The New Economy: facts, impacts and policies

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Abstract

The world economy is undergoing a fundamental structural change driven by the globalization of business on the one hand and by the revolution in information and communication technology on the other. The New Economy is the superior economic structure that is expected to arise as an outcome of these two forces. The papers in this special issue attempt to assess the significance of the New Economy, to estimate its impacts on economic growth, location of production and on income and wealth inequality, and to evaluate its prospects for economic development. Policies for promoting the New Economy are also discussed. © 2002 Elsevier Science B.V. All rights reserved.

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1. Introduction

In the late 1990s, many business leaders, investors, journalists and politicians became firmly convinced about the fact that the world economy is undergoing a fundamental structural change driven by both globalization and the revolution in information and communication technology (ICT). The superior economic struc-

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ture expected to arise as an outcome of these two forces was coined the ‘New Economy’ in the business press. The argument was simply that a business firm, an industry or an economy which is able to successfully utilize these global trends would eventually outperform its rivals. And, indeed, the casual evidence for the New Economy was strong. The stock market boomed, powered by ICT and ‘dotcom’ companies. Productivity and economic growth as well, took off in the United States. As a consequence, even average Americans warmed up to the idea that there really is a New Economy. According to an opinion poll conducted in March 2000, 57% of them believed that the United States has entered ‘a new kind of an economy’ that is ‘significantly different from the industrial economy’ (Business Week, 2000).

Given the interest shown by the policy-makers worldwide, it is surprising to find how scant the research on the impacts of the New Economy really is, especially outside the United States. Even the definition of the concept is rather vague. As Cohen et al. (2000) point out, the ongoing transformation of our economy has been given many names: a ‘post-industrial society’, an ‘information society’, an ‘innovation economy’, a ‘knowledge economy’, a ‘network economy’, a ‘digital economy’, a ‘weightless economy’, and an ‘e-conomy’. They all have their merits in emphasizing the different aspects of the structural change but are also vulnerable to misinterpretation. For example, the economy has always been driven by knowledge and innovation. Therefore, we prefer the term New Economy as it is the one generally adopted in the business and financial press.

2. A definition of the New Economy

In its original meaning, the New Economy is a well-defined concept. As mentioned above, it was coined by the business press to mean two broad trends in the world economy that have been under way for some time (Shepard, 1997). The first is the globalization of business. Simply explained, this means that, after the collapse of socialism, capitalism is spreading around the world. Markets are being introduced, and trade and capital flows are being deregulated. International trade and investment now play a greater role in each country’s economic policy than 15–20 years ago.

The second trend is the revolution in information and communication technology. Its driving forces are rapid improvement in the quality and sharp decline in the prices of ICT equipment and software, the convergence in communication and computing technologies and the swift growth in network computing. The ICT revolution has been going on since the invention of the transistor in the late 1940s.

But given that computer prices have been declining at rapid rates for the past 50 years, what makes the late 1990s so different from the earlier periods that the use of the phrase ‘New Economy’ is justified. Three explanations can be given. Firstly, a technological breakthrough seems to have occurred in the mid-1990s in
semiconductor manufacturing as this industry shifted from a 3-year product cycle to a 2-year one (Jorgenson, 2001).

The second explanation is the increase in network computing due to the rapid diffusion of a widespread information infrastructure—the Internet. It is in fact the first truly global marketplace and hence the factor that links together the two broad trends defining the New Economy, namely the globalization of business and the revolution in information and communication technology. The Internet is integrating markets and linking together people across all kinds of traditional boundaries.

A recent survey of the Internet domain name system indicates that in January 2001 there were 110 million computer hosts on the Internet (Internet Software Consortium, 2001). A host is a computer that has users who access network services through it. The growth in the number of Internet hosts has been spectacular as in January 1991 their number was only 376,000.

The third explanation for the interest in the New Economy is the fact that labour productivity appears to have picked up in the United States in the mid-1990s. The growth of output per hour worked in the non-farm business sector accelerated from around 1.4% per annum before 1995 to 2.5 in the period 1995–2000. It is interesting that service industries seem to have accounted for much of this acceleration. For example, wholesale and retail trade as well as telecommunication services have all had increases in labour productivity which are greater than for the economy as a whole. In their survey of the debate, Baily and Lawrence (2001) conclude that IT innovation has been driven by the demand for improved technologies in the using industries and that in the United States competition in the service industries, often on a global scale, has encouraged them to seek out new technologies to improve their own productivity.

