from the ICT and globalization. These considerations should be strictly based on long term aspects. Business cycles are here to stay, and they do not contribute to long term growth capacity. Thus, in what extent business cycles emerge is an irrelevant issue[2]. The long term productivity is the most essential one for considerations of the new economy.

Empirical findings of the so-called new growth theory, or endogenous growth theory, have for a some time revealed as the latest 'stylized fact' that structurally homogenous group of advanced (OECD) economies follow absolute convergence[3], even though absolute convergence does not apply for a broad set of world economies (including both developed and developing countries) (See e.g. Barro and Sala-i-Martin 1995, 26–30). However, this development may have been only temporal, since latest data suggest divergence among the OECD countries. This may indicate the emergence of the new economy (OECD 2000, 19). Even though these findings could be verified by empirical research, they would be perfectly compatible with the new growth theory, which claims that investment in research and development (R&D) and human capital may well conduct increasing returns on (human) capital. If this really is the case, one possible explanation is that earlier knowledge-based investment behavior of OECD countries did not differ much. OECD countries have followed different investment strategies in basic research, R&D, innovation, ICT, education, etc. only at recent times. According to the new growth theory, if investments in human capital differ, also growth rates will differ, and divergence in

---

[2] However, there exists a large macroeconomic literature concerning the so-called hysteresis phenomenon. That is, it may be the case that the full equilibrium depends on the previous history of business cycles. New insights to hysteresis research could be derived from the new economy considerations.

[3] Absolute convergence means that poor economies tend to growth faster in per capita terms than rich ones. This hypothesis follows from the neoclassical growth model.

economic growth may occur. All this may imply that sources of growth are fundamentally changing in the new economy.

It is not possible yet to make reliable conclusions on the effects of ICT on aggregate productivity. However, recent US studies suggest that ICT contributes to multifactor productivity (MFP) (OECD 2000, 57). Oliner and Sichel (2000) found in their study of the US economy that the use of hardware, software, and communication equipment contributed markedly to the productivity growth in the second half of the 1990s. The other contributing factor was the increased productivity in the production of computers. In fact, three channels of the impact of ICT on economic growth can be recognized. The first effect comes from the expansion of the ICT industry itself. The second impact comes from high investments in ICT technology in other industries. Lastly, MFP increase in every industrial sector because of the diffusion of various ICT applications which are able to reduce transaction costs, combine labor and capital more productively, and make it possible to get efficiency gains from organizational improvements (Visco 2000).

## 2.2 Market performance and competition

The Internet is an essential part of the utilization of ICTs. It is able to reduce information costs in large extent, which alleviate efficiency gains from many economic activities that are subject to transaction costs. A textbook presentation of demand and supply charts is quite applicable to highlight basics of the ICT economy (Figure 2).

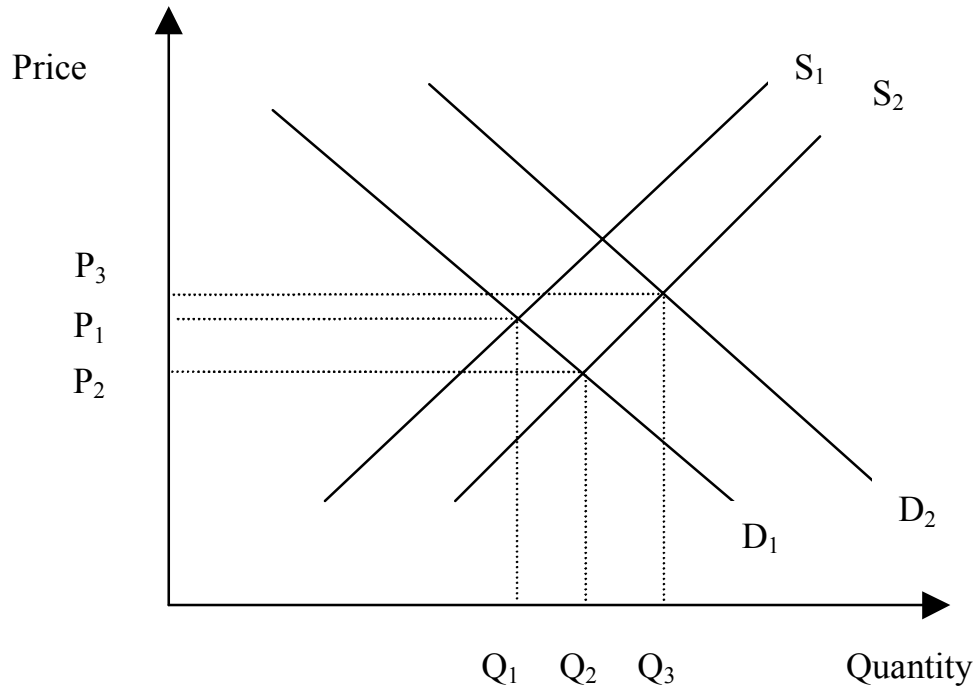


**Figure 2. Aggregate supply and demand effects of the ICT**

Assume that an economy is in equilibrium where demand ($D_1$) equals supply ($S_1$) with prices $P_1$ and output $Q_1$. New innovations push the supply curve outwards just like $S_2$ in the figure. In the new equilibrium output is larger and prices are lower than originally ($P_2$, $Q_2$). In the case of the Internet there are several sources for this expansion. The Internet reduces transaction costs making it easier for sellers and buyers to compare prices at the market. Consumers can process lot of price and quality information in short time at very low cost. Buying decisions can be made without visiting in the store or in the bank. As search costs are reduced, and prices and services become more transparent, increased competition leads to lower prices with increased supply.

The basic model of perfect competition is one of the fundamentals of economic reasoning. Even though it is, like any theory, highly abstract and unrealistic in some sense, it is an ideal reference for many favorable consequences that are hoped for from the well functioning markets. Consequently, it is seen that the Internet is a potential mean to convey markets near perfect competition. In the model of perfect competition transaction costs are zero, information is perfect, and entry and exit are free.

It seems that the Internet is quite able to fulfill these conditions for this ideal. In practice, however, virtual markets in the Internet are not perfect after all. Brynjolfsson and Smith (1999) found in their empirical study concerning books and CDs that the Internet retailers charge lower prices than conventional retailers do. Also lower menu costs allow the Internet retailers to make small price changes much more frequently. These findings suggest that the Internet may converge towards the ideal of perfect competition. However, Brynjolfsson and Smith (1999) also found that the dispersion in prices is higher in the Internet than in conventional markets. This is in contradiction to perfect competition. In fact, even in the Internet there prevails some features that make markets less than perfect, like asymmetric information, externalities, heterogeneous goods, differentiated products, brand names, and trust. After all, in real markets, even in virtual ones, price is only one dimension of goods.

Figure 2 suggests that the Internet may cause expansion in output and downturning in the price level. However, the new lower equilibrium price level is not the same as lower inflation. In essence, inflation is still a monetary phenomenon. The only reason why inflation could be affected by the new economy is because of permanent productivity growth that allows keeping excess demand of inputs down to zero. Even though ICT based innovations are able to increase potential output and supply in the new economy, it is also able to increase demand for new products and services so that demand curve shifts to the right (for example $D_2$ in the figure). Increased productivity means increased potential output; expected and actual income grows, which means increased demand for goods and services. Increased demand leads to a new equilibrium where the price level and output are at higher levels ($P_3$ and $Q_3$) [4]. At this point it is interesting to note Gordon's (2000) claim that the demand curve for computers has not shifted much or at all since 1963 in the USA. Gordon presents a figure in logarithmic terms with observations on real purchases of computers associated with price deflator, revealing the time-path that resembles the demand curve. In addition, Gordon assumes that the supply curve is horizontal. On the other hand, according to our view, this time path can also be explained to represent an equilibrium path of supply and demand in different years. This interpretation is consistent

[4] Again, this does not mean higher inlation; it is only the new higher price level where inflation may exist or not. The price level $P_3$ could, of course lie between prices $P_1$ and $P_2$, if the shift in the demand curve $D_2$ is small enough.

with the basic model in Figure 2. In fact, the estimation of the demand curve requires profound econometric analyses, and thus the true nature of the real demand curve is still controversial.

The Internet reduces barriers to entry because of an easy access to the marketplace. The other reason for the reduction of barriers to entry is that the optimal size of the firm is smaller. Even one-person-one-task -firms are much easier to implement than without World Wide Web; a peripheral firm or innovative entrepreneur may have an access to the global market. In Ronald Coase's (1937) theory of the firm the firm is seen as a nexus of treaties. The structure and size of the firm is in large extent determined by several contracts that mostly concern decisions about 'to make or to buy?' That is, the firm is a constellation of different functions like different production stages, marketing, accounting, maintaining, services etc. Each such function can be self-produced or bought from markets. The firm makes its decision to buy or make an input itself according to which way minimizes transaction costs. The Internet provides a global marketplace for all such functions so that relevant boundaries of the firms can be evaluated continuously. Thus, business-to-business electronic commerce leads to cost reductions in procurement costs, supply chain management costs, and inventory costs. All in all the new economy makes the whole economy more efficient eventually expanding the total output more than is possible ever in 'the old economy'.

When the Internet was introduced, many new Internet based firms were born challenging established firms to fierce competition. Many saw them as an alternative to established firms. Many incumbent firms took this challenge seriously, and consequently, the question arose 'who will survive?' The latest empirical evidence suggests that the business that is based only on the Internet may survive only in few cases. Many pure Internet firms have run out of business or their financial prospects are highly uncertain.

