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Asia's industrial crisis

Megascience challenge

Income tax "bubbles"

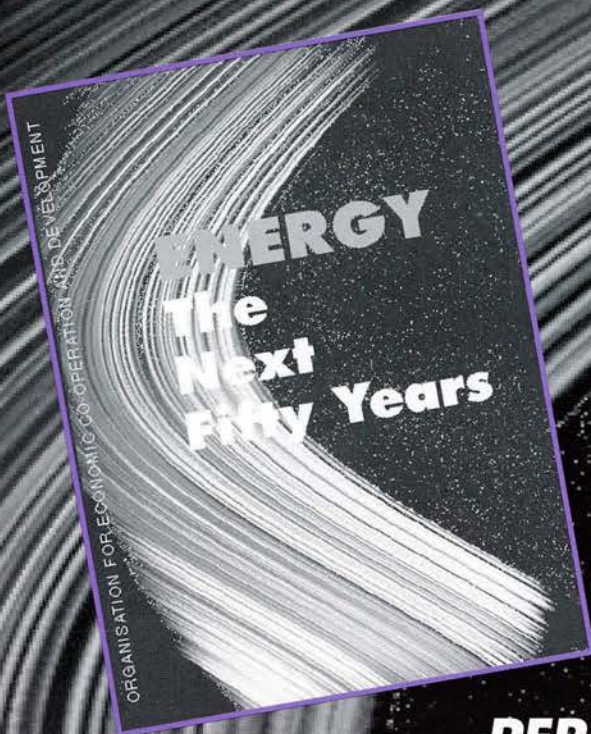


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On road safety

Your article in the March issue of OECD *Observer* No. 216 makes many valuable points and rightly highlights the problem of pedestrians. May I, as an urban policy analyst, put a proposal to you. Ministries of Transport and even road safety authorities tend to portray road casualties by means of graphs which show casualty rates per head of population. As in the case of the graph in your own article this portrayal generally shows a satisfying decline. This in turn permits policy-makers to feel comfortable about what they are doing. But death and injuries on the roads can be shown otherwise. Accumulated numbers of road victims could be forecast over a period of, say, a decade so as to depict the sum of human suffering, and the accumulated health service costs, that flow from current road vehicle technology and use.

If such an exercise was done for OECD countries the resulting picture would be sobering; if it was done for India and other developing countries it would be horrifying. Together the two kinds of forecasts (and the singling out of occupant and pedestrian casualties) promise to be of huge importance for road safety. It should be possible to use the data to put real pressure on the motor industry, a body which has, in my view, never taken responsibility for the lethal side-effects of its products.

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Biotechnology and development

I have read with interest the
Spotlight on Biotechnology in

the March edition of the *Observer* (no 216). The issues treated – public perception, consumer concerns over food safety, IPRs, trade barriers – reflect concerns currently expressed in OECD countries. It is disconcerting, however, – particularly as someone who is quite familiar with the OECD Development Centre's work on biotechnology – to find only a few short sentences throughout the Spotlight referring specifically to countries outside the OECD. In today's context of globalisation and sustainable development, such a narrow perspective is difficult to defend. During what became known as the Green Revolution, new technology was developed in the international agricultural research centres and national agricultural research systems specifically to increase food supply in developing countries. The technology "package" consisted of high-yielding varieties of wheat, maize and rice, chemical pesticides and herbicides and, often, irrigation. Green Revolution technologies did indeed increase grain production. However, they were also the vehicle for transferring the chemicals-intensive methods of production predominant in the most technologically-advanced systems of OECD countries to developing countries.

This model of production has been brought into question and more sustainable methods of production must be sought. Biotechnology – whether in the form of new varieties with specific properties, or as a tool in the research process – now offers all countries the potential for more sustainable agriculture, that is an agriculture which, *inter alia*, causes less water and soil pollution. For developing countries it also has the potential for improving lo-

cal food crops and for creating drought-resistant varieties. The potential of biotechnology for developing countries will not necessarily be realised by importing the same food products and the same varieties as those developed for OECD countries. Furthermore, biotechnologies produced for intensive OECD agriculture may perform poorly under the production conditions of developing countries.