The productivity performance of the US economy has impressed even renowned sceptics of the new technology. In 1987, the Nobel Laureate Robert M. Solow summarized the impacts of large investments in information technology in his much-quoted sentence `you can see the computer age everywhere but in the productivity statistics’. In 1999, he was reported to have said that ‘my beliefs are shifting on this subject’ and that ‘the story always was that it took a long time for people to use information technology and truly become more efficient. That story sounds a lot more convincing today than it did a year or two ago’ (Lohr, 1999). This change in Solow’s opinions well reflects the development in the thinking of the economics profession which is documented in many studies including those in this special issue.

3. Measures of the New Economy

Information and communication technology is both an output from the ICT-producing industries and an input into the ICT-using industries. As mentioned
above, the defining characteristics of this technological revolution are the fast
improvement in the quality of equipment and software, and the concomitant sharp
decline in their quality adjusted prices. Rationally behaving consumers and
business firms respond to the change in relative prices by substituting ICT
equipment, software and services for other goods and services. The rapid
technological advance makes it possible that the share of ICT industries in gross
domestic product increases while ICT prices decline.

In their paper in this volume, Koski, Rouvinen and Ylä-Anttila show that in 1997 ICT industries accounted for 3–4% of employment, 6–9% of value added, 10–25% of exports and 25–40% of research and development expenditure in the business sectors of the European Union, Japan and the United States.\footnote{Following OECD’s (2000) definition, ICT industries are defined rather broadly to include the manufacture of office, accounting and computing machinery, insulated wire and cable, electronic components, television and radio transmitters and receivers, telephone and telegraph apparatus, sound and video recorders and reproducers, measuring and testing instruments, and process control equipment. They also include both goods related and intangible services such as the wholesale of ICT goods, renting of office machinery and equipment as well as telecommunications and computer related services.} Considerable variation of course exists in these numbers across the member countries of the European Union—the Nordic countries and Ireland generally displaying higher than average shares.

A popular impression among policy-makers and journalists is that production,
employment and export shares are the relevant measures of the New Economy.
However, the trade statistics in the study by Koski, Rouvinen and Ylä-Anttila
show that the leading New Economy—the United States—is a net importer of
information and communication technology. But since the United States is still the
leading country in ICT research and development, one explanation for its negative
trade balance must be that US firms have outsourced component production
outside the country.

Wong in fact confirms this explanation in his contribution to this special issue
by showing that the Asian countries have captured a disproportionately high share
of global ICT production. In 1998, they accounted for almost 40% of the value of
all electronics production in the world. However, these countries are not generally
regarded as New Economies. The explanation must be that they have been
laggards in the adoption and use of information and communication technology.
Using regression analysis, Wong shows that Asian countries as a group have lower
rates of ICT adoption compared to their potential levels as predicted on the basis
of their current level of development (GDP/capita) and competitiveness (World
Competitiveness Index).

This draws our attention to the second measure of the New Economy: the use of
information and communication technology. Table 1 displays ICT spending to
GDP ratios for 51 countries in 1992–1999. Here ICT is more narrowly defined
than in our evaluation of production. It refers to information and communication
Table 1
Average share of ICT spending in gross domestic product, 1992–1999

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<th>Countries above average</th>
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Source: WITSA (2000) for the spending data; World Bank Development Indicators for the GDP data.

Technology equipment, software and services only. The 51 countries for which data exist are classified into two groups: those above and those below the average spending ratio of 5.0%. New Zealand, Sweden, Australia, United States and United Kingdom are at the top of the ranking whereas Romania, Egypt, Indonesia, Russia and India are at the bottom. Disparities in ICT diffusion are quite large and, as pointed out by Wong, a significant ‘digital divide’ exists even between the Asian countries.

It is apparent from Table 1 that across countries ICT spending is strongly correlated with the level of income. However, significant disparities exist between countries at similar income levels, as can be seen for example by comparing South Africa with other countries. Consequently, the impacts of the other factors

Information technology covers IT hardware for office machines, data processing equipment, and data communications equipment as well as IT software and services. Information and communication technology refers to information technology plus telecommunication equipment and services.
influencing both ICT adoption and GDP growth should be controlled for before more definite conclusions can be drawn about the causal relationship between these two variables.