## 2.3 Growth and economic policy

The new economy changes structures of the old economy; many activities, firms and even industries decline, new firms and industries will emerge, unemployment will increase in obsolete occupations while demand for labor of new skills will grow. Thus, markets for goods and labor are changing drastically, which poses challenges to economic policy. Changes of economic structures and performance require a reconsideration of the role of government and policy principles, if the main objective of economic policy is to promote conditions for sustainable economic growth[5] (in per capita terms). Some policy sectors are of most importance for economic growth performance in the globalizing new economy. The key factors behind knowledge based growth are internationalization, liberalization and (optimal) deregulation, entrepreneurship and human capital, infrastructure, social order and cooperative arrangements, basic research and science in universities, R&D-activity, and diffusion of knowledge. Long run economic policy must be able to design correct incentives for economic agents for innovations which are an essential part of competitiveness and success. Industrial, competition, educational, and regional policies are

[5] Other relevant policy goals concerning equality, the environment, social security, etc. set restrictions and quidelines for economic growth, and they may describe the content of sustainable equilibrium growth.

the policy sectors that must be reconsidered. The new growth theory[6] is helpful in understanding the essential features of and relevant policy variables in the new economy.

The fundamental question of growth theory is 'why some nations are rich, and some others are poor?' The neoclassical growth theory (Solow model) leads to several conclusions, few of which are (Mankiw 1995):

1. Every economy has its own steady state that is independent of its initial capital per labor level. A country grows faster, the further it is from its steady state and correspondingly rate of growth is lower near steady state. As steady state is reached capital per labor ratio becomes constant.
2. The steady state level of income depends on savings rate and population growth.
3. Increased savings rate means more total income (per person) but there is a definite savings rate that maximizes consumption per person. Thus, in this sense we can save too little or too much.
4. Higher population growth means lower steady state level of income per person.
5. In the steady state income per capita can grow only at the rate of technological progress.

These results mean that similar economies have the same steady state level. The growth rate of a poorer country should be faster than in a rich country, and a poor country should eventually catch up in terms of per capita income. For practical policy purposes the growth model suggests that promoting savings, i.e. investments, and controlling population growth typically are the keys for achieving higher levels of income per person in an economy. Furthermore, even though the model takes technology as given, it suggests that technological progress increases income per person.

The new growth theory asks 'why rich nations get richer, and poor nations stay poor, although neoclassical theory suggests that poor nations should catch up?' The fundamental reason for capital not to outflow from rich countries to poor countries is that the marginal product of capital is not decreasing in rich countries after all. Thus, the rich countries are somehow able to escape the law of diminishing returns to capital. The other name for new growth theory is endogenous growth theory because, unlike neoclassical theory, it takes technological progress, not as given, but endogenous. In other words, technological progress is a policy variable. Even though two countries had the same steady state and initial conditions, it is possible that the other economy could still get higher growth rates and per capita income levels if it invests in human capital while the other economy does not. Investments in human capital are able to speed growth rate of technology leading to innovations and productivity growth.

Possible steady state paths are presented in Figure 3. At $t^*$ a positive technology shock occurs. In path I this shock creates a level effect, i.e., the economy shifts to a higher level of potential GDP. In the short run growth rate increases (e.g. $\gamma_1$ and $\gamma_2$ etc.), but in the long run it does not change. In path II in addition to the level effect there is a permanent growth effect, that is, the growth rates are higher than before also in the long run. Path III describes a business cycle: in the long run both the potential GDP level and growth rate remain the same, indicating that there is no new economy.

---

[6] See e.g. Aghion and Howitt (1992) and (1998), Cannon (2000), Jones (1998), Lucas (1988), Romer (1986), (1990) and (1994).

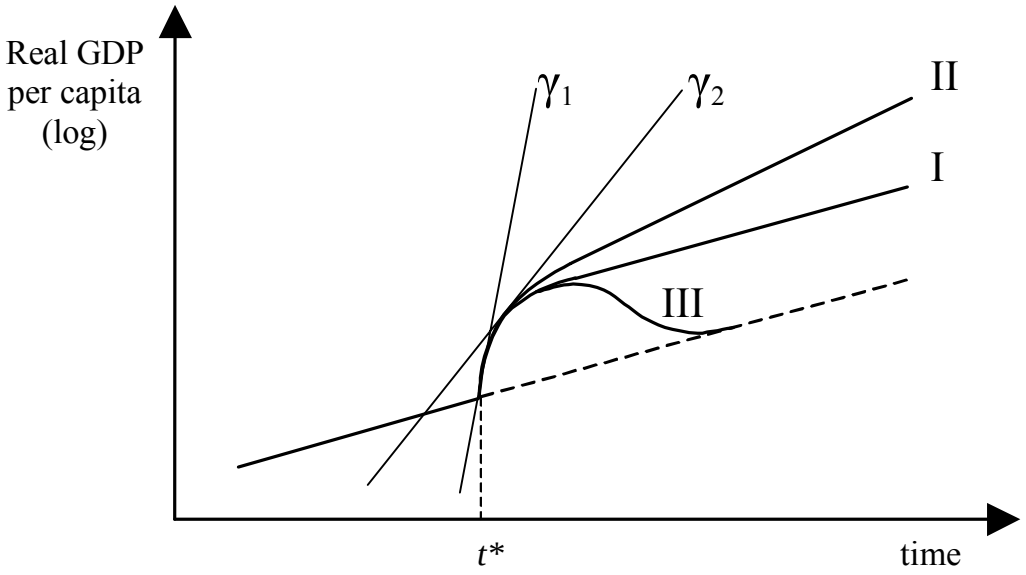


**Figure 3. Steady state growth and level effects in the new economy**

The new growth theory emphasizes research and development activity as an important source of economic growth. Also intensity and openness of trade have similar effects (Baldwin and Forslid 1996, Baldwin et al. 1998). The essential factors behind the new economy are high-technology firms. These firms have some special capabilities, which help them to survive in global competition. Typically these firms are innovative and their research and development activities are relatively intensive. Progress in ICT has intensified globalization and networking, and promoted further economic efficiency and productivity. However, firms' investments in R&D are not enough for economic progress to occur. From the societal point of view firms invest too little in research, because they cannot capture the full benefits to society. Also, firms are motivated to protect their inventions and findings in order to keep their competitive advantage. Successful R&D require high quality human capital, that is, schooling, education, and people who can understand scientific results. New applications and innovations are based on basic scientific knowledge. Science, however, is leaded by contributive researchers and scientists who are guided by their intuition and greed for new knowledge; knowledge is created only for the sake of knowledge. Often the practical usefulness for their scientific findings is unforeseeable, and may be found only in the unknown future. Firms are not interested enough to provide such basic knowledge. Knowledge is a public good, since once an invention has been made public, everyone who can understand it is free to use it. The use of knowledge does not reduce others' possibilities to do the same. Public sector is needed to promote universities and basic research in order to expand the knowledge base in society to appropriate level so that firms are prepared to do practical applications and innovations.

## 2.4 Globalization and network economy

The new economy is tightly attached to the worldwide trends of networking, globalization, diffusion of knowledge, investment in human capital, liberalization and deregulation. Driving forces in globalization are the spread and growth of multinational firms,

accelerating and widening capital movements, increasing international trade, and international concerns for employment, human rights, and the environment. Rapid progress in market liberalization, information technology and logistics has made this development possible and influential. Internationalized firms are in crucial role in this process. They are responding even faster to continuously changing demands of consumers. Firms have to be more flexible in their production of services and goods. Processes of globalization can be seen in financial systems, foreign direct investments, employment, technology, spread of liberal thoughts, and international trade (Väyrynen 1997, 40–69).

In industrialized democracies deregulation and internationalization of financial markets began in 1960s. The impetus to the process had several reasons: the development of the eurodollar market, the expansion of multinational corporations increased demand for international financial services, in the 1970s macroeconomic instability troubled the industrialized economies, and the Bretton Woods exchange-rate regime collapsed (Harris and Pigott 1997). Free movements of international finance have considerably increased, and public control has diminished respectively over the last two decades. Financial globalization turns up as blurred boundaries between banking, securities, and insurance industries, domestic market reforms, and integration of financial markets across national borders. Governments have ceded their decision-making roles of the financial industry in large extent to markets, which are now determining interest rates, credit allocations, and financial instruments and services mainly without government involvement. This means, among other things, easier access to international sources of finance.

By foreign direct investment (FDI) corporations establish a long term presence in other economies and create global networks. The structure, forms, and flows of the world trade have been shaped in large extent by FDI. Baldwin and Martin (1999) remark that FDI flows, which exploded in the mid 1980s, are an essential component of globalization. The globalization of business has meant that international networks and strategic alliances have been created in large extent and this trend is ever expanding. In Europe FDIs between the EU and the CEE countries create trade, and vice versa, that is, a circular causality between FDI and trade can be found (Widgrén 2000).

The spread of knowledge-based technology and business means that human capital has become more important factor of production. High technology activities are able to generate more value to the industries involved, and to create well-paying jobs. The other side of the story is that in industrialized countries demand for low-skilled workers may decline, which increases unemployment of this kind and widens a gap between wage rates at least temporarily. (Okko and Haukioja 2000)

Rapid progress and innovations in logistics and ICT together with precipitous decreasing costs has made the present wave of globalization so strong and sweeping. Both the methods and volume of communications and information processing capacities have increased extensively through all organizations and sectors of economic activities. Geographical distance as a barrier to economic activity has became less significant in many respects. Networking of business and coordinated flexible production systems have become easier to implement and manage.