What is needed therefore is more innovation within developing countries. Even though it is clear that some elements of technology and knowledge need to be transferred from external sources, it is still important that biotechnology innovations should be generated within the research and innovation systems of developing countries. This would require increased, sustained public research effort and innovative forms of collaboration between the public and private sectors. The Green Revolution technologies were developed as "public good" technologies, funded largely by philanthropy and the international donor community. In contrast, agricultural biotechnology has been spearheaded by private sector interests.

Developing countries in the process of reform have generally been compelled to reduce public funding of research. At the same time, official development assistance has tended to contract. Yet, as your editorial says, "it is the developing world which has the greatest need for the new knowledge and techniques promised by biotechnology". What role could OECD play in helping developing countries meet this challenge?

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The constituency of the future

DONALD J. JOHNSTON, SECRETARY-GENERAL OF THE OECD

On the Eiffel Tower here in Paris where the OECD is based, there is a clock which clicks down the days left to the end of the 20th century and the beginning of the new. It is a large, brightly-lit clock and it can be seen from quite a distance away. At the time of writing there were 178 days to go. Tomorrow it will be 177. Soon it will be 10 and in the blink of an eye, it will be day zero, or is that day 1? The idea is important because during the months ahead many people's minds will be filled with a mixture of excitement and anxiety about the future. There will also be a sense of nostalgia and celebration of the past, for when you drift into a new era, as with every New Year, you leave another one behind. There will of course be much to celebrate. The last half century alone has been a period of extraordinary human progress, in the sciences, in the conquest of space, in industry, entertainment and discovery. Life in 1999 is quite a lot different to what it was in 1949. A large group of people bears witness to that time, of hope, of rebuilding after the devastation of war, of renewal in ideas, in technology and possibilities. It was in effect a constituency for the future. The OECD is one institution which was forged from that exciting period of reconstruction and international co-operation, helping often dispirited governments and people understand and meet the challenges that lay before them. Despite our successes, some of the challenges we have encountered over the decades came as quite a shock, from political conflicts and tragic assassinations to oil price changes and global warming. Certainly, had a well-reasoned map of the future been available to us over the years to help us plot our way forward and perhaps avoid some of these problems, I am sure we would have used it eagerly.

Today's constituency for the future is even larger and more demanding than before. Perhaps by having experienced rapid change ourselves we are more conscious of our relationship with future generations. But there is more to it than that. People are not only living longer, they can expect to be healthy throughout most of their lives too. And greater personal responsibility for welfare has meant that more and more people feel they have a direct stake in the future. Indeed, investments they make or which are made collectively on their behalf depend on anticipating

the way ahead: whether in pensions, in environmental developments, in energy or in global political arrangements. And in this time of thickening innovation and dizzy expansion, particularly in fields such as electronic commerce and biotechnology, there is a great pressure to find fast, though considered, responses. To anticipate the future well, if not precisely, and to allow us the opportunity to influence developments ahead of time: that is what today's constituency of the future rightly wants.

One problem today is that the future arrives too quickly! Time, of course, has not sped up, but the rapidity of change, driven by modern technology, makes it increasingly difficult to adapt our public policy frameworks, let alone create new ones. But try we must. The OECD's response to this challenge was to establish the International Futures Programme in 1990, to help us think clearly and plan well. The Spotlight of this *Observer* is drawn from that programme, and a range of other articles in this special summer edition also consider the future in its longer term, usually 50 years.