The third interesting measure of the New Economy is the size of the Internet. As already mentioned, it provides a link between ICT and globalization. It integrates markets and links people together across all kinds of traditional boundaries. Much of the success of the Internet derives from a key underlying technical idea embodied in it, namely that of open architecture networking. However, the problem with the Internet is that it integrates markets and joins people at disparate rates across the world. People in the rich countries, having the required infrastructure and skills, are in a much better position to benefit from this phase of globalization than people in the poor countries.

According to Nua Ltd. (2001), 407 million people in the world were ‘online’ as of November 2000. Of all the people using the Internet regularly, ~40% reside in Canada and the United States, 30% in Europe and 25% in the Asia-Pacific region. This means that only 5% of them come from the rest of the world, namely from Africa, the Middle East and Latin America. While every second person is ‘online’ in North America, only four persons in a thousand are connected to the Internet in Africa.

To conclude, given its substantial size by any of the three measures, the New Economy can be expected to play a large role in the operation of many modern economies. Let us next consider its impacts.

4. Impacts of the New Economy

Attention will be first devoted to the role that information and communication technology has in generating economic growth, creating spatial as well as income inequalities and in promoting economic development. Modern theories of economic growth and economic geography argue that basically the same forces—increasing returns, knowledge spillovers and skill complementarities—drive economic growth and development, increase the spatial agglomeration of production and generate income differentials between people. Consequently, inequalities across countries, space and people can be explained by the same economic factors (see, e.g., Quah, 2001). But what role does ICT have in the explanation of these phenomena?

4.1. Economic growth

In their paper included in this special issue, Jalava and Pohjola first review the ways in which ICT can enhance economic growth and then assess the impacts of the use and production of ICT on economic growth in a number of industrial countries. By surveying recent research findings based on growth accounting
analyses, they confirm that both these factors have been behind the improved economic performance of the United States in the 1990s. About two-thirds of the recent improvement in labour productivity can be attributed to ICT. The benefits from use are likely to have exceeded the benefits from production. However, the evidence for the New Economy is much weaker outside the United States. In the other G7 countries, the contributions to output growth from the use of ICT have generally been less than half of the contributions estimated for the US.

Jalava and Pohjola also produce new evidence for the New Economy by estimating the contributions from the use and production of ICT to output growth in Finland, which is one of the leading European producers of ICT. They show that the contribution from the use of ICT to output growth in the Finnish market sector has increased from 0.3 percentage points in the early 1990s to 0.7 points in the late 1990s. In addition, the fast growth of multi-factor productivity in the ICT-producing industries has had a substantial growth contribution which has been at least as large as that from the use of ICT. However, unlike in the United States, there has been no acceleration in the trend rate of labour productivity in Finland. Other factors, notably the decline in the use of non-ICT capital per worker, have offset the growth-enhancing impact of ICT. In this sense, the New Economy is yet to demonstrate its strength.

What is it then that the US economy has and the others do not have to enable it to benefit so much better from the diffusion of ICT? As already mentioned above, Baily and Lawrence (2001) suggest that the answer lies in the fact that the United States has globally competitive service industries seeking out new technologies to improve their productivity. ICT innovations have been driven by the demand for improved technologies in the using industries. But the productivity gains do not only reflect increased investment in ICT but also complementary innovations in business organization and strategy.

4.2. Geographic concentration of production

As is evident from the survey presented above, both the production and use of ICT are unevenly distributed across countries and between regions. But this is well known to hold for all industries: firms in the same industry tend to locate near each other. As explained by Kolko in his paper in this issue, there are several centripetal forces, which may explain the tendency for industries to cluster geographically. Firstly, technological knowledge leaks from one firm to another. This spillover is likely to be the greater the smaller the distance between firms. Secondly, firms may also benefit from sharing an intermediate input or from sharing access to a common pool of skilled labour.

One would expect, however, the location of production to diminish in importance in a global digital economy where the costs of transportation and information are declining. The comparative advantage of a location does not any longer depend as much as it used to on some important endowment like the
availability of cheap labour or the existence of an intermediate product. Companies can nowadays mitigate many input-cost disadvantages through global sourcing. Despite popular predictions that the Internet will cause ‘the death of distance’ or ‘the death of cities’, there do not yet exist many empirical studies on the impacts of ICT on the location of production.

Kolko’s contribution is, therefore, very interesting. By studying industry-level data from the United States, he shows that IT-intensive industries exhibit slower employment convergence than other industries. He defines convergence as ‘the extent to which an industry’s employment shifts away from locations in which it is over-represented’. Consequently, convergence is the tendency of an industry to become less concentrated over time.