According to critique against conventional wisdom, integration divides the world economy to winners and losers, and the rich core is said to become richer on the expense of the periphery. However, it has been recently argued that globalization may benefit the periphery at the expense of the center. Krugman and Venables (1995) show that the economies must achieve a certain level of integration, before the core benefits. At some

point these advantages are eroded, and then also the peripheries will progress. These developments are driven by the interaction between scale economies and transportation costs or other transaction costs. Thus the basic question how globalization affects the location of production and gains from trade remains open, because several development paths are possible. (See e.g. Baldwin 1998, Baldwin and Forslid 1997)

According to liberal ideology there exist some profound ideas and institutions which are assumed to have universal validity. Especially, freedom of the individual, his economic, political, and human rights should be fully respected. Spread of liberal thoughts can be seen both cause and effect of globalization. On the one hand, globalization makes the exchange of different thoughts and ideas between people all over the world possible. This individualizes people, since they are forced to think and compare different phenomena, cultures and life styles, and to form understanding of their own on these matters. On the other hand, liberalism is good for globalization, because it enhances peoples freedom to act, expands and deepens market relations, promotes competition, and limits the powers of (despotic) governments to intervene or regulate markets for their own political purposes. Intensified worldwide deregulation can be seen as a logical consequence of the this development. (Okko and Haukioja 2000)

Among the industrialized countries exports have been growing more quickly than their GDP, and consequently, the economic interdependence between economies has increased. Also the composition of world trade and production has changed. The share of raw materials has reduced, the manufactured exports have grown, and services have increased considerably. Among industrialized countries intra-industry trade on manufactured goods is dominating (Baldwin and Martin 1999). Multinational firms are more important actors in international trade. It is estimated that 30–40 per cent of the world trade consists of intra-firm trade within international companies. The expansion of sales by foreign subsidiaries has created the network economy across national borders.

It has been argued that the extent which countries trade, affects the knowledge spillovers and diffusion across borders leading possibly to increased steady state growth rate, and in countries with similar technologies these rates become the same. Further, trade liberalization increases the steady state levels of all countries concerned (Ben-David and Loewy 1995, Ben-David and Loewy 1996). Also, empirical findings support the view that total factor productivity converges among countries that trade extensively with one another (Ben-David and Rahman 1996).

Globalization is not a new phenomenon. That is, the current internationalization process is not unprecedented. Baldwin and Martin (1999) have thoroughly surveyed the waves of globalization. They analyze two waves of globalization in 19th and 20th centuries. There are many common features in the both waves, but the current wave has some quite new aspects. One notable feature in recent globalization wave is the dramatic reduction in communication cost, sometimes called as 'death of distance.' It is also interesting to notice that there is some kind of de-industrialization going on in the OECD countries. With the exception of some newly industrializing countries, the share of labor in industry has fallen significantly since 1980s. Maybe the most important feature of the present wave is the trade in ideas. (Baldwin and Martin 1999) Optimistic views suggest that increase in human capital and knowledge-based services, goods, production methods, logistic systems, together with deepening and widening network economy may give almost unlimited potential to the present wave of globalization to launch economic long run growth path to quite a new level. Knowledge-based flexible production system can be seen as a key success factor of competitiveness in foreseeable future.

As the globalization of international economy gradually started off in the 1960s and 1970s, and a series of qualitative changes in technology, markets, and labor practices occurred, Fordist production philosophy began to loose its competitiveness. Fordism did not disappear, and probably it never will, but where innovation activity is high, product life cycles are short, and complexity of technology is present, the ultra-Fordist regime looses its applicability.

Global trends have intensified global competition in national and regional markets. New Computer Aided Design and Computer Aided Manufacturing (CAD/CAM) methods, intranet, extranet, and the Internet have become available. These advancements made the adoption of flexible manufacturing systems possible, since management of product design, inventories, scheduling, finance, customizing, etc. have become more efficient, flexible, and accurate. Also the value of human capital is recognized. Individual technical and social skills are appreciated, and they are organized into various forms in order to get most out of it. Labor is not only seen as an input in production process, but also as an active and participating developer, organizer, innovator, and manufacturer. (Holly 1996)

Collaboration between firms has taken new modes. Firms of different sizes have formed networks or virtual firms that are established in order to perform some specific tasks, e.g., to innovate some special economic design. By combining their capabilities firms may enhance markets, innovate new and better products and services, share risks of finance or research and development activities, and mitigate unnecessary destructive competition among them. One feature in the present globalization is the importance of clusters as a source of competitive advantage (Porter 1990). Reasons for clusters or industrial districts originate from network advantages. Many products compete globally and national markets have become too small for the product. In order to stay in business new innovations must be made continuously, which means escalating research and development costs. High investment in R&D activity often is too risky for many individual firms, but firms in networked clusters may share these risks in manageable ways. Individual firms are no longer able to master the whole production process or technology associated to the product. Thus, greater specialization of tasks is needed, and firms in virtual network may concentrate into their core competencies.

It is evaluated that the introduction of the Internet applications has potentially increased the productivity and utilization expectations of ICT (OECD 2000, 56–62). Open worldwide network is accessible with reasonable low costs. Because of reasonable ICT prices the diffusion of the Internet has been fast[7]. The number of Internet based firms has exploded, but also many of them have not succeeded. It seems that the Internet is of the greatest importance for the firms with established business. The MFP gains are realized from agriculture and construction to manufacturing, but also in the service sector, where customization and other value creating qualitative improvements are able to yield efficiency gains. The Internet provides an easy access marketplace for electronic commerce and business. OECD (2000, 61) lists the potential gains from e-commerce applications: (1) The reduction of the costs of executing a sale, (2) customer support and after-sales services, (3) purchase orders and procurement, (4) the less need for a large inventory, and (5) a greater ability to forecast consumer demand. The possibilities to exploit Internet applications in the full extent are still coming up, and many countries, firms, and consumers are still absent from the Internet. The pace of diffusion, however, is fast and the importance of ICT and the Internet is increasing.

---

[7] See Kiiski and Pohjola (2001) for the cross-country analysis of the diffusion of the Internet.

# 3 Financial intermediation in the new economy

## 3.1 Changes in financial markets

The introduction of the new economy changes the environment of financial intermediation. Eklund and Borg (2000) discuss some of the effects of the new economy to financial markets. At first, low inflation should mean low nominal interest rates and eventually also lower real interest rate through lower and more stabile inflation and thus lower risk premium. On the other hand, higher productivity and increased investments should rise the real interest rate. Development in ICTs may also lead to faster depreciation of capital, which again increases investments. Thus the net effect on interest rates is eventually ambiguous.

Secondly, the way the yield curve will behave is possibly changing in the new economy. According to 'old rules', the yield curve became steeper during economic booms due to expectations of higher inflation, i.e., the gap between short- and long-term interest rates widened. In recession the yield curve would became flatter. In the extreme case the curve would slope down as a result of central bank's actions to balance the economy for example by defending exchange rate or fighting inflation. These changes in yield curve may be opposite in the new economy, assuming sounder macro policy and stricter fiscal rules. In the extreme case only the short end of the yield curve will change while the long end is fixed through credible monetary policy. In general, short interest rates show more cyclical behavior compared to long ones. As a result, the inverse yield curve would indicate boom, rather than recession, as in the 'old economy'. Similarly, positive yield curve with low short-term interest rates would indicate recession.

Furthermore, more tight fiscal and budget policy together with possible selling of state-owned enterprises lowers public dept and thus decreases the supply of government bonds. Thus, the interest rate of government bonds will decrease. In the private sector the tendency is vice-versa; there will be more emissions because of the demand for finance will rise, especially in the new industries. Also, the proportion of high-risk bonds may increase. These changes will result as higher interest rates for corporate bonds, widening the spread between them and government bonds. Consequently, corporate bonds are likely to be more important indicators of economic activity, whereas the role of government bonds will decrease.

Finally, in the stock market low inflation and interest rates lower required yield and risk premiums, allowing higher price per earnings (P/E) –ratios than earlier. Stock markets are stimulated because of real economic growth, but valuation tend to be more uncertain. This applies especially for high tech companies and results volatility and risk of speculative bubbles. (Eklund and Borg 2000)

## 3.2 Financial intermediation in transition

Globalization and ICT development have dramatically influenced the development of modern finance. These developments enable service providers to create and price new instruments and help investors to allocate their capital more effectively. As a result, financial markets have exploded.

Many of the recent trends in financial services have been driven by trade liberalization, globalization of commodity and financial markets, and technological and structural changes, especially deregulation. Reduction of trade barriers and transportation costs and ICT development have accelerated global economic integration. Increased trade in goods and services across borders has increased the demand for financial services, and cross-border capital flows have been intense. Both commercial bank claims and private capital flows have multiplied during the last two decades. While capital flows have increased, also cross-border entry has increased, i.e., financial institutions have obtained physical presence in other countries by acquiring local financial institutions or by opening branches or subsidiaries. (Claessens et al. 2000)

Technology is changing the ways in which financial services are produced and delivered, and it is fundamentally changing the worldwide structure of the financial services industry. The Internet improves the management of information (collecting, storage, processing and dissemination), and potentially makes financial markets as markets for information more effective (Wilhelm 2001). The Internet and mobile communication technologies have significant effect on financial services as they provide not just new distribution channel, but a completely different way of providing services. Creating and tailoring products is cheaper and stratifying the customer base is easier, leading to personalization of information, services, and pricing, and to more effective identification monitoring of credit risks. Some of the previous human-capital intensive functions can be mechanized, changing the division between these routine functions and functions demanding genuine professional knowledge and experience (Wilhelm 2001). Simultaneously, the Internet allows new providers to compete more intensively for customers, as it requires no physical presence.

