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ICTs and Economic Growth: The OECD Experience and Beyond

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The attached introductory note has been prepared by the secretariat for the forthcoming CD-ROM entitled "ICTs and Economic Growth: The OECD Experience and Beyond". The CD-ROM includes relevant documents by OECD and other organisations, related conference proceedings, and the video footage of The Harvard Forum organised by IDRC Canada. It is circulated to POVNET for information.

The CD-ROM will be available free of charge via our ICT website (www.oecd.org/dac/ict).

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ICTs AND ECONOMIC GROWTH: THE OECD EXPERIENCE AND BEYOND

Introductory Note

There is broad understanding among policy-makers and in the international community that information and communication technologies (ICTs) should be seen as a means to help meet existing development objectives, in particular the United Nations Millennium Development Goals (MDGs), especially those for poverty reduction, education, health and environment. Although, in the OECD area at least the ICT sector was a driver of economic growth throughout the 1990s, it is clear that it is the application and use of these technologies that is most important.

It is important that economic policy take the full potential of ICTs into account. In this respect, the OECD and other organisations have performed extensive statistical, analytical and benchmarking work on the role of ICTs in economic growth to help inform good policy-making.

This CD-ROM presents a collection of this body of work as a “toolkit” for the following audience:

- Policy-makers and officers in charge of ICTs;
- Donor ICT advisors and practitioners, both at the headquarters and in the field;
- Other stakeholders, including the private sector, civil society and academia.

The Economic Impacts of ICTs

For many years, there has been a widespread assumption that ICTs are beneficial for economic growth. Due to the relative novelty of ICTs and truly global economic interactions, this assumption is still largely intuitive or based on anecdotal evidence. Only recently has substantive evidence has been presented to demonstrate the growth effects of ICTs. This has made it hard to argue for changes to established policy directions. This situation is exacerbated in developing countries (LDCs) by the fact that most research to date has centered on the economic impact of ICTs in the developed world.

What do we know about the role of ICTs in economic growth from OECD experience?

In 1999, the OECD Ministerial Council asked the Organisation to analyse the determinants of different growth performance and identify factors, institutions and policies that could enhance long-term prospects for growth, productivity and jobs – the so-called Growth Study, available on the OECD website at www.oecd.org/growth The report to the 2000 Ministerial Council, *Is There a New Economy?*, and the final report, *The New Economy: Beyond the Hype* (2001), concluded that ICTs have important potential to contribute to more rapid growth and productivity gains in the years to come and shed light on some of the crucial enabling factors. Both the 2001 and 2002 OECD Ministerial Council meetings reiterated the importance of ICTs for growth performance and requested the OECD to continue its work in this area.

The report *ICTs and Economic Growth: Evidence from OECD Countries, Industries and Firms* (2003), which responds to the Ministerial request, revisits the contribution made by ICTs to economic performance

using more recent data to assess the degree to which the findings that appeared valid at the end of 2000 remain intact. It also examines whether policy conclusions from previous OECD work require adjustment in the prevailing economic environment, and what measures OECD governments should take to seize the benefits of ICTs. The findings and policy implications of the work reaffirm and elaborate those of the Growth Study.

The key conclusions of the report are:

- ICTs act as drivers of growth in OECD economies, but with significant inter-country differences.
- The impact of ICTs arises in particular from:
 - The value of the ICT production sector (in those countries where one exists);
 - Increased labour productivity (ICTs enable individuals to produce more output in unit time);
 - Increased multifactor productivity (pervasive use of ICTs throughout the value chain).
- The degree of ICTs' impact at both country and firm levels appears to depend on other socio-economic factors, in particular:
 - The regulatory environment and degree of competition;
 - The availability of human capital;
 - The ability of organisations, especially firms, to adapt organisational structures;
 - The innovative use of ICT applications.