The OECD has an important role to play in the building of the new age. The challenges will mount and new local and global problems will abound. The OECD will be there to balance the objectives, to guard against contingencies and use its expertise to advance best practice advice to its member governments. It is not a forum to promote an acquired ideology or a unitary view. It is not a closed club either: in this year's ministerial council the Organisation showed its new sense of global responsibility by opening up dialogue with non-members for the first time. The OECD has a duty to review itself just as it reviews its members, to keep its knowledge up to date, to make sure it is capable of offering a service to the citizens of tomorrow's world. It is our engagement in lifelong learning! When I see that clock on the Eiffel Tower calling out the days, and the teams of excited young tourists gathered round it, I am reminded that the vast constituency of the future will expect no less. ■



• News brief •

Jacques Delors joins OECD as a Special Adviser

Jacques Delors, former president of the European Commission and France's former minister of economy and finance under François Mitterrand, is joining the OECD on a part-time basis to act as Special Adviser to the Secretary-General of the OECD, Donald J. Johnston. According to the Secretary-General, Mr. Delors will

play an important role in assisting with policy formation. "Mr. Delors will help us bring together more effectively the economic and social dimensions of our work, a challenge for all member governments as we move further into knowledge-based economies where the quality of human capital is the major comparative

advantage for everyone," Mr. Johnston said on announcing the appointment, which takes effect from 1 July 1999. Mr. Delors will advise on a wide range of subjects in the OECD's work programme, which touches nearly all areas of public policy. ■

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Better regulation for better governance

It is one thing to have regulation, it is quite another to have good regulation. Improving the legal quality of regulations, whether by revising them individually or rebuilding whole sections, can help economic and social performance, as well as governance. Not surprisingly, regulatory reform is attracting more and more interest as governments volunteer themselves for review under the OECD's Regulatory Reform Programme. The aim is to assess individual countries against international best practices and to suggest targetted action for reform. The United States and the Netherlands have recently been reviewed. A report on Japan was published in April, and another on Mexico is due shortly. ■

• www.oecd.org/subject/regreform/

A clearer perspective on GDP

Thanks to new OECD data, it is now possible to compare real GDP per capita accurately across 52 different countries. The new OECD data on real GDP per capita based on purchasing power parities (PPPs) covers not just OECD countries, but a number of former command economies in Central, Eastern and South Eastern Europe and the former Soviet Union as well. Comparing GDP levels of different countries using PPPs gives a clearer picture of actual wealth

than calculations based on regular currency exchange rates. This is because PPPs adjust for the differences in price levels, and hence in purchasing power, between countries. The new data reveals some rather wide income gaps. For the OECD as a whole, including the Czech Republic, Hungary and Poland but excluding Korea (figures not available), real GDP per capita in 1996 averaged nearly US\$20 000. However, the average for Slovenia and the Czech Republic was 67% and 64% of the OECD level.

On the same scale, per capita GDP in the Balkan region were: Romania 33%, Croatia 32%, Bulgaria 25%, the Former Macedonian Republic of Yugoslavia 21% and Albania 14%. Russia had the highest GDP per head of the former Soviet Union, according to the PPP measure, with 34% of the OECD average, followed by Belarus and Kazakhstan with 26% and 22% respectively. Most of the others were 15% or less. The data will be updated in 2000. ■

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• News brief •

Corporate governance: getting it right together –

The OECD and the World Bank agreed at the end of May to co-operate in the promotion of improved corporate governance on a world-wide basis. Both institutions are committed to assisting governments in evaluating and improving the legal, institutional and regulatory framework for corporate governance in their countries. The move responds to

mandates from finance ministers and central bank governors of the G-7 and the OECD countries.

The agreement envisages a newly created Global Corporate Governance Forum and enhanced structures for policy dialogue and development in regions and individual countries. The new forum is expected to be launched in September and

will bring together representatives from regional development banks, international organisations, private sector, and developing transition countries. There will be a Private Sector Advisory Group drawn from around the world. The new initiative leans on the respective strengths of the two organisations: the World Bank's long experience of working with developing and tran-

sition economies to establish effective corporate governance systems and infrastructures, the OECD's rich experience of consulting with both public and private sectors in its member and non-member countries, culminating in its Corporate Governance Principles that were finalised earlier this year. ■