The development of ICT has created a global market in all financial products from money to stocks. Public and private networks have created a network economy in which the laws of increasing returns operate – the more people connected to the network, the more valuable it becomes. The speed and size of today's global markets have created a different kind of markets from markets in the past. The network economy has been called a complex adaptive system with millions of agents operating according to their own agendas producing a result that cannot be predicted. These kind of nonlinear and complex systems tend to resemble biological rather than mechanical systems. Because the characteristics of these systems are unknown, the possibility of systemic failure cannot be ruled out (Wriston 1998).

The development of financial markets can slow down, if certain environmental or functional factors take an unsatisfactory direction. Global recession could stop the development, but only temporarily. Governments may fear for their authority and deliberately suppress financial and technological innovations by increased regulation. Also privacy and security issues, i.e., the abuse of online data, and the problem of asymmetric information should be solved. Otherwise governments may be encouraged to take regulative actions and, most importantly, lack of trust towards financial service providers may cause inefficiencies in the market. There is also a systemic risk built inside new financial technologies, as they try to repress considerable uncertainties. If they are successful, economies will be more stable but if they fail, consequences can be dramatic. The fear of widespread failure is one reason why regulators might constrain cross-border financial activity.

## 3.3 Competition and strategies of financial intermediaries

The technology on which the financial service industry depends has become much cheaper. Also communication costs have fallen and the number of Internet connections increase.

The Internet eliminates many processing steps and labor costs and avoids or reduces fixed costs of branches and related maintenance. According to Goldman Sachs and Boston Consulting Group's estimate, cost of a typical transaction through a branch or phone call is 50-fold compared to the one through the Internet (Claessens et al. 2000). The Internet and other technological advances increase competition in financial services. Economies of scope increase as cross selling of products becomes easier. For traditional financial service providers new technologies, especially the Internet, represent also an increasing threat of disintermediation. The possibility that financial markets would develop more towards direct finance reshapes the competition. Emmons and Greenbaum (1998) analyze this restructuring process and argue that due to better quality of information and decline in information costs, the total volume of financial intermediation will increase. Asset transformers will lose some of their clients to brokers, because brokers can manage transparent and standard risks more profitably. However, the volume of asset-transforming intermediaries may still increase, as they will serve more clients with non-standard and opaque risks.

The changing industry structure affects the competitive scene of financial intermediation. New types of service providers are entering the market, including nonfinancial entities, which offer payment and other services through their distribution and customer relationships networks. Claessens et al. (2000) divide the providers of electronic finance to online banks, online lenders, aggregators[8], online brokers, financial portals, e-enablers[9] and e-payments. Evidently, the distinctions between financial service providers will become less important. Sunk costs, that were important entry barriers in the past, are becoming less important, and barriers of entry are being created through first-mover advantages. In response to this new entry traditional providers are likely to join in the electronic delivery. Vertical integration in financial service companies creates synergies by combining brand names, distribution networks and customer relationships. These changes reshape the competitive business models in financial services.

Network externalities are mainly positive, i.e., the value of the network rises with the number of participants using it. The influence of network externalities on competition depends whether the networks are open or closed, private or common, and on the time horizon (cf. Claessens et al. 2000, Shapiro and Varian 1999). Generally, declining economies of scale, standardization, and declining costs mean increasing competition. This is the case when the networks are open or common. However, network externalities may hinder competition between closed or private networks. The provider who is able to create a standard will gain a large share of the market, and possibly the market dominance.

The wave of mergers in financial sector will continue, but to avoid difficulties of cross-border mergers it is also possible to expand by adopting Internet-based strategy. However, as in electronic commerce in general, to be successful, online finance needs offline presence, making the pure Internet-based expansion strategy only a passing phase. At the same time traditional service providers are establishing online services. The role of open finance, i.e., supermarket-style of service, where clients have access to products of many service providers, will also probably strengthen. For traditional service providers open finance is an alternative to disintermediation of even higher degree. Many established financial service providers, although reluctant to changes, are in fact well prepared to operate in the changing competition climate. Brand recognition and reputation may be

---

[8] Portals where consumers can compare products of different financial service providers.

[9] Companies supporting financial service providers by offering integrated e-finance system solutions.

even more important in online than offline finance, established providers already have a wide customer base and they have invested heavily on the new technology.

The development of ICT and its widespread use erodes the distinctions between different parts of finance. The margins in financial intermediation will narrow leading to the emergence of new business models. In many financial services (e.g. banking, stockbroking and 'bulk' insurances) the appeal of the Internet lies in relative cheapness of high-volume transactions, which results from the low marginal costs of electronic processing. Despite the relative cheapness, the increased competition will keep margins narrow in an extent that relatively less profits can be made from those transactions. Simultaneously, and for the same reason, deposits will pay near-market rates, narrowing the margins also in that part of business. Customers can observe the markets online and choose the best alternatives for their needs more easily. Consequently, capital markets are moving towards a model of perfect competition. Risk sharing will be at a new level and those who are best able and willing to bear risk also do so. At best, the development could deliver a new level of efficiency and stability in the global economy. Diversification that is made possible by the Internet plays a key role in this. (Wriston 1998)

Anand and Galetovic (1999) point out that irrespective whether the financial system is bank or market-based, all financial intermediation markets must solve the problem how to gather information and use it to trade. Controlling the flow of all gathered information is difficult, and the problem of nonexcludability of information, i.e., the problem that information gets revealed to rivals, arises. However, they show that despite the non-excludable information, institutional mechanisms, such as cooperation, ensure that intermediaries can appropriate the gains from information gathering.

## 3.4 Growth and financial intermediation

Applications of the new growth theory are expanding to various fields of economics. Also analysis of financial development has benefited from the new approach. Many features of the financial development in the new economy may be understood and analyzed by the help of endogenous growth theory and consequent empirical research. The role of financial intermediation in economic growth has been a controversial issue for a long time. One can find two extreme views about this: in one extreme, it is claimed that finance as such, does not contribute to economic growth. Rather, financial development is only a response to changing demand of financial services of other sectors in a growing economy. In the other extreme, financial conditions and innovations contribute to economic growth in large extent. For instance, Robinson and Lucas support the former view, and the latter is consistent with Schumpeter's creative destruction. The innovative and developed financial system is able to reduce intermediation costs, to screen good projects from bad ones, and to finance entrepreneurs and risky high-technology projects successfully. Consequently, the rate of economic growth will be higher than otherwise.

Emergence of the new growth theory has launched both theoretical and empirical research to reconsider the role of financial development in growth process. Theoretical modeling captures many links by the help of which the financial system may contribute long term growth. For example, the banking system can ease capital accumulation by transforming the structure and contents of savings. Thus, economic growth may follow even if the savings rate does not change. Financial intermediaries may reduce the need for self-financing, and the occurrence of temporal downturn of business does not require liquidation of capital. These properties may be of great importance for equilibrium growth

(Bencivenga and Smith 1991). One important feature of the financial system is its ability to gather and process information so that resource allocation and risk management may become more efficient. This gives higher returns on investment enabling also those innovations that need lot of resources. This expansion speeds financial development further (Greenwood and Jovanovic 1990). In the new economy division of labor and specialization are deepening. This requires that financial system is capable to finance high-technology projects that need lot of specific resources. If barriers to implement high-tech innovations are reduced, productivity increases leading to economic growth (Saint-Paul 1992).

Some empirical findings imply that indicators of the stage of the development of the financial system can give information about prospects of growth, capital accumulation, and technological progress (King and Levine 1993). Wurgler (2000) shows that countries with developed financial sectors increase investment more in their growing industries and decrease investment more in their declining industries than those with less developed financial sectors. International cross section studies reveal that the size and efficiency of financial sector affect growth performance. After the World War II those countries with developed financial intermediation systems have systematically reached higher growth figures (King and Levine 1993). Beck et al. (2000b) found an economically large and statistically significant relation between financial intermediary development and both real per capita GDP growth and total factor productivity growth. However, in the long run links between financial intermediary development and both physical capital growth and private savings rates are ambiguous. Also reforms of financial systems give evidence for positive growth impact (Holzmann 1997), but direction of cause-effect relations is not waterproof; time series analyses suggest that at least in some economies financial development results from economic growth (Arestis and Demetriades 1997). To conclude, it is likely that financial markets do not just react for demand of other markets, but are also innovative in developing new services and products that can save their customers' transaction costs leading to increased economic activity and growth in the long run (Freixas and Rochet 1997, 185–186).[10]

There are, however, some concerns that many potentially successful small businesses may not be able to obtain sufficient external finance, thus disturbing efficient allocation of resources and economic growth. Credit crunches (in Asia and US) or the lack of well-developed venture capital markets (in continental Europe) increase this concern. Bank lending would typically not be available to small business until they achieve a level of production where their balance sheets reflect substantial tangible business assets that might be pledged as collateral, such as accounts receivable, inventory, and equipment. In general, the capital structure decision between equity and debt is different for small firms than for large in part because small businesses are usually more informationally opaque. (Berger and Udell 1998) In financing new economy firms, stock markets are an important component, but not the most common. A distinguishing characteristic of financing those firms is its evolving pattern of control by different investors. The degree of risk taking and the diversity of investment are affected by the way in which competition and stability in financial systems are traded off and the form in which investor protection is provided, i.e., the nature of regulation. In Europe, where high levels of investor protection and low levels of diversity prevail, some changes may be needed to stimulate new economy firms. (Mayer 2001)

---

[10] For more discussion on the development of financial system and economic growth, see Beck and Levine (2000), Demirguc-Kunt and Maksimovic (2000), Beck et al. (2000a), Beck and Levine (2001), Demirguc-Kunt and Levine (1999), Levine et al. (1999).