In addition, ICTs increase overall productivity by benefiting efficient firms:

- ICT applications are more effective in firms that have a prior record of efficiency, otherwise they will not have immediate impact and possibly will not at all enhance business performance.
- The policy implications are that, in order to maintain their countries' relative position, governments and businesses need to act in ways that facilitate the impact ICTs can have on productivity and growth, for example by liberalising certain regulations, encouraging entrepreneurship, stimulating creation and use of human capital, restructuring organisations and adapt other existing practices.

The *Electronic Commerce Business Impacts Project (EBIP)* was carried out by the OECD in 2001 and 2002 to develop a set of in-depth, internationally comparable case studies that provide new insights into the dynamics and impacts of electronic commerce and electronic business strategies and adoption. This study included 217 firm-level case studies covering 20 industry sectors across 11 participating countries. This project showed that:

- Firm-level impacts of ICTs are extensive and are restructuring value chains;
- Impacts of ICTs are hard to disentangle from other transformative factors;
- E-commerce and e-business strategies are most successful when they are about business and

commerce, not about technology in isolation.

Do these factors apply in developing countries?

The report *ICTs and Economic Growth in Developing Countries* (2003), prepared for the OECD by Professor David Souter of the University of Strathclyde, reviews the evidence for links between ICTs, productivity and economic growth in OECD countries set out in *ICTs and Economic Growth: Evidence from OECD Countries, Industries and Firms* (2003). It then discusses the relevance of these findings for developing countries. The report concludes with recommendations for action by the governments of developing countries that will facilitate ICT investment and positive returns, focused on policy development processes, infrastructure and access, liberalisation and deregulation, and human capital.

The main conclusions of the report are:

- There is evidence that ICTs facilitate economic growth in OECD countries, principally by increasing productivity, though this is a long-term, rather than an immediate outcome of ICT investment.
- There is little or no clear evidence that the same outcome is yet being achieved in developing countries, largely because little or no relevant research has been undertaken. However, developing countries in general, and the least developed countries (LLDCs) in particular, are less well-equipped to take advantage of the potential of ICTs to stimulate growth, and so (to the extent that ICTs do stimulate growth) are likely to fall further behind OECD economies in relative terms.
- Hurdles that LLDCs must overcome in order to reap the full benefits of ICT investment have to do with economic structure (for example, the preponderance of agriculture, low income levels) and with policy issues (restrictive regulatory environments, low levels of human capital).
- Developing countries and development agencies have to balance policy and investment options regarding ICTs against other socio-economic objectives, notably the development objectives set out in the MDGs. Poverty reduction objectives are, however, more likely to be achieved against a background of economic growth, and any synergies between the impacts of ICTs in these two areas of national policy should be exploited.
- Government policy priorities should be to reduce the factors that inhibit the effective use of ICTs and take positive steps that will enable maximisation of the benefits that can be derived from ICTs, integrating ICT policy more effectively into overall national socio-economic development strategies.

Papers by the OECD and other organisations present information to support these findings. *The New Economy: Beyond the Hype* is the report of the OECD Growth Project to the OECD Ministerial Council in 2001. The *OECD Policy Agenda for Growth*, presented to the OECD Ministerial Council in 2003, examines the broader perspective. *Seizing the Benefits of ICTs in a Digital Economy* is a brief synthesis of the new work on ICTs and growth carried out by the OECD over the period 2002-2003, and was also prepared for Ministers attending the OECD Ministerial Council in 2003.

The Contribution of Information and Communication Technologies to Growth (2002), a paper by The World Bank, focuses on the linkage between ICTs and output growth and summarizes the literature findings on this subject.

Macroeconomic Impact of IT Adoption and Diffusion (2002), a research paper by The Japan Bank for

International Cooperation, explores measures for developing countries to achieve sustainable economic development through proactive IT utilisation.