• www.oecd.org/daf/governance/principles.htm

– and in Russia

Abuse of corporate governance remains a common problem in Russia. Investors have often seen their shares diluted by insiders and major shareholders. Companies have seen their assets stripped by various means of transfer pricing. The interests of creditors have not been adequately protected and the mobilisation of capital

has been hampered. Yet, good corporate governance is central for raising much-needed investment and stimulating economic activity. The Russian government has made progress in economic reforms but more is needed to promote better governance, encourage dialogue, identify areas for technical assistance and to plan the way

ahead. It is against this background that a decision was taken at an OECD meeting in Moscow to set up a twice yearly Round Table on corporate governance in Russia. The aim is to bring together securities regulators, judiciary experts, representatives of the financial and securities institutions and corporate leaders, as well as repre-

sentatives of stakeholders and civil society. The Moscow initiative was co-sponsored by the World Bank and the US Agency for International Development, with close support from the Russian government. ■

• www.oecd.org/daf/peru/home.htm
• www.worldbank.org/html/fpd/privatesector/cg/

Irish aid rises fastest

This year Ireland marks the 25th anniversary of its official aid programme. Over the last five years, the volume of Ireland's official development assistance (ODA) has risen by an av-

erage of 20% a year in real terms, the most rapid growth of any of the OECD's Development Assistance Committee (DAC) countries. Preliminary data indicate that Ireland's devel-

opment co-operation reached 0.3% per cent of GNP in 1998, nearly double its 1992 level. Six DAC reviews are conducted every year. Forthcoming reviews include Norway in

October, Austria in November and Australia in December. Reviews have already been released this year on Japan (April) and Denmark (March). ■
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• News brief •

Partnership for Belfast

One important way of strengthening Northern Ireland's economy is through partnership projects to regenerate its cities. On 24-25 June 1999 the OECD's territorial development service (TDS) and the Trade Union Advisory Committee (TUAC) held a high-level seminar in Belfast on Partnerships and Local Development. The seminar emphasised how much had been accomplished in the regeneration of the city over the past dec-

ade. The seminar focused on the activities of Lagside Corporation to redevelop the River Lagan and its banks, with recommendations for economic growth, job creation and social cohesion in the next phases of development in the city centre. The seminar highlighted partnerships and strategies for sustainable development which combine environmental and social objectives. ■

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New concern about renewables

In a report released at the end of June, called *The Evolving Renewable Energy Market*, the International Energy Agency called on governments, industry, researchers and consumers to work actively to promote renewable energy resources. Renewables, the IEA maintains, are the key to a sustainable energy future. The new report identifies a number of problems that

slow the rate at which the market adopts renewables. It suggests several solutions, including: reduction of technology costs, innovative financing mechanisms, stable energy policies, fair access for renewables, information and training, enhanced research and development efforts and international co-operation. ■

• www.iea.org

New Latin American observers to FATF

The Financial Action Task Force on Money Laundering (FATF), the world's leading anti-money laundering authority which operates from the OECD's seat in Paris, marked its tenth anniversary this month with the announcement of invitations to three Latin American countries to join it as observers. The invitations to Argentina, Brazil and Mexico, which will take effect at FATF's next meeting in September in Portugal, respond to a call by ministers from FATF member governments in 1998 for a worldwide alliance against money laun-

dering. The invitations to Argentina, Brazil and Mexico follow a political commitment by the governments of these countries to endorse the forty FATF Recommendations, to undergo two mutual evaluations and to play an active anti-money laundering role in their regions. Full membership in the FATF will be effective upon successful completion of a first mutual evaluation. Announcement of the invitations to the three Latin American countries was made in Tokyo on 2 July 1999. ■

• www.oecd.org/fatf;
• fatf.contact@OECD.org

Balkans aftermath: the OECD's role

At a meeting in Petersberg, Germany, on June 10, foreign ministers of the countries participating in the Stability Pact for south eastern Europe, including European Union countries, the United States, Canada, Japan, Russia and a number of south-east European states, acknowledged the OECD's strength as a forum for dialogue on medium-term structural policy. In a

communiqué, they invited the OECD "to take an active part in the South Eastern Europe Regional Table and to assist in the process of economic reconstruction, the strengthening of good governance and administrative capacities and the further integration of affected states into the European and global economy". ■