# 4 Banking in the new economy

Some economists have argued that, even without globalization, traditional banks that provide both deposits and loans will fade away, and more specialized financial institutions will take their place (see Freixas and Rochet 1997, 1). This gives a reason to ask: 'Has this argument become more relevant because of deregulation and globalization?' or 'How new technology, like the Internet and online finance, affects banking, especially competition and the market structure?'

Rajan (1998) argues, that historically the origin of banks lies in providing liquidity and safety in the environment of uncertain property rights, scanty information and anticompetitive regulations. However, technology, availability of information and property rights have developed so profoundly that at least some of the historical reasons for banks have eroded. Despite of this, banks still have a role in providing liquidity. In addition, banks are important in innovating new forms of finance.[11] Thus banks have a specific task in offering incomplete and renegotiable contracts, which are important especially for the opaque projects (Rajan 1998), and also in offering important complementary functions to the economy (Bossone 2000). Because bank money has always been virtual, technological development and the emergence of the Internet does not threat the existence of banks as such. Electronic trade has its own requirements for financing transactions, and banking has competitive advantage also in virtual markets, because any modern trade system needs liquidity, payment services, and credit supply. Therefore, traditional banking functions should be replicated in the cyberspace (Bossone 2000).

## 4.1 Technological transformation

Traditionally banking has not been classified as technology-intensive industry. In Finland[12], the development of total factor productivity and labor productivity has been weaker in banking than in other service industries and manufacturing until late 1970s. In 1970s productivity took off, and in the 1980s it grew faster than in manufacturing. The productivity growth can at least to some extent be explained by deregulation and technological development, namely the introduction of Automatic Teller Machines (ATM) and debit cards. Although technological development probably reduces average costs of banking, the effect can be weaker than expected for two reasons. Firstly, if innovations are related to basic infrastructure, they rarely replace branch networks. That was the case with ATMs, which became a new network itself with its own fixed costs. Secondly, innovations may affect customers' behavior in a way that, for example, the expected gains from diminished average cost per transaction are cancelled by the increase in the number of transactions (Kauko 2000). Banks are now facing similar changes in their environment on a global perspective.

Theoretically, there are scale economies in banking (Freixas and Rochet 1997), but the empirical evidence is somewhat controversial. A common conclusion is that there are clear

---

[11] Rajan (1998) presents Merton's argument, that financial institutions (banks) may provide liquidity in a more innovative way. For example commodity swaps and credit derivatives were first developed by institutions and later adopted by the markets.

[12] Finland is a good example of rapid technological and structural change that has taken place in Europe.

economies of scale among small and medium-sized banks but not among large ones. However, among European and Japanese banks scale economies seem to exist even among very large banks. Thus, the impact of technological progress on scale economies is also a subject of controversy. In the new economy, discussion on the economies of scope between traditional banking and capital market activities is relevant. An important question is whether direct finance will gain market share in the expense of traditional banking, while technological development and globalization makes direct finance easier.

In their study of small business lending in the United States Petersen and Rajan (2000) find that physical distance between lenders and small firms is increasing. Their analysis suggests that this may be explained with improvements in banking productivity, which is due to cost reductions and efficiency improvements in information gathering, storage, processing, analyzing, and communication. Because of drastic developments in ICT applications small business lending has increased significantly in the USA. This means that even riskier small business projects may get such finance that was not possible earlier. Even though the distance between lenders and banks has increased, one may still observe that informationally opaque firms stay closest to lenders.

While ATMs were a marked technological development in the 1980s, the Internet is that today. The most important effects of the Internet in banking are related to the basic nature of the Internet; (marginal) transaction costs are close to zero, physical distance becomes meaningless, searching and switching costs are reduced, and the need for branch network diminishes (Andersen et al. 2000). Thus, the worldwide trend has been the rapid increase of Internet-based banking service, Scandinavian countries and especially Finland being in the front of the development. In Finland over a one third's share of all banks' customers have Internet banking agreements and half of them use the Internet as their main channel for executing banking transactions. It is noteworthy, that established banks have maintained their positions despite the emergence of Internet services. In fact, there are no pure online banks in Finland, which is contrary to the situation in the USA and UK. However, also in those countries traditional banks have maintained their positions to a large extent. (Andersen et al. 2000)

Furst et al. (2000) evaluated Internet banking comprehensively in order to increase knowledge about its impact on banking industry. They used a questionnaire that covered the Internet banking offerings of every US bank. Among other things, they find that large banks are likely to provide a larger variety of online services than small banks do, banks that provide Internet banking are more profitable than banks without such services, customers are likely to have accounts in institutions that are able to provide Internet banking, and Internet banks are likely to rely on other than interest income or core deposits in their business.

## 4.2 System transformation

Direct finance has been connected to the innovation phase of production, and indirect finance mainly to the established investment phase. In the United States, direct finance is seen as the driving force in the emergence of the innovation based new economy. Also in Europe corporate bond market has emerged and whole new markets have become internationally relevant, e.g., Neue Markt in Germany (Danthine et al. 2000).

There exist much research on the subject which economies perform better: those that are mostly based on banking or those that rely on stock markets in financing economic activities? These studies often compare the United States, Great Britain, Germany, and Japan where the former two present stock markets and the latter present bank based systems. Conclusions from these studies are controversial. One advantage of bank based systems is lending relationships, which give a solid base for business to develop and to make long term plans without fear of running short of finance. On the other hand, it is argued that often innovative firms will not get finance enough in this system, because banks prefer established business and firms that are cooperative and ready to submit to banks' will in business. There exists also a potential threat that banks' lending to its customers is too slack and economic resources are wasted in unprofitable business.

In the US traditional banking business of accepting deposits and making loans has declined in recent years. There has been a switch from directly held assets to pension funds and mutual funds. Banks have, however, maintained their relative GDP share by innovating and switching from their traditional business to fee-producing activities. The trends of development in different financial systems are quite similar, but the operating models are distinct (e.g. US or UK vs. Japan or Germany). This can be explained by differences in competition from financial markets. When the (significant) competition is absent, banks are able to eliminate risk by intertemporal smoothing, i.e., building up reserves of short term liquid assets when returns are high and run them down when they are low. Thus the development of banking in the US can be seen as a response to the competition from markets and the decline of intertemporal smoothing. (Allen and Santomero 2001)

In the changing financial environment banks have to consider the threat of disinter-mediation. Schmidt et al. (1999) carried out an empirical study of disintermediation and the role of banks in Europe. The paper investigated whether there can be found a common trend of disintermediation, securitization, and a declining role of banks in France, Germany, and the United Kingdom. The hypothesis that there is a general tendency towards disintermediation does not get support. The second finding is that there is a general tendency toward securitization, and thirdly, the importance of banks in the financial system is not declining. These three countries reveal somewhat different kinds of developments, and their financial systems do not seem to converge[13].

It is often believed that stock markets based systems are more innovative in providing new forms of finance.[14] This means that markets are able to provide finance to those projects that are most profitable and where the future of new business looks promising. Black and Gilson (1998) emphasize that stock market-centered systems are superior in providing venture capital. On the other hand, finance may be myopic which means that potential firms may fade away because of temporal crisis (von Thadden 1992 and 1995). Direct finance and venture capital activity has been the driving force of the emergence of the new economy in the USA. In more bank oriented financial systems banks' role in financing innovations and risky projects could be more active (Hellman 1997, Rajan and Zingales 1999).

Arestis et al. (2001) argue that although stock markets probably promote economic growth, the effects of banking are more powerful in that respect, and that the effects of

---

[13] For a survey of structural changes in the EU banking business, see ECB 2000.
[14] However, cf. footnote 11.

stock markets may have been exaggerated by studies that utilize cross-country growth regressions.[15]

We may observe that both kinds of systems are able to finance economic development and progress. Even though market based finance has increased in economies that are traditionally bank oriented the role of banks will remain still important in financial intermediation. Banks are able to reduce transaction costs, uncertainty, manage risks, and specialize in specific project financing. It seems that economies still need both kinds of financing, because they can serve different needs of different kinds of business (Freixas & Rochet 1997, 39–40, 183–185; Levine 1997).

## 4.3 Competition and strategies in banking

The changes in the operating environment affect directly to the competition banks encounter, and thus shape the strategies of successful banking. On of the most significant change is the relaxation of regulatory actions by the public sector. An example with resemblances to global development, is the expanding cross-border financial activity in the single economic space of Europe. Banking sector in continental Europe may now be about to enter a period of sharply increased competition. Public authorities have to consider contestability and the likelihood that excessive profits in domestic banking might quickly lead to competition from banks abroad, while maintenance of financial stability is a of central concern. (White 1998)

Also the question of risk taking and its incentives in the new environment are relevant from the regulators point of view while the competition increases and the banks' charter value decreases. Herring and Vankudre (1987) remind that the willingness of banks to take large gambles at the cost of lower total expected return is greater, the lower the ratio of total economic net worth to assets. In the past, the perverse incentives created by the excessive deposit insurance system were countervailed by potential loss of valuable charter that induced banks to limit their own risk taking. In a new more competitive environment, after the demolition of various anticompetitive restrictions which endowed banks with market power and made banking charters valuable, the deposit insurance system should be evaluated continuously to reduce the rewards it provides for excessive risk taking, and on the other hand, to strengthen the stability of banking system (cf. Keeley 1990).

