



IT and Economic Growth

by Matti Pohjola

The popular view is that information technology will change the world by boosting productivity and income. But while IT has many visible effects on the modern economy—the growth in electronic commerce for example—its impact on productivity and economic growth has been surprisingly difficult to detect.

Although there is increasing evidence that IT investment is associated with an improvement in company performance in industrial countries, studies that look at the bigger macroeconomic picture find little correlation between IT investment and overall productivity—and some studies even find a negative correlation.

Explaining the Productivity Paradox

How can we explain this discrepancy between the micro and macro pictures? The table on page 2 sheds new light on this paradox by displaying results from a UNU/WIDER study for three countries—Finland, Singapore and South Korea—and comparing them with findings for the United States economy by Daniel Sichel (see the references at the end of this article). All these countries have invested large amounts in IT over the past two decades; computer capital (hardware etc.) has grown at annual rates ranging from 25 per cent in Finland to 40 per cent in South Korea.

Economists measure the contribution of computers to GDP growth by first multiplying the growth rate of computer capital by the share in national income of the return on computer investment. In doing so we find that computers have accounted for the greatest share of GDP growth (32 per cent) in South Korea, and the smallest share (8 per cent) in the United States. These estimates measure the impact of computers and peripherals as a factor of production, and do not measure the effect on GDP of their manufacture.

The last two rows in the table show that the growth contribution of computers in the United States has doubled in recent years. At the same time the growth rate of GNP in the United States has also doubled, so the relative share of IT in growth has been virtually unchanged. It does seem, however, that IT investment has become more profitable.

The increased productivity of IT investment may be a

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WIDER lessons on IT

Visual Communications Group



Professor Hans van Ginkel, Rector of the United Nations University, Professor Matti Pohjola, Principal Academic Officer and Acting Director of UNU/WIDER, Professor Danny Quah, London School of Economics, Mr Jason Dedrick, Center for Research on Information Technology and Organizations (CRITO) University of California Irvine, and Mr Veli-Pekka Niitamo, Director Global Resourcing Nokia made presentations at a UNU panel on 'Information Technology, Economic Growth and Development' on 5 May 2000 at the UN Headquarters in New York. This was one of the panels organized as part of the preparatory process for the high-level segment of ECOSOC 2000 on the theme 'Development and International Cooperation in the XXI Century: The Role of Information Technology in the Context of a Knowledge-based Economy'.

Over 100 people attended the meeting, including delegates, UN officials and NGO representatives. The articles in this issue of *WIDER Angle* are based on the presentations made at this policy panel session. ■

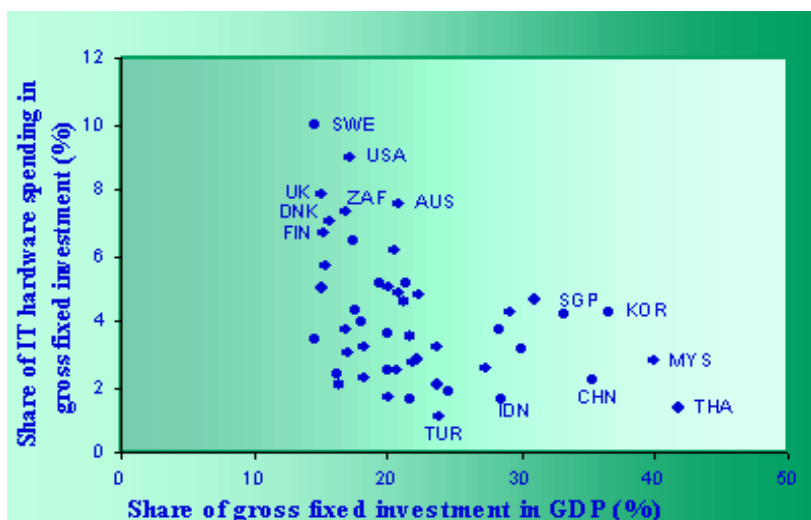
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result of networking—the fact that all of the world’s computers can be linked to each other via the Internet. In this way enterprises and households that use IT benefit from the investments made by others. Moreover, enterprises may have learnt to modify their organizations and practices so that the return on these investments has risen.

The table (below) also suggests that the ‘productivity paradox’ has been largely an American phenomenon. IT’s growth contribution has been much greater in other countries for which data is available. In Finland the stock of computers has grown at practically the same rate as in the United States. Computers have had a bigger impact on GDP growth in Finland (16 per cent) because they account for a larger share of national income in Finland than in the United States. This does not, however, imply that IT investment is more productive in Finland. Rather, Finland has a more capital-intensive economy than the United States—partly because of greater intervention in the labour market—so that capital produces a greater proportion of Finland’s national income.

IT in Developing Countries

According to UNU/WIDER’s cross-country comparison of a larger sample of 23 OECD countries in 1980-95, investment in computers and software is strongly correlated with economic growth. The effect of



Source: International Data Corporation and World Bank

Countries: Australia (AUS), China (CHN), Denmark (DNK), Finland (FIN), India (IDN), South Korea (KOR), Malaysia (MYS), Singapore (SGP), South Africa (ZAF), Sweden (SWE), Thailand (THA), Turkey (TUR), United Kingdom (UK), United States (USA).

IT investment has been almost as great as the effects of all other fixed investment combined. On the other hand there has been no corresponding growth effect in our sample of developing countries. It would therefore seem that developing countries have not yet invested sufficiently in physical infrastructure and human capital to make IT investment worthwhile. Consequently, from a historical perspective, IT does not yet seem to offer the developing countries a shortcut to prosperity.

The figure above illustrates the basic difference between developed and developing countries. The

investment share in GDP is very high in such fast growing economies as China, South Korea, and Thailand. But the IT content of investment is low. However, in developed countries such as Finland and the United States, the investment ratio is low but the share of IT investment in total investment is high.

Policy Priorities

Investment in infrastructure, physical capital, and education is still the key to economic development. This is, of course, a long-standing recommendation. But it needs to be updated for a world economy in which the use of IT is spreading fast, so that no country—rich or poor—can ignore the need to invest in IT. Thus, the UNU/WIDER study concludes that the IT content of investments in infrastructure, physical capital, and education must be raised. The old policy recommendation is therefore given a new twist.

Besides providing IT education and training for their citizens, governments can themselves become sophisticated users of information technology. By developing advanced applications of IT—and by becoming a model for the private

The contribution of computer investment to economic growth		
	GDP growth	Contribution from computers
	(% per year)	(percentage point)
Finland 1983-96	2.4	0.4
Singapore 1977-97	7.8	1.5
South Korea 1980-95	7.9	2.5
USA 1980-92	2.3	0.2
USA 1996-98	4.2	0.4

Source: Matti Pohjola

sector—governments can change the attitudes of workers, firms and consumers and lower their costs of adopting IT. It is the use of information technology, not necessarily its production, which matters for economic development in this new century.