More technical and in-depth analytical work done by the OECD is contained in the STI Working Papers series available at www.oecd.org/sti/working-papers. Of particular relevance for in-depth analysis of the role of ICTs in economic development are:

- *Measuring Investment in Software: Statistical Analysis of Science, Technology and Industry* (2003)
- *Productivity Growth in ICT-Producing and ICT-Using Industries: A source of growth differentials in the OECD?* (2001)
- *ICT Investment and Economic Growth in the 1990s: Is the United States a unique case? A Comparative Study of Nine OECD Countries* (2001)

IT and Telecommunications Policy

Effective policies that integrate ICTs into economic development seek to maximise the important role they play in value chains and their effectiveness for sector transformation in all areas of the economy. Though the private sector has a primary role, government can serve as a model user and purveyor of services via digital delivery. Further, policy should seek to develop ICT skills within organisations and among individual users, if their potential benefits are to be realised. The benefits and risks to countries from ICT labour outsourcing have recently become a particularly relevant issue, with more work in this area forthcoming.

Formulating, analysing and monitoring policy requires measurement, and measurements require careful interpretation. Several OECD publications provide an overview of ICT policies and statistical analysis in such areas as ICT pricing and penetration in OECD countries:

- *OECD Communications Outlook 2003*
- *OECD Information Technology Outlook 2002*
- *OECD Communications Outlook 2001*
- *OECD Information Technology Outlook 2000*

The rapid development and deployment of broadband infrastructures and services have enormous potential for growth and development and have great implications for all stakeholder groups. Thus, broadband is one of the most pressing issues in the ICT policy community. In early 2004, the OECD Council adopted the *Recommendation of the Council on Broadband Development*, of which background work is presented in the following documents.

- *Broadband Driving Growth: Policy Responses* (2003)
- *Broadband Audio-Visual Services: Market Development in OECD Countries* (2003)
- *Broadband and Telephony Services over Cable Television Networks* (2003)
- *Universal Service Obligations and Broadband* (2002)

- *Broadband Access for Business* (2002)

Opening telecommunications markets to competition in developing countries is generally desirable, normally in encouraging sector investment, infrastructure development and choice for consumers, however, it is not easy to achieve. *Roadmaps for Success in Telecom Liberalisation: Issues and Best Practices* (2003), an Analysys report, provides the background to the relevant issue, and a realistic approach to policy options. The success of this complex process depends on the adoption of a sequential approach, laying down essential regulatory and economic infrastructure, and limiting the negative impacts of rapid change.

The OECD Development Centre's 2003 Web-Doc, *Providing Low-Cost Information Technology Access to Rural Communities in Developing Countries: What Works? What Pays?*, and a report from the World Bank Institute (WBI), *ICTs in Rural Development* (2000) provide an overview of the policy and technical issues related to rural connectivity and development in developing countries.

The infoDev *Study on Open Source Software and Development* (2003) provides an overview of development issues related to open software.

The OECD has organised several international events to discuss and share its work on IT and telecommunications policy. These include:

- *OECD Emerging Market Economy Forum on Electronic Commerce* (Dubai, 2001)
- *OECD Global Conference on Telecommunications Policy for the Digital Economy* (Dubai, 2002)
- *OECD-APEC Global Forum on the Knowledge Economy: Policy Frameworks for the Digital Economy* (Honolulu, 2003)

Measuring the Information Society

Without good statistical data, indicators and benchmarks, robust analytical work cannot be conducted for use in the policy community.

Most recently, *The Economic Impact of ICT: Measurement, Evidence and Implications* (2004) brings together several firm-level studies, providing an overview of the impacts of ICT on economic performance, and the ways through which these impacts can be measured. The report shows that ICT is having substantial impacts on economic performance and the success of individual firms, in particular when it is combined with investment in skills, organisational change and innovation. These impacts can be observed in firm-level studies for all OECD countries, but have not yet translated in better economic performance at the industry or economy-wide level in many OECD countries. The report points to some factors that may explain this gap between firm-level and aggregate performance, such as aggregation effects, time lags and measurement. This report is available from the OECD Online Bookshop.