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• News brief •

Measuring minds

Although it is the combination of intellectual and tangible capital of a company that creates value, intellectual capital is still not measured or reported adequately. That was one of the key messages of a symposium on measuring and reporting companies' intellectual capital in Amsterdam 9-11 June. It was organised by the OECD with the Netherlands Ministry of Economic Affairs and Ministry of Education, Culture and Science and the Nordic Industrial Fund. Frans van der Wel, professor of accounting at the Free University, Amsterdam and former head of the Royal Dutch Institute of Chartered Accountants, chaired a technical meeting to review results of recent surveys of 1,800 companies, and case studies and experimentation in 125 companies in

OECD countries. "Intellectual capital", or "intangibles", includes know-how and experience of employees, research and development and technology, organisational structure, marketing, customer and supplier networks, and software. There has been some progress in measuring human capital, but clearly not enough. According to some, one of the difficulties is the damaging tendency to see the labour market rather like one sees financial markets, although for humans rather than financial capital. For more on this idea, readers are invited to read last January's edition of the *Observer* no. 215, where Joop Hartog, of the University of Amsterdam, takes a look behind the veil of human capital. ■

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ADB chief calls for higher private-sector standards in Asia

Tadao Chino, the president of the Asian Development Bank, has called on the private sector in Asia to enhance governance, transparency and information disclosures. "Like the public sector," the ADB president said, "the private sector should, for example, also adopt international standards in the area of transparency and good governance, and ensure stronger due diligence and better risk management in their operations." The ADB President also called for corporate restructuring, partnerships between the private and the public sectors and targeted financing for reform measures from the international community,

including the multilateral lending institution. Tadao Chino went on to explain that the ADB was exploring ways of helping the private sector to achieve these ends, but warned that these investments by the ADB could only bring about benefit in a context of "good governance, privatisation of state-owned banks, and the creation of sound financing mechanisms for the private sector." The ADB president was speaking at the 1999 International Forum on Asian Perspectives, organised jointly by the OECD Development Centre and the ADB in Paris on June 29. ■

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Staying up with e-commerce

What does electronic commerce really mean for business and government? Getting a grasp on the policy implications of the fast-moving digital economy is a central part of the OECD's work. In October 1998 the OECD ministerial conference "Realising the Potential of Global Elec-

tronic Commerce", held in Ottawa, set out action plans regarding the policy issues to be tackled both by the public and private sectors. To take stock of developments and to check progress since then, a follow-up forum will be held at the OECD in Paris in October 1999. It will examine

emerging issues and look at what remains to be done to help policy-makers to keep ahead in the growing e-world. Meanwhile, as a follow-up to the OECD book, *The Economic and Social Impacts of Electronic Commerce - Preliminary Findings and Research Agenda*, the OECD is preparing a new

study on business-to-business e-commerce. Its aim is to provide a comprehensive quantitative and analytical picture, with some policy conclusions, of this dominant, though still insufficiently understood, area of the e-commerce market. ■

• www.oecd.org/subject/e_commerce/



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United States: riding out the boom

RICHARD HERD, ECONOMICS DEPARTMENT, ECO.CONTACT@OECD.ORG

Last year was the seventh consecutive year of economic expansion in the United States; real GDP rose by 3.9% in 1998. The question everyone is asking is: can the boom continue?

When the legendary British prime minister, Harold Macmillan, told his electorate that they never had it so good, he was talking about the UK economy in the 1950s. The same phrase could well be used about the United States today. Some simple facts do indeed show that the US economy has rarely, if ever, been better. To start with, it was the only G-7 country to manage a growth rate above 2% in real terms in the 1990s. Recent growth has been most remarkable of all, since the economy's average rate of increase has been 4% over the last three years. The sustained expansion has reduced the unemployment rate to 4.3% of the la-

bour force, a level not seen since the second half of the 1960s.