Regulative changes are important also in respect of entry to the market. In their study, Besanko and Thakor (1992) found that a relaxation of entry barriers into banking improves the welfare of borrowers and savers in the expense of bank stockholders. Equilibrium loan interest rates fall and deposit interest rates rise as banking becomes more competitive. However, the relaxation of regulative entry barriers does not necessarily mean increase in entry to the market. Dell'Ariccia et al. (1999) argue, that asymmetric information can per se form a barrier to entry into banking market and it arises out of the nature of competition. A bank entering the market will receive disproportionately large share of bad borrowers, because established banks are probably able to distinguish between good and bad risks.

---

[15] See also Cetorelli and Gambera (2001) who get very interesting results concerning the effects of banking market structure on the total economy, different industrial sectors, younger firms, and the pace of technological progress.

Thus, informational asymmetry can make entry extremely difficult, even in multi-period examination.

The structure of financial industry forces entrants to make investment in information, leading to the conclusion that steady-state equilibrium is characterized with finite number of competing firms, even in the absence of exogenous fixed costs. Thus, asymmetric information represents an important determinant of the market structure of the banking industry. Other technological, informational and institutional factors contribute to reduce the number of competitors in loan markets, and to make banking industry not contestable. Thus, if significant economic barriers to entry exist, the removal of legal barriers will not necessarily increase competition (Dell'Ariccia 1998). Dell'Ariccia et al. (1999) present two strong implications. At first, if established banks have been able to gather pervasive information about their customers, new entry will be more difficult. Secondly, new entry will be difficult in those segments of the markets where asymmetric information is more important. In systems, where banks are able to create close links to their customers and are thus able to solve their monitoring and screening more efficiently, barriers to entry are higher and there are less competition. A trade-off between efficiency and competition emerges (cf. universal bank systems vs. market based systems). Thus, different degrees of competition may prevail in different segments of the market, even within the same regulatory environment. According to Dell'Ariccia (1998) information sharing as a solution to asymmetric information problems would have a threefold effect. Firstly, competition for creditworthy customers would increase. Secondly, competition for new borrowers would decrease, and finally, informational barriers to entry would fall, leading to more competitive banking industry.

Whether the threat of new entrants is relevant or not, the competition from established financial market operators have already shaped the strategies of banks. Structural changes, especially a shift by companies to direct capital-raising in the debt and equity markets, force banks to start their own capital market business. According to Danthine et al. (2000), in EMU economies of scope between investment and commercial banks provide an organizational advantage to universal banks. They anticipate that there will be only few universal banks in Europe competing with US banks globally. However, Mester (1992) argues that there are diseconomies of scope between traditional (originating and monitoring loans) and nontraditional (loan selling and buying) banking activities. In their study Boot and Thakor (1997) found that the bank's optimal response to increased competition is to expand traditional activities relative to its nontraditional capital market activities. This implies that the motivation of banks' capital market business is purely to maintain or gain market share.

As an example of one of the many aspects banks have to consider while aiming to successful banking in the new economy is the strategy concerning virtual banking. The development in financial market force established banks to adopt an Internet strategy. There are several reasons for that: Continuously spreading Internet banking, arising new competition from pure online operators, competition with current offline competitors and shareholders demands. Five basic strategies can be distinguished:[16] 1) pure Internet banking, keeping offline and online operations completely separate, 2) online hybrid, extending existing brands to the web, 3) online alliances, teaming up with, e.g., tele-communications company, Internet-service provider or portal, 4) 'white labeling', where

[16] The Economist, May 20th 2000. The virtual threat. A survey of online finance.

banks are silent partners, e.g., by providing back-office services to enable another firm to run a bank, and 5) offline banking. The development already seen has been especially to the direction of online hybrids and alliances, although examples from all categories exist. In the future the role of so called aggregators, i.e., companies helping customers to compare more easily the properties of different banking services, thus reducing searching costs, is likely to increase (Andersen et al. 2000). Open finance, where service providers no longer sell only their own products, but offer the best available, is also one possible Internet strategy. This has been said to apply especially to personal finance, and some large banks share that view. Aggregation, i.e., taking customers' all financial needs into account, and subsequent mass customization will be more important and with the new technology much easier.

# 5 Conclusion

The purpose of the study is to conduct a selective survey on the nature and characteristics of the new economy, and to consider its effects to financial markets and banking. With economics it is possible to explain and understand many of the phenomena of the new economy. In fact, the concepts new economy, networking, globalization etc. are different sides of the same phenomenon. To our view, it is important to separate short and long term, as well as micro and macro aspects of the new economy. According to new growth theory investment in human capital is increasingly important in economic development. To improve the competitiveness of an economy governments should ensure favorable conditions for entrepreneurship and innovations, and basic research, education and R&D should be recognized as essential factors in the long term growth.

In this environment financial service industry is facing changes; fragmentation, dis-intermediation, and cross-branch and cross-industry fusions have significant effects on the structure, conduct and performance of the industry. Thus, pressures towards public policy are increasing. Deregulation and globally opening markets set new challenges to public supervision to ensure the stability and efficiency of the financial system. In the USA, direct finance and venture capital activity has had an important role in the new economy. It has been suggested, that also in the Continental Europe, where the financial system is more bank oriented, banks could be more active in financing innovations and risky projects.

Although technological development reshapes also the banking industry, the basic functions of banks do not change. Online banking is ever increasing form of banking activity, and banks are forced to create their own strategies in respect to it. In globalizing markets the positive demand effect of online banking will probably outweigh the negative effects of increasing competition, i.e., universal online banking will propagate. Thus, banks have to maintain their reputation by concentrating on relationship banking; online payment system, aggregation, mass customization and more accurate consulting are new means to serve customers enabled by the new ICTs.

In further research of online banking demand effects should be taken more carefully into account. Thus, theoretical analyses should emphasize the importance of online payment system, reputation of the service provider, and quality of services.

# References


Adams, Douglas (1979) The hitch hiker's guide to the galaxy. Pan Books. London.

Aghion, Philippe - Howitt, Peter (1992) A model of growth through creative destruction. Econometrica 60 (2), 323–351.

Aghion, Philippe - Howitt, Peter (1998) Endogenous growth theory. The MIT Press. Cambridge.

Allen, Franklin - Santomero, Anthony M. (2001) What do financial intermediaries do? Journal of Banking and Finance 25, 271–294

Anand, Bharat N. - Galetovic, Alexander (1999) Information, nonexcludability, and financial market structure. Journal of Business 73 (3), 357–402.

Andersen, Atso - Hyytinen, Ari - Snellman, Jussi (2000) Recent developments in the Finnish banking sector. Bank of Finland Discussion Papers 15/2000. Bank of Finland. Helsinki.

Arestis, Philip - Demetriades, Panicos (1997) Financial development and economic growth: assessing the evidence. The Economic Journal 107 (May), 787–799.

Arestis, Philip - Demetriades, Panicos - Luintel, Kul B. (2001) Financial development and economic growth: The role of stock markets. Journal of Money, Credit and Banking. 33 (1), 16–41.

Baldwin, Richard E. (1998) Agglomeration and endogenous capital. CEPR Discussion Papers 1845. Centre for Economic Policy Research. London.

Baldwin, Richard E. - Forslid, Rikard (1996) Trade liberalization and endogenous growth: A $q$-theory approach. CEPR Discussion Papers 1397. Centre for Economic Policy Research. London.

Baldwin, Richard E. - Forslid, Rikard (1997) The core-periphery model and endogenous growth. CEPR Discussion Papers 1749. Centre for Economic Policy Research. London.

Baldwin, Richard E. - Martin, Philippe (1999) Two waves of globalisation: Superficial similarities, fundamental differences. NBER Working Paper Series 6904. National Bureau of Economic Research. Cambridge.

Baldwin, Richard E. - Martin, Philippe - Ottaviano, Gianmarco I.P. (1998) Global income divergence, trade and industrialization: The geography of growth take-offs. CEPR Discussion Papers 1803. Centre for Economic Policy Research. London.

Barro, Robert J. - Sala-i-Martin, Xavier (1995) Economic growth. McGraw-Hill. New York.

Beck, Thorsten - Demirguc-Kunt, Asli - Levine, Ross - Maksimovic, Vojislav (2000a) Financial structure and economic development: Firm, industry, and country evidence. Working Papers 2423. World Bank. <http://www.worldbank.org/research/interest/wrkpapers.htm>

Beck, Thorsten - Levine, Ross (2000) New firm formation and industry growth: Does having a market- or bank-based system matter. Working Papers 2383. World Bank. <http:// www.worldbank.org/ research/interest/wrkpapers.htm>

Beck, Thorsten - Levine, Ross (2001) Stock markets, banks, and growth: Correlation or causality. Working Papers 2670. World Bank. <http://www.worldbank.org/research/interest/ wrkpapers.htm>

Beck, Thorsten - Levine, Ross - Loayza, Norman (2000b) Finance and the sources of growth. Journal of Financial Economics 58, 261–300.

Bencivenga, Valerie R. - Smith, Bruce D. (1991) Financial intermediation and endogenous growth. Review of Economic Studies 58, 195–209.