The OECD report, *Measuring the Information Economy* (2002), provides a comprehensive international comparison of OECD member countries' performance in the information economy. It covers more than 80 indicators based on up-to-date official statistics. The most recent edition contains some new indicators that address emerging policy issues: international differences in the quality and price of the ICT infrastructure, diffusion of Internet technologies in larger and smaller firms, relative size of cross-border electronic transactions, and barriers to Internet commerce. Methodological notes on indicators and data sources are provided. For the first time data annexes with time series for the ICT sector are available in the on-line version at www.oecd.org/sti/statistical-analysis.

The *OECD Science, Technology and Industry Scoreboard 2003* provides internationally comparable data on the knowledge-base economy. It draws mainly on OECD databases, indicators and methodology developed by the Directorate for Science, Technology and Industry, and focuses on growth in the knowledge base of OECD economies, the information economy and the global integration of economic activity, productivity and economic structure.

The digital divide – differences in access to information and communication technologies, infrastructures and services – is a manifestation of existing economic and social divides, which will widen even further if developing countries are not helped to take advantage of ICTs in tackling economic and social problems and are denied access to markets that are becoming increasingly ICT-dependent as part of globalisation. *Understanding the Digital Divide* (2001) explains the basic concepts of the digital divide within countries as well as between countries through multi-dimensional analysis. An updated version of much of this work can be found in Chapter 6 of the *OECD Information Technology Outlook 2002*, entitled “ICT Diffusion and the Digital Divide”.

For a global set of indicators of the digital divide, the joint Orbicom-CIDA-InfoDev-UNESCO project report, *Monitoring the Digital Divide... and Beyond* (2003) provides a unique and authoritative perspective both on the magnitude and the evolution of the international digital divide, based on a coherent conceptual framework and existing data, as well as some composite indicators for the main dimensions of the digital divide..

For further OECD work on the digital divide, please visit:

- *OECD Emerging Market Economy Forum on Electronic Commerce* (Dubai, 2001)
- *OECD/UN/UNDP/World Bank Global Forum on the Knowledge Economy: Digital Opportunities for Poverty Reduction* (Paris, 2001)

Policies to Promote Trust

Strengthening the trust framework, including enhancing information and network security, promoting the use of authentication, and ensuring privacy and consumer protection, is a prerequisite for economic growth through ICTs and for building confidence among ICT users. The OECD has developed a number of Recommendations in this area, often taking the form of guidelines or policy principles that set common standards for “rules of the game” that govern a stable predictable framework for trust-building in the digital economy and information society. *Privacy Online: OECD Guidance on Policy and Practice* (2003) discusses privacy issues specifically, and is available from the OECD website. Published OECD guidelines in this and other areas are:

- *OECD Guidelines for Protecting Consumers from Fraudulent and Deceptive Commercial Practices Across Borders* (2003)
- *OECD Guidelines on the Security of Information Systems and Networks: Towards a Culture of Security* (2002)
- *OECD Guidelines for Consumer Protection in the Context of Electronic Commerce* (1999)
- *OECD Guidelines on Cryptography Policy* (1997)
- *OECD Guidelines on the Protection of Privacy and Transborder Flows of Personal Data* (1980)

In 2003, the OECD hosted the *OECD Global Forum on Information Systems and Network Security* in Oslo, the documents of which are presented on this CD-ROM. OECD websites containing complete, in-depth information in areas related to trust are:

- www.oecd.org/sti/cultureofsecurity
- www.oecd.org/sti/security-privacy
- www.oecd.org/sti/consumer-policy
- www.oecd.org/sti/spam (See particularly the 2004 *OECD Workshop on Spam* in Brussels.)

ICTs Beyond the OECD

This section includes related reports and experience beyond OECD countries and also beyond the theme of ICTs and economic growth, addressing the areas of development and poverty reduction.