References:

Pohjola, M. (ed.) **Information Technology, Productivity and Economic Growth: International Evidence and Implications for Economic Development**, Forthcoming Oxford University Press publication.

Sichel, D.E. 'Computers and Aggregate Economic Growth: An Update'. *Business Economics* 34, April 1999.

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IT and Growth

Although IT has many visible effects on the modern economy, its impact on productivity and economic growth has been surprisingly difficult to detect

No country can avoid heavy investment in IT if it wishes to preserve and raise its living standards

It is the use of information technology, not necessarily its production, which matters for development

Investment in physical capital, and education is still the key to economic development. But the IT content of these investments must be raised

The Weightless Developing Economy

by Danny T. Quah

For the last fifty years, economists and development practitioners have viewed the accumulation of physical capital—machines, buildings, and highways—as central to economic growth. However, the evidence shows that technological advance, reflecting the accumulation of knowledge, is more important. Today, there are new opportunities to use knowledge for faster development; outsourcing software construction and data entry to workers in emerging economies (such as India) is just one example.

Economic progress has been knowledge-driven since the Industrial Revolution of the late 18th century, and you could argue that the ancient Sumerians started the process when they first carved financial records onto clay tablets, some 5,000 years ago. Indeed, many of today's worries—job destruction and rising inequality—were evident when spinning jennies and steam engines first came into use.

The Weightless Economy

However, the present revolution in information and communications technology (ICT) does raise fresh questions. Today's weightless economy consists of ICT together with intellectual assets—patents together with copyrights, trademarks, images and so forth—as well as electronic libraries, databases and biotechnologies. We are seeing the emergence of an economy that is qualitatively different from the one that dominated the 20th century.

Knowledge workers generate the technological base of a manufacturing economy. Intellectual property rights such as patents protect their ideas. In contrast, the new weightless economy is built on strings of information; these may exist on the hard disk of a PC or on an Internet server, they may consist

of a paper blueprint, or even an idea in someone's mind. The form that they take is largely immaterial to their value. Hence, intellectual property is more difficult to protect in the new weightless economy.

Moreover, these information strings do not simply plug into a production process as before. Instead, consumers deal with them directly; from your PC you can download computer software, digital entertainment, or use the Web to purchase health consultations, financial instruments, and other valuable items. And the enjoyment of these products by one consumer does not preclude their consumption or use by anyone else. This is qualitatively different from the way consumers interacted with the old manufacturing economy.

Policies for a Weightless Economy

Obviously, encouraging ongoing technological development is critical to the growth of a weightless economy. Less obviously, systems for managing intellectual assets must be changed—sometimes radically. Protecting intellectual property (and thus the incentive to innovate) without at the same time creating socially harmful monopolies is a key issue in the weightless economy, whether it is software or the DNA profile of Iceland's population. Access is also critical: worldwide there are potentially six billion users for the products of the weightless economy, but getting them hooked up to the new economy is not straightforward. Thus governments and collective bodies should contribute more to the fixed costs that would otherwise inhibit global access, and to encouraging the spread of knowledge about (and desire to use) these exciting, but sometimes complex, knowledge products.

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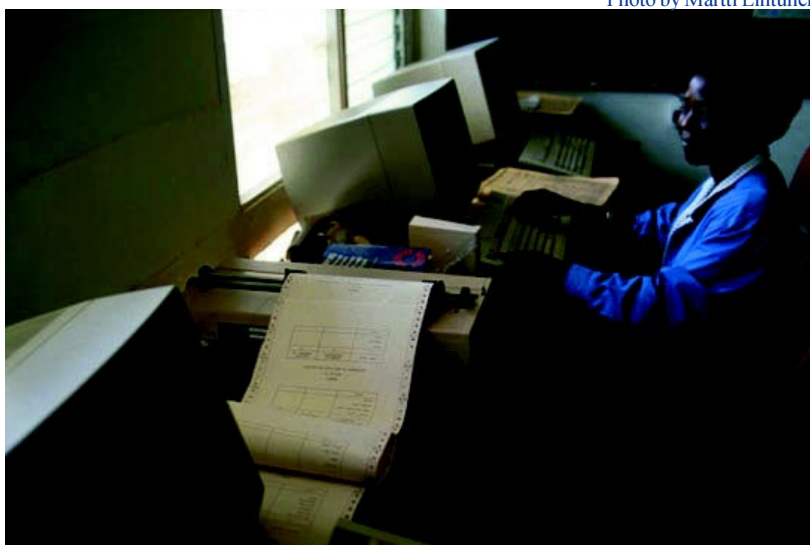
Lessons from Ancient China

At the end of the Sung dynasty in the 14th century, China stood at the brink of an industrial revolution—400 years before the industrial revolution arrived in late-18th century Europe. China's output of iron per capita was higher than that of 18th century Europe—the

Protecting the Incentive to Innovate

The weightless economy is a new form of the knowledge-based economy. Historically, societies developed intellectual property rights to protect the incentive to innovate. At times this meant lost efficiency, but the spur to innovation was worth it. As ICT and other technologies drive economies

Photo by Martti Lintunen



IT investment is boosting productivity across the world, including Africa

result of its lead in blast-furnace technology. Yet, the next five centuries saw dismal economic decline, instead of sweeping economic change. Why was this so?

Fundamentally, China's failure to accelerate its growth was a failure of demand. In 14th century China, technological knowledge was tightly controlled—scholars and bureaucrats kept the secrets to themselves and it was said that the Emperor 'owned' time itself. A large customer base never developed, and technological development languished after its early and promising start. A European of the eighteenth century was, in contrast, eager to use the products of the new spinning jenny and steam engine and strong consumer demand encouraged more technological progress. So, Europe took the lead, and China languished until the late twentieth century.

to become progressively weightless, so protecting innovation incentives becomes even more important—but old systems for achieving this are now less effective. The challenge is a crucial one if the weightless economy is to prosper.

Societies must also develop the skills and attitudes that are necessary to consuming and appreciating complex technologies. Because participation matters—not just access—openness to new ideas is crucial to societies seeking to develop a weightless economy. China in the 14th century is a dramatic case in point. It was insufficient scientific knowledge among the general population and within the governing elite about the benefits of science—not inadequate scientific knowledge itself—that crippled an entire nation's prospects for economic growth and development.

The Weightless Economy

Economic progress is now knowledge driven

Intellectual property is more difficult to protect in the weightless economy

Governments must encourage the spread of knowledge and increase access

Ancient China shows that science alone is not enough; supportive institutions are critical

Danny Quah is a Professor of Economics at the London School of Economics, and a participant in the UNU/WIDER project on Information Technology and Growth led by Professor Matti Pohjola. This article is based on his presentation to the UNU panel on IT, Economic Growth and Development (UN ECOSOC 2000 preparatory process) in New York on 5 May 2000.