Ben-David, Dan - Loewy, Michael B. (1995) Free trade and long-run growth. CEPR Discussion Papers 1183. Centre for Economic Policy Research. London.

Ben-David, Dan - Loewy, Michael B. (1996) Knowledge dissemination, capital accumulation, trade and endogenous growth. CEPR Discussion Papers 1335. Centre for Economic Policy Research. London.

Ben-David, Dan - Rahman, A.K.M. Atiqur (1996) Technological convergence and international trade. CEPR Discussion Papers 1359. Centre for Economic Policy Research. London.

Berger, Allen N. - Udell, Gregory F. (1998) The economics of small business finance: The roles of private equity and debt markets in the financial growth cycle. Journal of Banking & Finance 22, 613–673.

Besanko, David - Thakor, Anjan V. (1992) Banking deregulation: Allocational consequences of relaxing entry barriers. Journal of Banking and Finance 16, 909–932.

Black, Bernard S. - Gilson, Ronald J. (1998) Venture capital and the structure of capital markets: banks versus stock markets. Journal of Financial Economics 47, 243–277.

Boot, Arnoud W. A. - Thakor, Anjan V. (1997) Can relationship banking survive competition? CEPR Discussion Papers 1592. Centre for Economic Policy Research. London.

Bossone, Biagio (2000) What makes banks special? A study on banking, finance, and economic development. Working Papers 2408. World Bank. <http://www.worldbank.org/research/ interest/wrkpapers.htm>

Brynjolfsson, Erik - Hitt, Lorin M. (2000) Beyond computation: Information technology, organizational transformation and business performance. Journal of Economic Perspectives 14 (4 Fall), 23–48.

Brynjolfsson, Erik - Smith, Michael D. (1999) Frictionless commerce? A comparison of Internet and conventional retailers. <http://ecommerce.mit.edu /papers/friction>

Cannon, Edmund (2000) Human capital: level versus growth effects. Oxford Economic Papers 52, 670–676.

Cetorelli, Nicola - Gambera, Michele (2001) Banking market structure, financial dependence and growth: International evidence from industry data. The Journal of Finance LVI (2), 617–648.

Claessens, Stijn - Glaessner, Thomas - Klingebiel, Daniela (2000) Electronic finance: reshaping the financial landscape around the world. <http://www.worldbank.org/research/interest/ confs/upcoming/ papersjuly11/ papjuly11.htm>

Coase, Ronald H. (1937) The nature of the firm. Economica 4, 386-405.

Danthine, Jean-Pierre - Giavazzi, Francesco - von Thadden, Ernst-Ludwig (2000) European financial markets after EMU: A first assessment. CEPR Discussion Papers 2413. Centre for Economic Policy Research. London.

Dell'Ariccia, Giovanni (1998) Asymmetric information and the market structure of the banking industry. IMF Working Paper WP/98/92. International Monetary Fund.

Dell'Ariccia, Giovanni - Friedman, Ezra - Marquez, Robert (1999) Adverse selection as a barrier to entry in the banking industry. RAND Journal of Economics 30 (3 Autumn), 515–534.

Demirguc-Kunt, Asli - Levine, Ross (1999) Bank-based and market-based financial systems: Cross-country comparisons. Working Papers 2143. World Bank. <http://www.worldbank.org/ research/interest/ wrkpapers.htm>

Demirguc-Kunt, Asli - Maksimovic, Vojislav (2000) Funding growth in bank-based financial systems: Evidence from firm level data. Working Papers 2432. World Bank. <http:// www.worldbank.org research/interest/wrkpapers.htm>

ECB (2000) EU banks' income structure. April 2000. European Central Bank. Frankfurt am Main.

Eklund, Klas - Borg, Anders E. (2000) Ny ekonomi - nya finansmarknader (in Swedish with English abstract). Ekonomisk Debatt 28 (6), 529–535.

Emmons, William R. - Greenbaum, Stuart I. (1998) Twin information revolutions and the future of financial intermediation. In: Amihud, Yakov - Miller, Geoffrey (eds.) Bank mergers & acquisitions. Kluwer. Boston.

Freixas, Xavier - Rochet, Jean-Charles (1997) Microeconomics of banking. The MIT Press. Cambridge.

Furst, Karen - Lang, William W. - Nolle, Daniel E. (2000) Who offers Internet banking? Quarterly Journal 19 (2), 27–46.

Gordon, Robert J. (2000) Does the "New Economy" measure up to the great inventions of the past? Journal of Economic Perspectives 14 (4 Fall), 49–74.

Greenwood, Jeremy - Jovanovic, Boyan (1990) Financial development, growth, and the distribution of income. Journal of Political Economy 98 (5), 1076–1107.

Harris, Stephen L. - Pigott, Charles A. (1997) A changed landscape for financial services. The OECD Observer (206), 28–31.

Hellman, Thomas (1997) Venture capital: A challenge for commercial banks. Journal of Private Equity, Fall 1997. <http://faculty-gsb.stanford.edu/hellmann/pdfs/banks%20in%20vc.pdf>

Herring, Richard J. - Vankudre, Prashant (1987) Growth opportunities and risk-taking by financial intermediaries. The Journal of Finance XLII (3 July), 583–599.

Holly, Brian P. (1996) Restructuring the production system. In: Daniels, P.W. - Lever, W.F. (eds.) The global economy in transition. Longman. Dorchester. 24-39.

Holzmann, Robert (1997) Pension reform, financial market development, and economic growth: preliminary evidence from Chile. IMF Staff Papers 44 (2), 149–178.

Jalava, Jukka - Pohjola, Matti (2001) Economic growth in the new economy. Evidence from advanced economies. WIDER Discussion Paper No. 2001/5. World Institute for Development Economics Research. Helsinki.

Jones, Charles I. (1998) Introduction to economic growth. W.W. Norton & Company. New York.

Jorgenson, Dale W. (2001) Information technology and the U.S. economy. The American Economic Review (March) 91 (1), 1–32.

Kauko, Karlo (2000) The microeconomics of innovation: Oligopoly theoretic analysis with applications to banking and patenting. Publications of the Helsinki School of Economics and Business Administration. Series A. Doctoral Dissertations 166. Helsinki School of Economics and Business Administration. Helsinki.

Keeley, Michael C. (1990) Deposit insurance, risk, and market power in banking. The American Economic Review 80 (5 December), 1183–1200.

Kiiski, Sampsa - Pohjola, Matti (2001) Cross-country diffusion of the Internet. WIDER Discussion Paper No. 2001/11. World Institute for Development Economics Research. Helsinki.

King, Robert G. - Levine, Ross (1993) Finance and growth: Schumpeter might be right. The Quarterly Journal of Economics (August), 717–737.

Krugman, Paul - Venables, Anthony J. (1995) Globalization and the inequality of nations. The Quarterly Journal of Economics CX (4), 857–880.

Levine, Ross (1997) Financial development and economic growth: Views and agenda. Journal of Economic Literature XXXV (June), 688–726.

Levine, Ross - Loyaza, Norman - Beck, Thorsten (1999) Financial intermediation and growth: Causality and causes. Working Papers 2059. World Bank. <http://www.worldbank.org/ research/interest/ wrkpapers.htm>

Lucas, Robert E. Jr. (1988) On the mechanics of economic development. Journal of Monetary Economics 22, 3–42.

Mankiw, Gregory N. (1995) The growth of nations. Brookings Papers on Economic Activity (1), 275–326.

Mayer, Colin (2001) Financing the new economy. Financial institutions and corporate covernance. WIDER Discussion Paper No. 2001/4. World Institute for Development Economics Research. Helsinki.

Mester, Loretta J. (1992) Traditional and nontraditional banking: An information-theoretic approach. Journal of Banking and Finance 16, 545–566.

Nordhaus, William D. (2001a) Alternative methods for measuring productivity growth. NBER Working Paper 8095. National Bureau of Economic Research. Cambridge. <http:// www.nber.org/papers/ w8095>

Nordhaus, William D. (2001b) New data and output concepts for understanding productivity trends. NBER Working Paper 8097. National Bureau of Economic Research. Cambridge. <http://www.nber.org/papers/w8097>

Nordhaus, William D. (2001c) Productivity growth and the New Economy. NBER Working Paper 8096. National Bureau of Economic Research. Cambridge. <http://www.nber.org/papers/w8096>

OECD (2000) A new economy? The changing role of innovation and information technology in growth. OECD. Paris.

Okko, Paavo - Haukioja, Teemu (2000) Globalization and Governance Structures: Contractual Theory of the Firm Approach. The Ninth International Conference on Management of Technology, IAMOT 2000, February 21-25, Miami, Florida, USA. CD-ROM.

Oliner, Stephen D. - Sichel, Daniel E. (2000) The resurgence of growth in the late 1990s: Is information technology the story? Journal of Economic Perspectives 14 (4 Fall), 3–22.

Petersen, Mitchell A. - Rajan, Raghuram G. (2000) Does distance still matter? The information revolution in small business lending. NBER Working Paper 7685. National Bureau of Economic Research. Cambridge. <http://www.nber.org/papers/w7685>

Pohjola, Matti (2001) Information technology and economic growth: Introduction and conclusion. In: Pohjola, Matti (ed.) Information Technology, Productivity and Economic Growth: International Evidence and Implications for Economic Growth. WIDER Studies in Development Economics. Oxford University Press. Oxford.

Porter, M. E. (1990) The competitive advantage of nations. The Free Press. New York.