But, most interestingly, it is not the use of IT per se that is associated with slower convergence. The higher IT-intensive industries also hire more educated workers and grow more rapidly. Once these characteristics are controlled for, information technology seems to speed convergence. Consequently, high IT clusters persist not because they are technology intensive per se, but because they tend to rely on highly skilled labour. The policy conclusion is that public policies that attract low-skill support functions for IT-using industries may only yield short-run benefits.

4.3. Income and wealth inequality

Information and communication technology is one of the factors often claimed to be behind the observed increase in income and wealth inequality. The popular view is that the impacts are large. For example, The Economist (2001: 3) wrote in its recently published survey of the new rich that ‘the past decade was probably the most exuberant period of wealth creation in human history. It also produced an unprecedented number of wealthy people’.

In his contribution to this special issue Wolff takes a look at the facts in the leading New Economy—the United States. Applying family income and wealth data from the period 1947–1998, he finds that income inequality has indeed increased sharply since the late 1960s. Inequality in household wealth first declined until the mid-1970s and then increased dramatically.

In explaining these trends in inequality by institutional and economic factors, Wolff finds that the largest effects on income inequality come from equipment investment and unionization. Computerization, as measured by investment in office, computing and accounting equipment (OCA), is also found to have a positive and significant effect on income inequality, though not as strong as equipment investment. Unionization has a decidedly negative effect on income inequality.

It is noteworthy, however, that income inequality seems to have risen in the United States much before ICT investment had any visible impacts on the performance of the economy. The productivity improvements did not materialize
until in the mid-1990s. This means that, besides ICT, many other factors must have mattered even more importantly.

With regard to wealth inequality, Wolff finds that the only two statistically significant effects come from the ratio of the stock market index to housing prices, which has a very strong positive relation, and the minimum wage in constant dollars, which has a negative and less strong relation. When both asset prices and ICT indicators are used as explanatory variables, then only asset prices matter for wealth inequality. However, investment in OCA per worker has a very strong positive relation to movements in stock prices, which suggests that it is indirectly linked to changes in wealth inequality.

5. Prospects for economic development

Given its strong economic performance in the 1990s, the United States is generally regarded as the leading New Economy. But why the United States? A recently published book entitled *A Nation Transformed by Information*, edited by Chandler and Cortada (2000), argues that information has been a driving force in America for 300 years. The book explains the success of the United States by listing many possible factors, ranging from the strong protection of intellectual property rights, to the large capacity of domestic markets, and to firm government support to basic R&D. The editors themselves give an answer based on the role of systems in the evolution of the information infrastructure, such as the US Postal System, the Bell Telephone System, RCA’s National Broadcasting System, IBM’s System 360 computers and Microsoft’s Operating System. These systems were created to assure a high-volume flow of information, and they were embedded in large business enterprises. The authors conclude that ‘if history is any guide, a small number of large complex enterprises, particularly those experienced in building systems, will continue to lead in commercializing the hardware for today’s Information Age’ (Chandler and Cortada, 2000, p. 289).

But what lessons can we draw for countries which do not already possess similar infrastructures or have large domestic markets? Becoming successful producers may be impossible because some segments of the ICT industry (e.g. microprocessors, operating systems, packaged business applications) are virtually closed off because the standards are set by the leading companies in the market (like Intel and Microsoft) (Kraemer and Dedrick, 2001). Other segments of the industry require large capital investments and specialized skills or have already been preempted by earlier entrants. Some larger countries like China and India are, however, in a more advantageous position than small nations since they can negotiate with multinationals for production and technology transfer in return for market access.

The hope of developing countries may lie in the fact that, as Chandler and Cortada (2000) note, the software industry is the most obvious, dramatic and
important exception to the big business explanation of the American success story. It has provided and will provide more entrepreneurial opportunities than did any of the many new technologies that evolved during the Industrial Age. Chandler and Cortada conclude that software and the Internet will carry us into a different economy but, as historians, do not specify how. No one, after all, could anticipate in the early 1950s the many ways in which the transistor was to be used in the following decades.

In their contribution to our special issue, Arora and Athreye assess India’s much celebrated success in the software industry. As is well known, India’s specialization in software has been driven by wage advantages. The impact of the industry has, however, been limited to a small section of the economy as there are not more than 400,000 people employed in the industry. But it has grown quite rapidly, and the question being asked is whether current growth can be sustained without a significant increase in domestic demand.