Further details of UNU/WIDER research on information technology and its economic impact can be found on our Web site at: www.wider.unu.edu. Danny Quah's home page at the LSE is: <http://econ.lse.ac.uk/staff/dquah/>

National IT Policies for Developing Countries

by Jason Dedrick and Kenneth L. Kraemer

Information technology (IT) and the Internet present opportunities for developing countries to improve productivity, support development, and participate more fully in the world economy. Countries that fail to adopt these technologies risk isolation from international markets and from the wealth of information and communication resources available via the Internet. Developing countries face challenges in three areas as they attempt to construct effective IT policies: IT use, national IT industries, and national capabilities.

IT Use

Research shows that IT investments result in increased productivity for developed countries, but does not find this relationship in developing countries. However, it is likely that sustained investments in IT and in complementary assets such as human resources, physical capital and telecommunications infrastructure will eventually lead to productivity gains in developing countries as they have in developed countries.

Globalization makes it more urgent to develop IT capabilities. High-tech industries such as computers and electronics are moving quickly to integrate global supply chains electronically. Even low-tech industries such as textiles and footwear are adopting electronic commerce. Companies and countries need to be able to use IT to take part in these global production networks.

National IT Industries

The computer industry is a major source of output, exports and jobs in countries such as Singapore, Taiwan, South Korea, China, Mexico and Malaysia. Creating a national IT industry is not a simple matter, however. Only those in close proximity to a large market and to a

well-developed supplier base are likely to succeed in hardware, and only a few developing countries are in such a position.

Fortunately, there is an option available to developing countries that encourages IT use while also creating opportunities to develop a local industry. This option, which we call 'production close to use', includes IT services such as system integration, custom programming, and web design and hosting, as well as some kinds of packaged software.

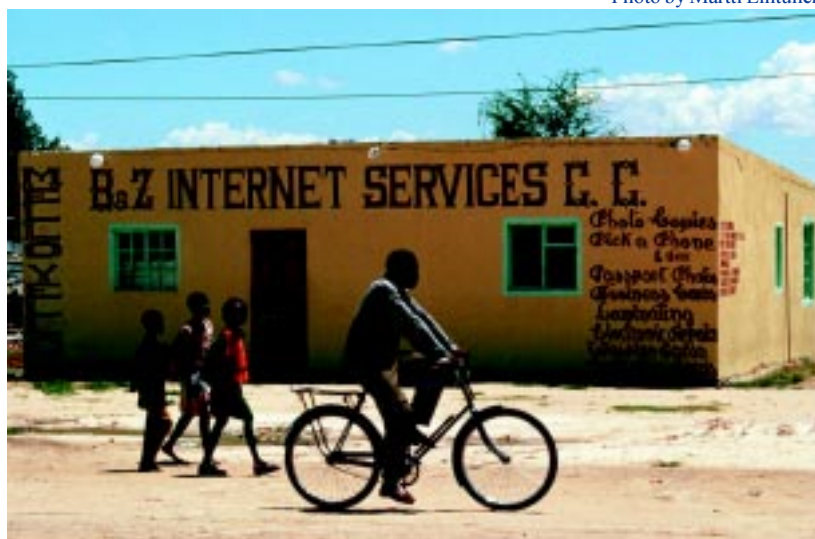
These segments offer specific

the IT industry (see table on page 6), and present many opportunities for new entrants.

National Capabilities

In order to support both IT use and production, countries need to develop human resources and information infrastructure. At one level, there is a need to develop basic capabilities through general education and broad infrastructure investments. However, focused investments in high level capabilities are also important. These can include the training of

Photo by Martti Lintunen



The Internet reaches southern Namibia

advantages for developing countries. First, there are opportunities to develop niche products that meet the needs of local languages and business cultures, and to provide services to local customers. Such markets have relatively low entry costs, so local companies can start small and grow at a pace that can be supported by their own resources.

Next, IT services can serve as a link between use and production, helping users apply IT more effectively, and creating business opportunities for domestic entrepreneurs. Finally, software and services are the fastest growing segments of

IT professionals, investment in specialized information infrastructure, and the creation of advanced technology institutions.

Such investments will create the foundation for building broader capabilities. For instance, professionals with advanced training are needed to support IT use and production, and are also needed to develop IT education programs at local schools and universities. Likewise, specialized high-speed research networks can provide the infrastructure for widespread Internet use.

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The most effective IT policies are those that promote use and production close to use, and those that build national capabilities. These policies work best if developed in cooperation with the private sector, and if the efforts of related agencies are coordinated so that they complement, rather than compete, with each other.

Promoting IT Use

A key step is to lower IT costs. Any policy that makes computers more expensive will discourage use, so lowering taxes and tariffs on IT products will help promote use. Public sector use must also rise. Governments can become sophisti-

ally involves some combination of financial incentives, export processing zones, infrastructure, and worker training. Promoting software and services is more complex, but three policies are likely to be effective.

First, promoting IT use among small businesses is essential. These usually rely on local vendors for IT services, and provide a valuable source of revenue and opportunities to develop new products and services. Second, provide direct support. Governments can provide low-interest loans and grants in amounts that are appropriate for small companies, and can create incubators for new

quality. Finally, technology capabilities must be upgraded. This means creating institutions to evaluate, adapt and diffuse imported technologies and eventually create original R&D capabilities.

In summary, IT use pays off when investments are sustained and combined with investments in complementary assets, such as human resources. While some countries may be able to develop computer hardware industries, 'production close to use' of software and services offers the best opportunities for most developing countries. Government policy can make a difference by promoting use, stimulating production close to use, and developing national capabilities.

Computer industry growth rates, 1987-1997	
Industry segment	CAGR (per cent)
Hardware	8.6
Software	14
Services	20.6

Source: McKinsey & Co., *Computer Industry Trends, 1998*.

CAGR = Compound Annual Growth Rate

cated IT users, developing useful applications and becoming a model for the private sector. Putting computers and Internet access in schools and providing necessary support for teachers not only can improve education, but will also nurture a new generation of children who are comfortable using IT. Moreover, we need more development-orientated applications.

Many IT applications are well-suited to the development process. For instance, geographical information systems can help protect natural resources and support land use planning, while distant learning can support education in countries with remote rural populations. Governments and development agencies can work with the private sector to deploy such applications.