Quah, Danny (2000) The weightless New Economy. Paper presented at an EVA Seminar on September 8th, 2000. EVA-kirje 1/2000. Helsinki.

Rajan, Raghuram G. (1998) The past and future of commercial banking. Viewed through an incomplete contract lens. Journal of Money, Credit and Banking. 30 (3, part 2), 524–550.

Rajan, Raghuram G. - Zingales, Luigi (1999) Financial system, industrial structure, and growth. <http://gsbwww.uchicago.edu/fac/raghuram.rajan/research/finsys.pdf>

Romer, Paul M. (1986) Increasing returns and long-run growth. Journal of Political Economy 94 (October), 1002–1037.

Romer, Paul M. (1990) Endogenous technical change. Journal of Political Economy 98 (October), S71–S102.

Romer, Paul M. (1994) The origins of endogenous growth. Journal of Economic Perspectives 8 (1), 3–22.

Saint-Paul, Gilles (1992) Technological choice, financial markets and economic development. European Economic Review 36, 763–781.

Shapiro, Carl - Varian, Hal R. (1999) Information rules. A strategic guide to the network economy. Harvard Business School Press. Boston.

Schmidt, Reinhard H. - Hackethal, Andreas - Tyrell, Marcel (1999) Disintermediation and the role of banks in Europe: An international comparison. Journal of Financial Intermediation 8, 36–67.

Vatter, Harold G. - Walker, John F. (2001) Did the 1990s inaugurate a New Economy. Challenge 44 (1 January-February), 90–116.

Visco, Ignazio (2000) The new economy: fact or fiction? OECD Observer No. 221/222, 6–10.

von Thadden, Ernst-Ludwig (1992) The commitment of finance, dublicated monitoring and the investment horizon. WWZ-Discussion Paper. Universität Basel. Revised: December 1994.

von Thadden, Ernst-Ludwig (1995) Long-term contracts, short-term investment and monitoring. Review of Economic Studies 62, 557–575.

Väyrynen, Raimo (1997) Global transformation: economics, politics, and culture. Report no. 161. Sitra. Helsinki.

White, William R. (1998) The coming transformation of continental European banking. BIS Working Papers No. 54. Bank for International Settlements. <http://www.bis.org/publ/work54.pdf>

Widgrén, Mika (2000) Comparative advantage, intra-industry trade and location in the northern dimension. In: Alho, Kari E.O. (ed.) Economics of the northern dimension. ETLA, The Research Institute of the Finnish Economy, Series B 166. Taloustieto Oy. Helsinki.

Wilhelm, William J, Jr. (2001) The Internet and financial market structure. Financial Economic Papers. Working Paper Series 2001-FE-07. Oxford Financial Research Centre. <http://www.finance.ox.ac.uk /Papers/FinancialEconomics/2001fe07.pdf>

Wriston, Walter B. (1998) Dumb networks and smart capital. Cato Journal 17 (3), 333–344.

Wurgler, Jeffrey (2000) Financial markets and the allocation of capital. Journal of Financial economics 58, 187–214.

**E L I N K E I N O E L Ä M Ä N  T U T K I M U S L A I T O S  (ETLA)**
THE RESEARCH INSTITUTE OF THE FINNISH ECONOMY
LÖNNROTINKATU 4 B, FIN-00120 HELSINKI

Puh./Tel. (09) 609 900 Telefax (09) 601753
Int. 358-9-609 900 Int. 358-9-601 753
http://www.etla.fi

**KESKUSTELUAIHEITA** - DISCUSSION PAPERS ISSN 0781-6847

No 741 JUKKA LASSILA – TARMO VALKONEN, Pension Prefunding, Ageing, and Demographic Uncertainty. 01.12.2000. 21 p.

No 742 PENTTI SYDÄNMAANLAKKA, The New Challenges, Roles and Competencies of Human Resource Management. 01.12.2000. 6 p.

No 743 EVA M. MEYERSSON-MILGROM – TROND PETERSEN – RITA ASPLUND, Pay, Risk, and Productivity. The Case of Finland, 1980-1996. 15.12.2000. 26 p.

No 744 MATTI VIRÉN, Fiscal Policy, Automatic Stabilisers and Policy Coordination in EMU. 21.12.2000. 30 p.

No 745 JAAKKO KIANDER – MATTI VIRÉN, Measuring Labour Market Flexibility in the OECD Countries. 21.12.2000. 15 p.

No 746 HANNU HERNESNIEMI – PEKKA LINDROOS, Socio-economic Impact of European Single Market on Lithuanian Companies. Methodology Manual. 27.12.2000. 73 p.

No 747 PEKKA ILMAKUNNAS – MIKA MALIRANTA, The Turnover of Jobs and Workers in a Deep Recession: Evidence from the Finnish Business Sector. 08.01.2001. 20 p.

No 748 ARI HYYTINEN, Loan Market Equilibrium with Difference of Opinion and Imperfect Competition. 18.01.2001. 41 p.

No 749 ARI HYYTINEN, Information Production, Banking Competition and The Market Structure of The Banking Industry. 18.01.2001. 43 p.

No 750 PASI HUOVINEN – HANNU PIEKKOLA, Unemployment and Early Retirements of the Aged Workers in Finland. 07.02.2001. 40 p.

No 751 ERKKI KOSKELA – MARKKU OLLIKAINEN – MIKKO PUHAKKA, Renewable Resources in an Overlapping Generations Economy without Capital. 12.02.2001. 26 p.

No 752 KARI ALHO – COLIN HAZLEY– HANNU HERNESNIEMI – MIKA WIDGRÉN, EU:n itälaajenemisen vaikutukset Suomen tuotantorakenteeseen. 22.02.2001. 34 s.

No 753 RITA ASPLUND, Mobility and Earnings. An analysis of Finnish manufacturing and services. 08.03.2001. 48 p.

No 754 OLAVI RANTALA, Toimialojen ja avainklustereiden tuotannon ja työllisyyden pitkän ajan kehitys. 15.03.2001. 52 s.

No 755 JUHA HONKATUKIA – MARKKU OLLIKAINEN, Towards Efficient Pollution Control in the Baltic Sea. An anatomy of current failure with suggestions. 29.03.2001. 26 p.

No 756 GREGORY S. AMACHER – ERKKI KOSKELA – MARKKU OLLIKAINEN, Optimal Forest Policies in an Overlapping Generations Economy with Timber and Money Bequests. 17.04.2001. 24 p.

No 757 MIKA MALIRANTA, Productivity Growth and Micro-level Restructuring. Finnish experiences during the turbulent decades. 20.04.2001. 67 p.

No 758 ERKKI KOSKELA – RONNIE SCHÖB, Optimal Factor Income Taxation in the Presence of Unemployment. 23.04.2001. 16 p.

No 759 JUHA FORSSTRÖM – JUHA HONKATUKIA, Suomen ilmastostrategian kokonaistaloudelliset kustannukset. 24.04.2001. 28 s.

No 760 PETRI BÖCKERMAN, Tietokone- ja informaatioteknologian vaikutukset työmarkkinoihin. 12.06.2001. 16 s.

No 761 COLIN HAZLEY, EU Enlargement and Finnish Forest Industry: A Special Emphasis on the Packaging Industry. 22.06.2001. 110 p.

No 762 KARI E.O. ALHO, Catching up and Unemployment in the EU. 05.07.2001. 10 p.

No 763 PIA WALDEN – PEKKA YLÄ-ANTTILA, Skenaariot ja kansantalous 2026. Kansainvälisten skenaarioiden tulevaisuuskuvia Suomen näkökulmasta. 30.07.2001. 21 s.

No 764 OLAVI RANTALA, EU:n itälaajenemisen vaikutus Suomen väestökehitykseen. 03.09.2001. 15 s.

No 765 JUKKA LASSILA – TARMO VALKONEN, Ageing, Demographic Risks, and Pension Reform. 03.09.2001. 34 p.

No 766 PERTTI HAAPARANTA – HANNU PIEKKOLA, Taxation and Entrepreneurship. 26.09.2001. 39 p.

No 767 REIJO MANKINEN – JYRKI ALI-YRKKÖ – PEKKA YLÄ-ANTTILA, Palveluiden vienti ja kansainvälistyminen. 25.09.2001. 42 s.

No 768 ARI HYYTINEN – OTTO TOIVANEN, Asymmetric Information and the Market Structure of the Venture Capital Industry. 03.10.2001. 13 p.

No 769 MINNA SEPPÄLÄ, Vihreä veroreformi: Laskelmia Suomen aineistolla. 05.10.2001. 28 s.

No 770 PEKKA MANNONEN, Advancing Information Technology and Financial Intermediation. 10.10.2001. 20 p.

No 771 MIKA WIDGRÉN – STEFAN NAPEL, The Power of a Spatially Inferior Player. 23.10.2001. 20 p.

No 772 TEEMU HAUKIOJA – JARMO HAHL, The Emergence of the New Economy, and its Challenge to Financial Intermediation and Banking: A Survey. 01.11.2001. 30 p.

Elinkeinoelämän Tutkimuslaitoksen julkaisemat "Keskusteluaiheet" ovat raportteja alustavista tutkimustuloksista ja väliraportteja tekeillä olevista tutkimuksista. Tässä sarjassa julkaistuja monisteita on mahdollista ostaa Taloustieto Oy:stä kopiointi- ja toimituskuluja vastaavaan hintaan.

Papers in this series are reports on preliminary research results and on studies in progress. They are sold by Taloustieto Oy for a nominal fee covering copying and postage costs.