ICTs, Poverty and Development: Learning from Experience (2003) by infoDev and *ICTs for Poverty Reduction: Where, When, How?* (2003) by Canada's International Development Research Centre provide a comprehensive overview of the knowns and unknowns in terms of ICTs for development issues.

The OECD report *Using Knowledge for Development: The Brazilian Experience* (2001) presents a case study in using knowledge-based economic activities to enhance the contribution of Brazilian firms to the value chain, applying the subsequent benefits to broader economic development.

The WBI reports, *China and the Knowledge Economy: Seizing the 21st Century* (2001) and *Korea and the Knowledge-Based Economy: Making the Transition* (2000) also provide country-specific overviews in terms of the knowledge-based economic framework.

Three World Bank Group reports, *Information and Communication Technologies: A World Bank Group Strategy* (2002), *ICTs and the Millennium Development Goals: A World Bank Perspective* (2003) and *ICTs and Development: Enabling the Information Society* (2003), provide the World Bank Group's views, strategies, best practices and lessons learned in ICTs for development.

The OECD/DAC publication *Donor ICT Strategies Matrix* (December 2003 version) provides a collection of information on how bilateral and multilateral donors have mainstreamed ICTs in their development assistance programmes. A CD-ROM including this Matrix and all other related documents is available free of charge via the website www.oecd.org/dac/ict.

OECD Related Conferences

Since the early 1990s the OECD has been engaged in a policy dialogue with over 70 countries in transition and emerging markets economies outside its membership. This dialogue is coordinated by the OECD Centre for Co-operation with Non-Members (CCNM). In an increasingly interdependent world economy, many of the subjects treated in the OECD's programme of work require the involvement of non OECD Members. CCNM helps non-members benefit from the OECD's work and to facilitate the agenda of policy reform.

This section showcases the OECD's conferences related to the Knowledge Based Economy – digital economy issues. You will find the programme, proceedings and other related documents for each of the following conferences:

- *OECD Emerging Market Economy Forum on Electronic Commerce* (Dubai, 2001)
- *Joint OECD/UN/UNDP/World Bank Global Forum on the Knowledge Economy: Digital Opportunities for Poverty Reduction* (Paris, 2001)
- *OECD Global Conference on Telecommunications Policy for the Digital Economy* (Dubai, 2002)
- *OECD Global Forum on the Knowledge Economy: Policy Frameworks for ICTs, Innovation and Human Resources* (Brasilia, 2002)
- *OECD-IPS Workshop on Promoting Knowledge-Based Economies in Asia* (Singapore, 2002)
- *OECD-APEC Global Forum: Policy Frameworks for the Digital Economy* (Honolulu, 2003)
- *Joint OECD/UN/World Bank Global Forum: Integrating ICT in Development Programmes* (Paris, 2003)
- *OECD Global Forum on Information Systems and Network Security* (Oslo, 2003)

The Harvard Forum

A Dialogue on ICTs and Poverty: The Harvard Forum

(A special contribution from the International Development Research Centre, Canada.)

In September 2003, the Canadian International Development Research Centre (IDRC) invited 30 experts from around the world to discuss ICTs and poverty reduction. The meeting took place on the campus of Harvard University in Cambridge, Massachusetts. The participants included members of the Harvard faculty, educators, academics, and engineers from developing countries, and Nobel Prize winning economists. Their objectives were:

- to discuss the connections *between* diffusion of ICTs, and poverty, in developing countries of different kinds;
- to consider ways which ICT policies, management and investments can be more effective for poverty reduction;
- to consider priority areas for action and research, for increasing the contribution of ICTs to poverty reduction.

A summary video, interviews with participants, and an extensive background survey of ICTs for Poverty Reduction, can be found in this section.

For further information please visit www.idrc.ca.

Related Websites

Updated information, new publications, and other relevant news can be found on our selection of suggested websites.

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