Developing National IT Capabilities

Promoting hardware production usu-

ally involves some combination of financial incentives, export processing zones, infrastructure, and worker training. Promoting software and services is more complex, but three policies are likely to be effective. First, promoting IT use among small businesses is essential. These usually rely on local vendors for IT services, and provide a valuable source of revenue and opportunities to develop new products and services. Second, provide direct support. Governments can provide low-interest loans and grants in amounts that are appropriate for small companies, and can create incubators for new

Developing Capabilities

The final set of tasks are amongst the most important. These include expanding IT skills by training people locally and sending the best abroad for advanced degrees. Then ensure that there are opportunities to do interesting work, so that talented people will stay or return. In addition, it is vital to develop information infrastructure, by encouraging competition in telecommunications and Internet access to reduce prices and improve

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Promoting IT use

By lowering costs, increasing IT use by government, and creating development orientated applications

By developing national IT capabilities through expanding IT use among small businesses, providing direct support, and creating partnerships between local firms and multinationals

By developing capabilities through training people locally, and sending the best abroad for advanced degrees

Making Information Accessible and Affordable for All

by Veli-Pekka Niitamo

Photo supplied by Nokia

Great challenges must be overcome if the emerging 'mobile information society' is to be affordable and accessible worldwide. Otherwise, the digital divide will persist—and widen—between countries that have access to the new technologies and those that do not. But financial, institutional, political, and human factors are the main barriers for developing countries—not the technology itself.

Mobile Telephony

Traditional IT companies dominated the digital economies of the 1990s. They focused on the PC—in both hardware and software. But the Internet challenged this business paradigm by providing information and software at low cost. And now the telecommunications industry is bringing more change. Mobile telephony will soon challenge PCs as the preferred terminal for Internet access. Mobile terminals are both cheaper than PCs, and they will increasingly offer data, image, and video transmission in addition to voice transmission.

No single company, technology, or even business sector will dominate the mobile information society. Innovative companies regardless of size or location can become successful—including those located in developing countries.

China's Success

China has a long history of fostering technical innovation. From being a primarily rural-based economy, China has transformed itself into one of the leading markets for mobile information. And its record in fostering talent for technical innovation is unmatched in the developing world. Markets were opened to high technology investment in the early 1990s, a strong national technology policy was introduced, and price controls



Old and new technologies meet in China

were eased. A large domestic market for wireless telephony is the result.

By the mid-1990s, foreign companies were engaged in fierce competition in the Chinese market. During the late 1990s, China expanded local manufacturing to create employment and skills, and encouraged more knowledge transfer from foreign investors. Building research and development capacity in leading-edge mobile telephony became a top priority in the late 1990s. Domestic companies started competing with foreign companies—first at home, and then worldwide.

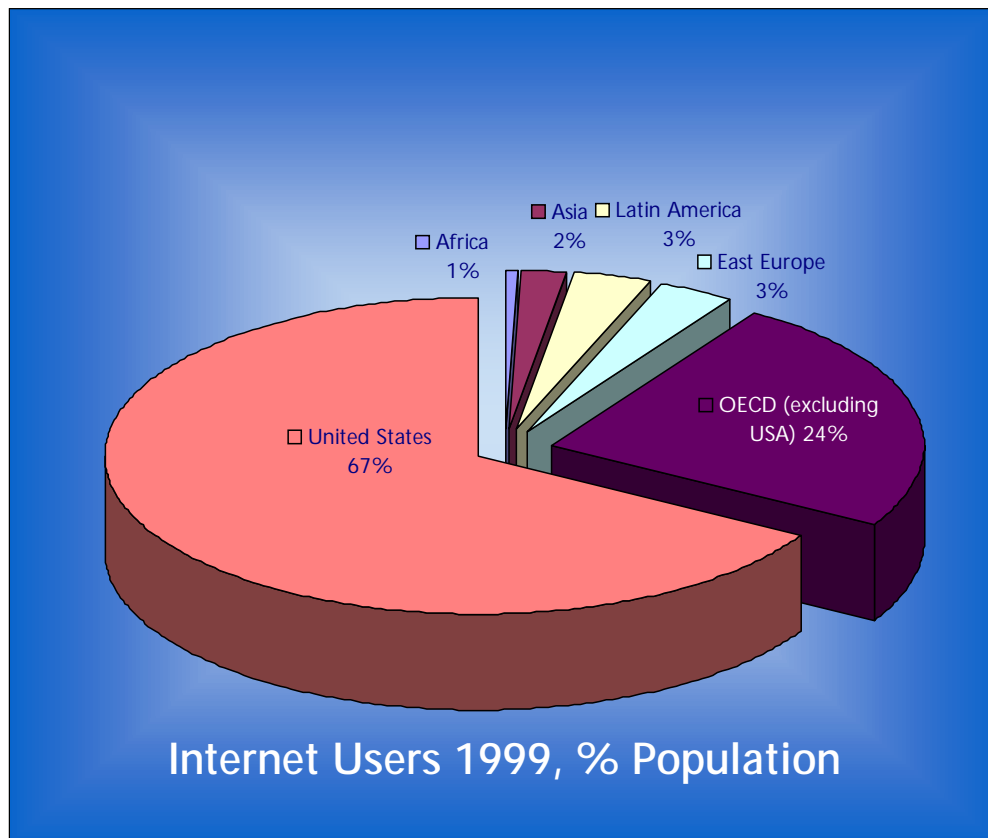
The economy's strong growth—which is increasingly led by consumer demand, especially among the expanding middle class—has helped the national technology policy. China has over 50 million mobile phone users and the mobile phone is becoming the

preferred mode of voice transmission. China will soon become the world's biggest market for mobile terminals. Some estimates predict 250 million mobile phone users by 2005 of which 50 per cent will have Internet access. And China is one of the first countries to develop third-generation broadband wireless technology with access to the Internet backbone. It is also accessing rural areas with radio links and bypassing expensive infrastructure investments for fixed-line telephony. Mobile coverage will soon extend to the least developed areas.

India and Venezuela

There are also positive developments in India, a country long known for its good quality engineering and technical education. Government initiatives to attract high technology investment are starting to bear fruit, and multinationals are investing in India-based research and development facilities.

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Source: NUA Internet Surveys

This has led to a reversal of India's longstanding brain drain. Expatriate Indian engineers are returning home to become entrepreneurs or to work with foreign investors in India. India's own technology companies have succeeded in global markets and new economy start-ups are getting global attention and funding.

Venezuela has also had some success. A lively market in mobile telephony has been created and penetration rates and business have been growing. Venezuela began liberalization in 1992, resulting in fierce competition among five mobile operators. Competition has made mobile companies efficient and flexible compared with fixed-line telephony. There are now more mobile lines than fixed-lines, prices are cheaper in mobile telephony, and consumers have benefited from this competition.

The Human Factor

Similar changes are underway in several other Asian and Latin American countries. But these

recent developments have yet to make much impact in many parts of Africa. Still, the new technologies open up better—and often cheaper—possibilities. Thus, in areas where fixed-line telephony is nonexistent, a viable option is to use radio link technology and 400-470 MHz digital radio technologies.

China has shown that with the right technology choices and investment in education and training, developing countries can match developed nations in their use of leading-edge technologies. But, overcoming the digital divide, and making global information affordable and accessible for all, is not just a matter of technology—the biggest challenges are human, especially in education.