Booming private consumption and fixed investment have been the main sources of this expansion. Households have stopped saving and boosted their spending instead. At the same time, spurred by falling computer prices, companies continued to increase equipment outlays. Such a rapid growth of private domestic demand has offset the slackening in exports. But inflation has declined. Against this, with imports surging as demand rose and exports falling, the current account deficit on the balance of pay-

ments rose and, for the first time in half a century, the personal sector has moved into financial deficit.

But can these good times continue? Every stock market dip is eyed nervously as the beginning of a terrible downturn, only to see the next day turning into the scene of another bull run. The small increase in official short-term interest rates at the end of June did not stop the markets' euphoria either. Indeed, it seemed like more-business-as-usual within a day. But there is a wisdom that what goes up must come down, which in the case of the US boom begs two questions: When? And how? Looking at the causes of the upturn may help us to come up with some answers.

What kind of productivity?

Three factors explain the excellent US economic performance: strong productivity growth, falling import prices and a marked increase in household wealth. Productivity is very widely seen as being one of the primary drivers of the boom, which is why great care must be taken in looking at it. Productivity has been boosted by a rapid increase in capital formation that has pushed investment to the relatively high level of almost 12% of the net real capital stock of the business sector, well above its peak in any previous cycle since 1945. To be sure, a higher amount of replacement capital is needed than in the past, because of greater expenditures on shorter-lived equipment. Nonetheless, the growth rate of the real net capital stock has picked up in the last few years, reaching rates not seen since 1979.

It is this type of strength which has led to the increase in the sustainable growth rate of the US economy to almost 3%. But what is particularly important to note is that the associated increase in labour productivity has

mainly been associated with the boost in the amount of equipment, especially computers and related information technology, used by each worker. There is little evidence that the total productivity of capital and labour has accelerated. The significant gains in 1996 and 1997 can be explained by the cyclical upswing in the economy, but only a small part of the 1998 rise could be used to justify a trend increase.

The growth in labour productivity has meant that unit costs have not accelerated as quickly as wage hikes would indicate. Unit labour costs have been generally well contained, as nominal compensation has barely risen faster than above-average productivity increases. However, competitive pressures have been extreme and corporations have had to contend with falling prices in 1998 that have led to a decline in corporate profit margins.

This stability in costs leads us to the second factor accounting for the US economy's good performance, and that is the sharp fall in import prices. It is important because the fall has re-

strained inflation and so boosted demand. The import price deflator plummeted in 1998 after declining the year before, with the cost of oil plunging by one-third, directly shaving a quarter of a percentage point off the consumer price index. Commodities were particularly hard hit by the slowdown in world demand. Other import prices also fell, as the dollar appreciated, bringing the largest improvement in the terms of trade since 1983.

Quite simply, consumers have lowered their saving rates because their balance sheets are in good shape.

The third reason for the boom is to be found in the behaviour of US households themselves. Quite simply, consumers have lowered their saving rates because their balance sheets are in good shape. Although debt has risen rapidly, financial assets have grown faster, while holdings of tangible assets have accelerated too. The net worth of households has increased over 10%, at an annual rate, in the last three years, reflecting stock prices that have grown 23% annually. Households now hold almost a third of their financial assets either directly or indirectly in corporate equities – up from a quarter three years earlier.

So, can it last?

Regrettably, not all of these positive factors can be expected to persist and slower growth is likely. Plant and equipment investment is expected to slacken as profits weaken and further surges in share prices become less and less likely. Consumer spending will slow too as a result. Despite this slowing in demand, inflation should pick up as oil prices rise from their historical lows and, so far, the exchange rate is little changed from its 1998 average, lessening the prospective fall in import prices.

These factors help to justify the OECD's outlook for US growth: that it should slow to 2% from the second half of this year and hold at that rate into 2000. Despite this slackening of demand, the current account deficit is expected to widen further, reaching 3.5% of GDP next year. Some increase in unemployment also seems likely, though it should still remain well under the OECD estimate of the equilibrium level of 5.5% of the labour force, leaving the economy operating above its potential next year.