Arora and Athreye note that the success of the software industry has increased the relative value of professional workers, not only programmers, but also managers and analysts. This growing importance of human capital has led to innovative models of entrepreneurship and organization, pioneered by the software sector. These models are slowly taking root and spreading to other sectors of India’s industry. A potentially important and under-appreciated contribution of the software industry is thus its exemplar of good entrepreneurship and corporate governance to the rest of the economy. Arora and Athreye believe that, though less visible than the macro contributions to employment and foreign exchange, this role is a source of productivity improvement for all industries, and can have powerful long-term benefits for India’s industrialization and growth.

But the fact is that the ICT industry is yet to become the internal engine for structural economic change in India. The benefits achieved so far have come from the production and export of software and not from the large-scale adoption and use of ICT. In this sense, despite its large size, India has followed the export-led model developed by smaller Asian nations (see Wong in this issue).

Meng and Li take a look in their paper at another large, developing economy—China. They demonstrate that, although there is still a huge gap between this country and the developed countries in the development of the ICT industry, the astonishing pace of its progress shows promise for the New Economy. The ICT industry is becoming the most dynamic sector of the Chinese economy, surpassing many of the traditional industries of the Industrial Age. By many indicators of the production and use of ICT, China has already overtaken India.

There is, however, a clear digital divide among China’s three economic regions, the eastern region being the most advanced, followed by the central region and finally by the most backward western region. This disparity is a major barrier to establishing a nationwide common market. The authors conclude their study by noting that the transmission of information and communication technology from the developed countries provides the developing countries with a unique opportunity to build completely new market mechanisms.
6. Policies for the New Economy

The last two papers of this special issue consider policies for the New Economy. The former Secretary of the Treasury of the United States, Larry Summers is reported to have once said that ‘the New Economy is based on old virtues; thrift, investment, and letting market forces operate’. But what else is needed?

Kiiski and Pohjola consider policies for improving access to the Internet by studying the factors which determine the diffusion of the Internet across countries. The Gompertz model of technology diffusion is estimated using data on Internet hosts per capita for the years 1995–2000. For a sample of the OECD countries, the basic finding is that GDP per capita and Internet access cost explain best the observed growth in computer hosts per capita. Competition in telecommunications markets does not seem to exert any independent influence on Internet penetration.

Somewhat unexpectedly, investment in education does not have any statistically significant explanatory power in the model. This may, however, rather reflect the low variability of the schooling variable in the OECD sample than the lack of impact of education on the diffusion of the Internet. Moreover, the variable measuring proficiency in English enters the regression with the wrong sign. Also, the fact that the regional dummy variables for the ‘northern’ and ‘southern’ OECD countries improve the precision of the parameter estimates and the statistical fit of the model suggests that there are cultural or technology policy-related differences between the countries in the adoption of the Internet which have not been captured in the analysis. For a larger sample of both industrial and developing countries, Kiiski and Pohjola’s results change in such a way that also education, especially at the university level, becomes significant.

In the last paper of the special issue, Mayer asks what are the financial sector preconditions for the successful development of a high technology sector. The conventional view regards the development of venture capital firms and stock markets as a priority. Mayer argues that a distinguishing characteristic of the financing of high technology firms is their evolving pattern of control by different investor groups. While stock markets are an important component of the development of the most successful firms, they are not the most common. The US and UK experiences suggest that the financing of new high tech firms seems to be highly reliant on own funds, families and friends. Once these are exhausted, external equity initially comes from private investors. Venture capitalists come in at a later stage, and only a small fraction of the successful firms are floated on the stock market. This transition from personal to stock market finance involves a gradual broadening of the investor base. Dominant control structures also need to shift rapidly between entrepreneurs and different investor groups as the financing needs of the New Economy firms change.

Mayer also considers policies that can be used to influence the development of institutions. Legal and regulatory structures have a significant influence on institutional development. The degree of risk taking by financial institutions and the diversity of their investments are affected by trade-offs between competition
and stability and the emphasis placed on minority investor protection. For the most part, Europe has opted for high levels of investor protection and low levels of diversity. Mayer argues that if Europe wishes to stimulate high technology sectors, it may have to change this balance. A thriving New Economy requires a high degree of diversity in institutions, investments and forms of control.

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References

Lohr, S., 1999. At last, economists see a high-tech payoff. International Herald Tribune, 15 April.