Veli-Pekka Niitamo is Director of Global Resourcing, Nokia. This text is based on his presentation to the UNU panel discussion on 'IT, Economic Growth and Development' (UN ECOSOC 2000 preparatory process) in New York on 5 May 2000. Nokia's Web site is at: www.nokia.com

Bridging the Digital Divide

The mobile information society must be made affordable and accessible for all

Mobile telephony will soon challenge PCs as the preferred terminal for Internet access

Innovative companies regardless of size or location can become successful

China is matching developed countries in the use of leading-edge technologies

India's own technology companies are succeeding in global markets

UNU/WIDER Research on IT

Information Technology and Growth (1998 - 1999)

This project, led by Professor Matti Pohjola, empirically assessed the common view that information technology radically changes productivity and economic growth. IT certainly has many effects on the modern economy; the growth in electronic commerce is one example. However, its productivity and growth effects have been surprisingly difficult to establish.

By surveying previous studies and by presenting new micro- and macroeconomic evidence, this project demonstrated that in recent years IT investment has exerted a strong influence on productivity and

economy. The project identified the components of such national strategies. A key policy is to balance IT investment with investments in education, and training.

Production, Employment and Income Distribution in the Global Digital Economy (2000 - 2001)

This project is the sequel to the 1998 - 1999 project on IT and growth. The new project is also directed by Professor Matti Pohjola.

In his contribution to the earlier project, Danny Quah argued forcefully that the most profound impact of the IT revolution is that it makes modern economies increasingly weightless or

services, electronic databases and libraries, media entertainment and Internet delivery of goods and services. The thesis of dematerialiation is that economic value will increasingly be created by producing and distributing bits of logic rather than atoms of physical material.

The new project therefore confines its attention to the economic effects of the 'digital', 'Internet', 'weightless' or 'new' economy. The aim is to derive the implications of digital technology for productivity and growth, location of production, firm and industrial structure, employment and income distribution, and economic development at the global level. Economic policies for promoting the new economy will also be analyzed.

Photo by Martti Lintunen



The Net expands to cover Latin America

economic growth in many industrial and newly industrialized countries. Admittedly, however, developing countries seem to have neither invested in IT nor benefited from such investments to the same extent.

There is concern that information is becoming a factor, like income and wealth, by which countries are classified as rich and poor. To prevent this from happening, governments need to formulate national IT strategies to promote participation in the information

dematerialized in the sense that an increasingly greater fraction of gross domestic product comes to reside in economic goods with little or no physical manifestation (see the article by Danny Quah in this issue of *WIDER Angle*).

Such a weightless group of commodities includes all products and services that can be expressed in digital form—encoded as a stream of bits—such as computer software, telecommunications, biological algorithms, financial

Forthcoming Book on IT

Information Technology, Productivity and Economic Growth: International Evidence and Implications for Economic Growth, Edited by Matti Pohjola, Oxford University Press.

Other publications such as working papers are available as PDF documents on the Institute's site at:

www.wider.unu.edu

Working Papers on IT

WP 173 **Information Technology and Economic Growth: A Cross-Country Analysis**, Matti Pohjola, January 2000

WP163 **On the Regulation of Telecommunications Markets** Manfred J. Holler, August 1999

WP155 **The Weightless Economy in Economic Development** Danny Quah, January 1999

WP153 **Information Technology and Economic Development: An Introduction to the Research Issues**, Matti Pohjola, November 1998

BY INVITATION

How Great is World Inequality?

By Branko Milanovic

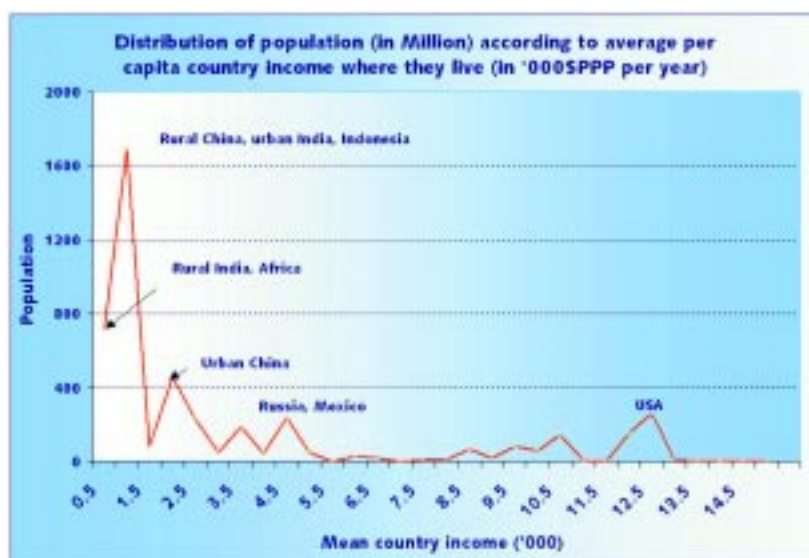
Issues of income inequality have recently gained prominence. Increasing inequality in North America and Western Europe in the 1980s, an ‘explosion’ of inequality in transition economies in the 1990s, improvements in the economic theory of inequality, and more and better data, have all stimulated a new interest in inequality.

In the policy debate, as well as in the media, rising inequality has become linked to the phenomenon of globalization. But the issue is more complex than it first appears. Globalization is eroding the importance of national borders to economic life. So, we need to know whether world inequality is rising. For even if within-country inequalities are rising, world income inequality need not increase, or may even decline, if the poor (and populous) countries grow faster than the rich (and less populous) countries. Therefore, even if globalization can be shown to raise within-country inequalities, globalization may still lessen income differences between *individuals* in the world.

World income distribution must be distinguished from inter-national income distribution, which is based on differences in mean incomes between countries (weighted by population). But the latter does not take into account income inequality within countries. This is what world income distribution does.

Calculating the World Income Distribution

To make our calculation we need household-survey data for most countries. Fortunately, we now have 216 household surveys from countries that together account for over 90 per cent of the world’s population and more than 95 per cent of world GDP. This data allows



Source: World Bank

us to compute world income distribution for two ‘benchmark’ years: 1988 and 1993 (sufficient data is not yet available to cover later years). Details of how we compare the real welfare of people from different countries in US dollars at purchasing power parity (SPPP), as well as further methodological discussion, is contained in a working paper posted on the Web site of the World Bank (details are at the end of this article).

The world Gini coefficient was 65.9 in 1993, an increase on 62.5 in 1988 (in SPPP). The implied increase of about 0.7 Gini points per year is very high. For example, during the 1980s, inequality in the US and UK increased by about ½ a Gini point per year—a rapid rise by historical standards. Remarkably, the increase is from an already very high level of inequality (and is present when we use either PPP dollars or current dollars, and when we use the Theil index which is another measure of inequality).