No radical shift in policies

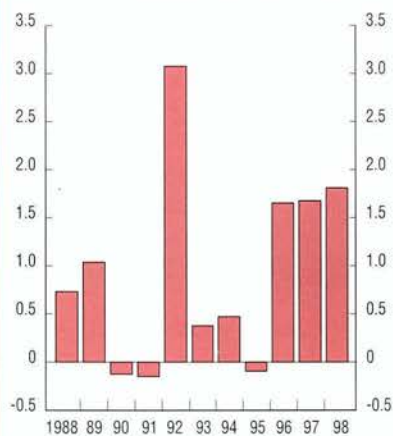
Monetary policy has helped keep up the momentum of the upswing. Interest rate cuts last fall averted a possible slowdown, helping asset prices recover. The forecasts suggest that the economy will indeed slacken with only a moderate pickup in inflation. However, if the recent strength of the economy were to persist, and if evidence emerges that the current weak inflationary situation cannot be sustained, then a case may be made for tightening monetary policy.

As for fiscal policy, it has exerted a stabilising influence on the economy in the past year. The general government account registered its second surplus in the past thirty years, resulting in net public debt falling to 42% of GDP from a peak of 47% in 1995. Policy decisions that checked the growth of spending played a role in this development, together with the higher-than-expected increase in tax revenues.

The five-year expenditure control programme agreed by Congress and the Administration in 1997 has now reached a crucial stage that will help determine the medium-term outlook for the budget position. Overall spending was allowed to rise somewhat at the start of the plan, but it will have to

Labour productivity¹ growth in the US business sector

Year-on-year percentage changes



1. GDP per employed person.



What goes up...

fall in nominal terms in the next three years to stay within the legislated spending caps. But spending cuts are

difficult when times are good and the budgets are in surplus, since the political demands on the federal purse

intensify. Measuring and, in many cases, resisting those demands for more money requires great determination from the authorities. But if Congress can stick to the President's budget proposal limiting the increase in discretionary spending to the inflation rate in the medium term, then net general government debt should fall to around 10% of GDP by 2009, down from its current level of 42%.

That is ten years away, but such a boost to national savings is a key part of the effort that is needed to meet the consequences of ageing in the next 40 years. The boom is unlikely to last forever, but acting on the budget now – and in the way intended – will help to ensure that there will be more good times in the future. ■

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Coping with the consequences of ageing

The long-term picture for the US economy very much depends on one thing: how policies are developed to deal with ageing and the shifting structure of the population. Richard Herd explains.

“The economy, stupid” has been a proud motto in US politics in recent years, and with good reason. But for it to work in the years ahead, the demographics had better not be forgotten. The next forty years will see a major change in the structure of the US population: the number of elderly is expected to increase markedly while the growth of the working population should slacken. The number of people over the age of 65 for each person of working age could almost double.

The US changes are predicted to be much less severe than in many other OECD countries, since the US population will benefit from relatively high fertility and immigration. Nevertheless, the economic implications are still serious.

There is also likely to be a slackening in economic expansion owing mainly to slower growth in the labour force. If that happens, with the elderly consuming more than the working popu-

lation, personal savings may keep declining in the longer term, which, despite capital inflows, could result in lower growth of the capital stock and productivity. And that will affect living standards.