The bottom 20 per cent of the world’s population received only 2 per cent of total world SPPP income in 1993, down from 2.3 per cent in 1988, while the share of the bottom

half fell from 9.6 per cent to 8.5 per cent (see Table on page 11). Overall, the richest 1 per cent of people in the world (50 million people) receive as much as the bottom 57 per cent (2.7 billion people).

Why is World Inequality High and Rising?

World income inequality is high because the greatest contributors to the world Gini are countries with large populations that are at the two poles of the income distribution spectrum. One poor pole consists of 2.4 billion people who live in countries whose mean income is less than SPPP 1,000 per year (see figure above). They include many African countries, both rural and urban India, rural and urban Indonesia, and rural China. The rich pole consists of ½ billion people who live in countries which have an income level of over SPPP 11,500. They include France, Japan, Germany, the UK, and the US. The poor pole accounts for 42 per cent of the world’s population and 9 per cent of world SPPP income; the rich pole accounts for 13 per cent of world population and 45 per cent of world SPPP income. Populous countries

Cumulative percentage of world income		
Cumulative percentage of world population	1988	1993
Bottom 10 per cent	0.9	0.8
Bottom 20 per cent	2.3	2
Bottom 50 per cent	9.6	8.5
Bottom 75 per cent	25.9	22.3
Bottom 85 per cent	41	37.1
Top 10 per cent	46.9	50.8
Top 5 per cent	31.2	33.7
Top 1 per cent	9.3	9.5

Source: World Bank



Photo UNICEF

Raising the income of women is crucial to ending poverty in Africa

that have 'middling' per capita incomes (for example Brazil, Mexico, and Russia) do contribute to inequality but less so than the two polar sets.

Much of the rise in world income inequality between 1988 and 1993 is due to the fact that income growth in the developed OECD countries exceeded income growth in the rural areas in large South Asian countries (India and Bangladesh) and in rural China. Thus, mean per capita rural income in India increased by 5 per cent in current \$PPP terms between 1988 and 1993;

by 14 per cent in Bangladesh, and by 21 per cent in rural China. Meanwhile, mean current \$PPP incomes rose by 24 per cent in the US, 60 per cent in Japan, and 43 per cent in Germany. The rest of the increase in world inequality is accounted for by widening differences within China between urban and rural areas (current \$PPP incomes in urban China rose by 70 per cent) and between urban China and rural India.

Thus, we are left with a bleak picture; the differences are extremely

World Income Inequality

Household survey data now permits the calculation of the world income distribution for the first time

The Gini coefficient for world income inequality is 65.9

The richest 1% of people in the world (50 million people) received as much as the bottom 57% (2.7 billion)

To reduce world income inequality, the populous and relatively poor countries must grow faster than the world's rich countries

large, and seem to be increasing. To reduce world income inequality we need the populous and relatively poor countries—China, India, Indonesia, Bangladesh, and Nigeria—to grow faster than the world's rich countries. This, moreover, has to occur without any (or much) increase of their within-country inequality. This is the challenge that policymakers face today.

Dr Branko Milanovic is Principal Economist in the World Bank's Development Research Group and the author of 'True World Income Distribution, 1988 and 1993: First Calculation Based on Household Surveys Alone', World Bank Policy Research Working Paper No. 2244 November 1999, available from the Web site: www.worldbank.org/research/transition/.

This article is based on Dr Milanovic's UNU/WIDER public lecture delivered in Helsinki on May 18, 2000. UNU/WIDER's World Income Inequality Database (WIID), together with further papers on poverty and inequality can be accessed through our web site (www.wider.unu.edu).

New UNU/WIDER Web Site at www.wider.unu.edu

UNU/WIDER launched a new Web site in July 2000. An increasing number of people in the developing world are now connected to the World Wide Web (although still too few in Sub-Saharan Africa). But their use of the Web is often a frustrating experience since telecommunications infrastructure is still very underdeveloped.

Therefore UNU/WIDER's Web site is designed for users with slow connections as well as small computer displays.

The UNU/WIDER Web site offers a comprehensive range of material on development issues, including poverty, conflict and transition.

This Web site publishes a wide range

of reports including working papers, policy briefs, the research for action series and the WIDER *Angle*, all in PDF format for downloading.

The webmaster invites comments and suggestions in order to improve accessibility and service. Please e-mail:

webmaster@wider.unu.edu

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The United Nations University
WIDER
World Institute for Development Economics Research

Mission

- UNU/WIDER
- Mandate
- Framework
- Modus Operandi
- Funding Resources

NEW BOOKS

War, Hunger, and Displacement: The Origins of Humanitarian Emergencies

Poverty and Undernutrition: Theory, Measurement, and Policy.

UNU/WIDER is the first research and training centre of the United Nations University, dedicated to the study of major global economic processes for the purpose of fostering widespread improvements in human life and society.

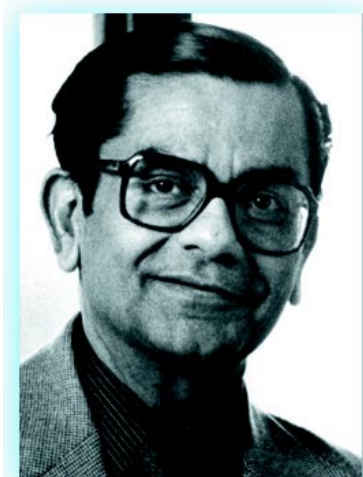
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FIN-00160 Helsinki, Finland
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fax: +358-9-61599333
webmaster

Local intranet zone

News and Events

WIDER 2000 Annual Lecture

Jagdish N. Bhagwati



Globalization and Appropriate Governance

Monday 27 November, 2000
WIDER Annual Lecture by Professor Jagdish N. Bhagwati, Arthur Lehman Professor of Economics and Professor of Political Science, Columbia University, New York, United States. Further details available at: www.wider.unu.edu

Project Meetings 2000

6-7 October, Helsinki, 'The Social Impact of Privatization and the Regulation of Utilities in Latin America', *Project Co-Directors Dr Cecilia Ugaz and Professor Catherine Waddams.*

20-21 October, Helsinki, 'Why Some Countries Avoid Conflict While Others Fail' *Project Co-Directors: Dr Tony Addison and Dr Mansoob Murshed.*

17-18 November, Helsinki, 'New Fiscal Policies for Growth and Poverty Reduction' *Project Director Dr Tony Addison.*

Lecture Series

UNU/WIDER research staff teach a range of courses at the University of Helsinki and the Helsinki School of Economics and Business Administration as well as at institutions outside Finland. These courses are offered to full-time registered students in the respective universities.

Forthcoming courses

The Economics of the Information Society at the Helsinki School of Economics and Business Administration, 12 September - 26 October), *Professor Matti Pohjola.*

The Economics of Development at the University of Helsinki, main building, lecture room 6, 31 October - 7 December 2000. *Lecturers Dr Steve Kayizzi Mugerwa, Dr Mansoob Murshed, and Dr Laixiang Sun.*

Staff Movements

Dr **Vladimir Mikhalev**, Project Director for the project on 'Income Distribution and Social Structure' completed his assignment in February and is now a Senior Economist at Oxford Policy Management Ltd, UK.

Professor **Beealasing Dabee**, The University of Mauritius, participated in the Short-term Sabbatical Programme between March and April. His research on 'Globalization and Economic Performance in Island States in the South West of the Indian Ocean' was attached to the project on 'Globalization and the Obstacles to the Successful Integration of Small Vulnerable Economies'.

Mr **Djono Subagio**, UNU/INTECH, participated in the Internship Programme between March and June. His research on 'Prudential Regulation of Banks in Vulnerable Developing Economies' was related to the project on 'Globalization and the Obstacles to the Successful

Integration of Small Vulnerable Economies'.

Mr **Erkki Viitanen**, Computer Information Systems Assistant, separated in April.

Dr **Stefan Dercon**, Katholieke Universiteit Leuven/Centre for the Study of African Economies, University of Oxford, was appointed in April 2000 as a Research Fellow/Project Director for the project 'Insurance Against Poverty'.

Dr **Steve Kayizzi Mugerwa**, Göteborg University, was appointed in May 2000 as a Research Fellow/Project Director for the project on 'Institutional Capabilities, Reform Ownership and Development in Sub-Saharan Africa'.

Professor **Sebastiano Fadda**, University of Rome III, participated in the Short-term Sabbatical Programme between May and June. His research on 'Poverty, Economic Development and Institutional Change: Towards a New Framework for Analytical and Policy Purposes' was attached to the programme on 'Institutional, Poverty and Distributive Issues'.

Dr **Pramila Krishnan**, Centre for the Study of African Economies, University of Oxford, joined the Short-term Sabbatical Programme on 1 June 2000 for a period of four months. Her research work relates to the project on 'Insurance Against Poverty'.

Professor **Ashwani Saith**, Institute of Social Studies, The Hague, and the London School of Economics was appointed in June 2000 as an External Project Director for the project on 'Privatization, Unemployment and Welfare in China'.

Dr **Stephany Griffith Jones**, University of Sussex and **Dr Ricardo Ffrench Davis**, UNECLAC, Santiago joined in June as External Project Co-Directors for the project on 'Capital Flows to Developing Countries since the

Asian Crisis: How to Manage their Volatility.'

Professor **Anis Chowdhury**, University of Western Sydney, Macarthur, participated in the Short-term Sabbatical Programme between June and July. His research on 'Politics, Society and Financial Sector Reform in Bangladesh' was broadly related to the project on 'Financial Contagion'.

Ms **Maiju Perälä**, University of Notre Dame, joined the Internship Programme for Ph.D. students on 1 August 2000 for a period of five months. Her work relates to the project on 'Globalization and the Obstacles to the Successful Integration of Small Vulnerable Economies'.

Mr **Robert Osei**, University of Nottingham, joined the Internship Programme for Ph.D. students on 1 August 2000 for a period of five months. His work relates to the project on 'New Fiscal Policies for Growth and Poverty Reduction'.

Announcement

RESEARCH INTERNSHIPS provide Ph.D. students from universities worldwide the opportunity to conduct research for 4-6 months with the Institute's faculty in Helsinki, commencing either in March or August 2001, on a topic related to the research programme of UNU/WIDER. Special emphasis will be given to students from developing/transitional countries. Travel grant and stipend will be provided. Four to five are expected to be selected. Applications should include: a letter of reference from applicants' supervisor(s) and a formal agreement from the candidate's own university authorities. Forms can be downloaded from the UNU/WIDER Web site, obtained by e-mail (wider@unu.edu), or by writing to UNU/WIDER (contact details on the last page of this newsletter).

SHORT-TERM SABBATICAL PROGRAMME offers overseas researchers and academics an

opportunity to spend 2-5 months in 2001 (except July and August) in Helsinki, interact with the resident academic staff and contribute to the UNU/WIDER research programme with a paper to be included in a publication series. Applicants must arrange sponsorship to cover their cost of participation in the programme. Financial support will be provided to partially cover living expenses. Three to four scholars will be selected. Applications should include detailed curriculum vitae, a list of publications, the topics of the proposed research and the preferred time for the sabbatical.

Research areas include: the economics of transition, long-term development prospects in sub-Saharan Africa, institutional, poverty and distributive issues, international, financial and growth issues, and national and global governance.

Information on UNU/WIDER and details of the above programmes can be obtained at the Institute's Web site (www.wider.unu.edu).

Applications for both programmes should reach UNU/WIDER (attn: Principal Academic Officer) by 31 October 2000.

2000 Board Meeting

The sixteenth session of the Board of UNU/WIDER was held during 19-20 June 2000 in Helsinki.

Board members present included: Dr Harris Mutio Mule, Dr Sylvia Ostry, Dr Jukka Pekkarinen (Vice-Chairperson), Dr Ruben Yevstigneyev, Dr Masaru Yoshitomi. Professor Ramesh Thakur, Vice-Rector, UNU, attended the session on behalf of the Rector of the UNU and Professor Matti Pohjola attended in his capacity as the Acting Director of UNU/WIDER.

The Board heard a presentation of UNU activities and deliberated on the WIDER report on the 2000/2001 research programme and also on the concluding research programmes.

UNU Update

The United Nations University launched an online newsletter in spring 2000. This news bulletin aims to disseminate the work and the research output of the UNU and its research centres and programmes worldwide.

Subscribe: www.update.unu.edu
The United Nations University and its research centers and programmes include:

UNU Centre
Tokyo, Japan

UNU/WIDER
World Institute for Development
Economics Research
in Helsinki, Finland

UNU/INTECH
Institute for New Technologies in
Maastricht, The Netherlands

UNU/IAS
Institute for Advanced Studies
Tokyo, Japan

UNU/IIIST
International Institute for
Software Technology
Macau, China

UNU/INWEH
International Network on Water,
Environment and Health
Hamilton, Canada

UNU/INRA
Institute for Natural
Resources in Africa
Accra, Ghana

UNU/ILA
International Leadership
Academy
Amman, Jordan

INCORE
The Initiative on Conflict
Northern Ireland

UNU/GTP
Geothermal Training Programme
Reykjavik, Iceland

UNU/FTP
Fisheries Training Programme
Reykjavik, Iceland

UNU/BIOLAC
Programme for Biotechnology in
Latin America and the Caribbean
Caracas, Venezuela

UNU Food and Nutrition Programme for Human and Social Development
at Cornell University
NY, USA

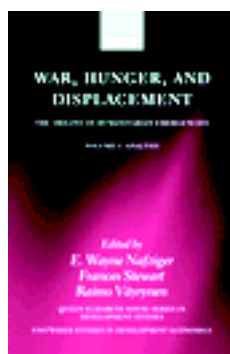
UNU/WIDER Publications

New Titles

Books

War, Hunger, and Displacement: The Origins of Humanitarian Emergencies, Volume 1 & 2

Edited by E. Wayne Nafziger,
Frances Stewart and Raimo
Väyrynen

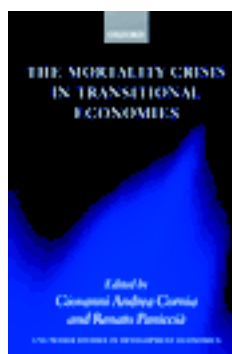


Volume 1, Hardback, 0-19-
829739-4, UK Price: £48.00
Publication date: September 2000

Volume 2, Hardback, 0-19-
829740-8, UK Price: £55.00
Publication date: September 2000
Oxford University Press

The Mortality Crisis in Transitional Economies

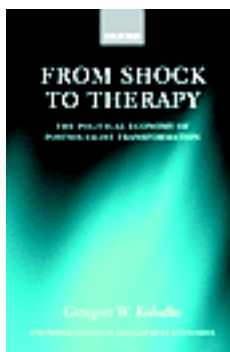
Edited by Giovanni Andrea Cornia
and Renato Panizza



Hardback, 0-19-829741-6,
UK Price: £55.00
Publication date: August 2000
Oxford University Press

From Shock to Therapy: The Political Economy of Postsocialist Transformation

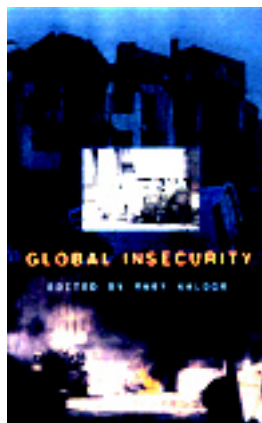
by Grzegorz W. Kolodko



Hardback, 0-19-829743-2, UK
Price: £48.00
Publication date: April 2000
Oxford University Press

Restructuring the Global Military Sector Volume III: Global Insecurity

Edited by Mary Kaldor



ISBN 1-85567-644-3 pbk, ISBN
1-85567-645-1 hbd
UK Price: £12.99 pbk- £40.00 hbd
Publication date: July 2000
Continuum International
Publishing Group Ltd

Poverty and Undernutrition: Theory, Measurement, and Policy

by Peter Svedberg

Hardback, 0-19-829268-6, UK
Price: £45.00
Publication date: September 2000
Oxford University Press

The New Regionalism and the Future of Security and Development

Edited by Björn Hettne, Andrés
Inotai and Osvaldo Sunkel

Hardback ISBN 0-333-68713-2,
UK Price: £50.00
Paperback ISBN 0-333-68714-0,
UK Price: £19.50
Publication date: April 2000
Palgrave/Macmillan Press Ltd

National Perspectives on the New Regionalism in the Third World

Edited by Björn Hettne, Andrés
Inotai and Osvaldo Sunkel

Hardback ISBN 0-333-68711-6,
UK Price: £50.00
Paperback ISBN 0-333-68712-4,
UK Price: £19.50
Publication date: April 2000
Palgrave/Macmillan Press Ltd

National Perspectives on the New Regionalism in the North

Edited by Björn Hettne, Andrés
Inotai and Osvaldo Sunkel

Hardback ISBN 0-333-68709-4,
UK Price: £50.00
Paperback ISBN 0-333-68710-8,
UK Price £19.50
Publication date: April 2000
Palgrave/Macmillan Press Ltd

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Working Papers

WP187 Hospital Efficiency in Sub-Saharan Africa: Evidence from South Africa

Eyob Zere, June 2000

WP186 Price Scissors, Rationing, and Coercion: An Extended Framework for Understanding Primitive Socialist Accumulation

Laixiang Sun, June 2000

WP185 Sex Workers in Calcutta and the Dynamics of Collective Action: Political Activism, Community Identity and Group Behaviour

Nandini Gooptu, May 2000

WP184 Individual Motivation, Its Nature, Determinants and Consequences for within Group Behaviour

Sabina Alkire and Séverine Deneulin, May 2000

WP183 Has the Coffee Federation Become Redundant? Collective Action and the Market in Colombian Development

Rosemary Thorp, May 2000

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Abigail Barr, May 2000

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Barry Eichengreen and Donald J. Mathieson, April 2000

WP 180 EMU Effects on International Trade and Investment

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David Begg, April 2000

WP 178 Will the Emergence of the Euro Affect World Commodity Prices?

John T. Cuddington and Hong Liang, March 2000

WP 177 EMU and the Developing Countries

Benjamin J. Cohen, March 2000

WP 176 Will the Euro Trigger More Monetary Unions in Africa?

Patrick Honohan and Philip R. Lane, March 2000

WP 175 Globalization, Marginalization and Development

S. Mansoob Murshed,
February 2000

WP 174 Fundamental Economic and Social Change: The Case of Kyrgyzstan 1993-97, Georges Heinrich, February 2000

WP 173 Information Technology and Economic Growth: A Cross-Country Analysis

Matti Pohjola, January 2000

WP 172 Group Functioning and Community Forestry in South Asia: A Gender Analysis and Conceptual Framework

Bina Agarwal, January 2000

Printed copies USD 5.00 / FIM 20.00

WIDER Publications

Recent publications, newsletters, introductory chapters of new books, and public lectures are available in PDF-format on the Institute's Web site (www.wider.unu.edu)

Publications such as Working Papers are priced as indicated, postage inclusive. Please address your orders to UNU/WIDER Publications at the mailing address given on this page, or by e-mail to tuula@wider.unu.edu. Payments accepted by USD bank draft payable to UNU/WIDER, by credit card (Amex, Eurocard, MasterCard, OK, Visa), or by transferring the amount in FIM/Euro or in USD to the Institute's bank account (please ask for details). An invoice will be provided on request.

Books are available from the respective publishers and their outlets at the list price plus postage and packing.



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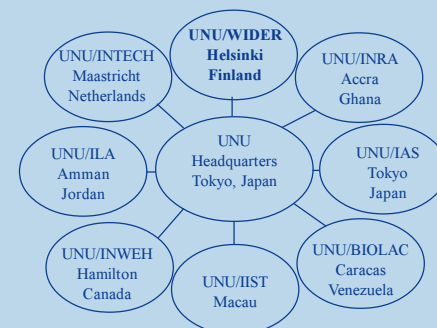
WIDER

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Economics Research

UNU/WIDER was established by UNU as its first research and training centre and started work in Helsinki, Finland, in 1985. Through its research and related activities, UNU/WIDER seeks to raise unconventional and frontier issues and to provide insights and policy advice aimed at improving the economic and social development of the poorest nations.

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