Taking the strain

Fortunately for the United States, the private sector runs a well-developed pension saving industry, so lessening the strain on public finances, at least

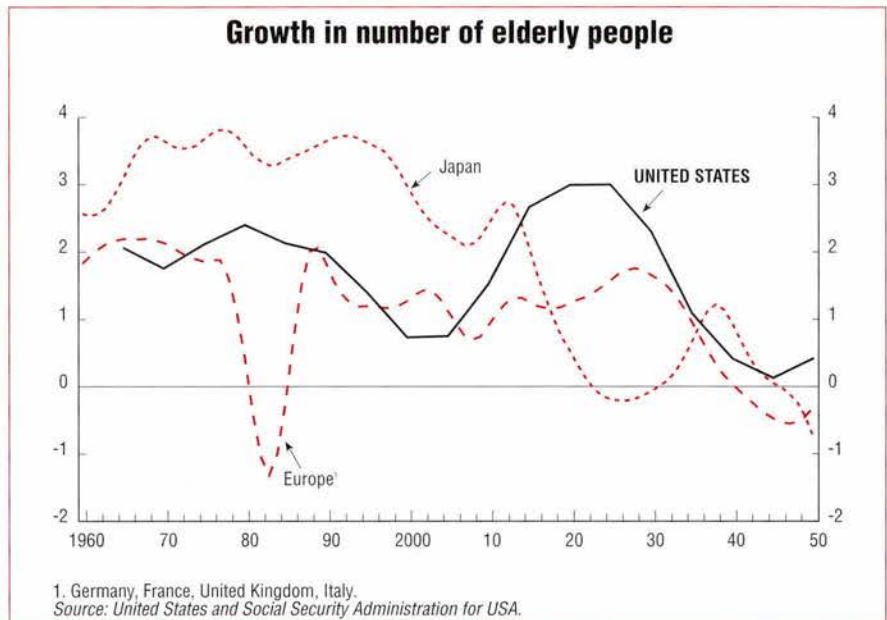
compared to other OECD countries. Most notable has been the successful experience with 401 (k) defined-contribution plans, introduced in 1978 to induce people to accumulate assets in preparation for their retirement. At the end of 1997, more than \$1.8 trillion was invested in 401 (k) and similar plans, almost three times the size of the Social Security Trust Fund portfolio. Two positive aspects of this "success story" are worth noting: 401 (k) plans have improved the ease with which retirement saving can be preserved when changing jobs, which is good for labour flexibility; and second, they have also given individuals more responsibility as to their own investment decisions for retirement purposes.

But there will be strains on public finances. In the next four decades, according to official projections, social security pension payments and health care costs for the elderly seem likely to expand by 2.25% and 4% of GDP, respectively. As a result, by 2034, actuarial estimates suggest that there will be no assets left in the Social Security Trust Fund. However, while Social Security and Medicare may be running

Blissfully planning ahead



A. Duclos/Gamma



large deficits, the remainder of the federal budget should be generating significant surpluses. Over the very long run, with no policy changes, Social Security and Medicare could be running deficits equivalent to 0.8% and 1.3% of GDP. Increases in Medicaid for the elderly will also add 0.3% of GDP to the deficit – a total deficit due to ageing of 2.4% of GDP. On the other hand, the remainder of the budget has room for tax cuts amounting to 1.6% of GDP – provided that Congress sticks to the President's spending plans. This illustrates the importance of viewing the government sector as a whole, rather than just focusing on the ageing components of the budget.

While the likely overall surplus in the remainder of the budget may be sufficient to ensure the future of Social Security, it cannot finance both Social Security and Medicare. Structural changes to both of these programmes are required, rather than just book-keeping adjustments. The scale of the changes that need to be made to public finances is, however, relatively small – less than 1% of GDP compared to the improvement in public finances seen over the past six years.

The President's proposal for saving Social Security involves creating a reserve to prolong the life of Social Security. This planned reserve should ensure that the unified budget (including So-

Structural changes to Social Security and Medicare are required, not just book-keeping adjustments.

cial Security) remains in surplus and adds to national saving. This is a positive development because international experience shows how difficult it is to sustain and increase a budget surplus.

As yet, no proposals have been made as to how to safeguard Social Security over the very long term. This would likely require consideration of some of the following options: some acceleration in the planned increases in the retirement age, some linking of retirement age to life expectancy and perhaps lower cost of living adjustments. Moreover, part of the President's proposal rests on obtaining high, and far from certain, returns from investing part of the Social Security Fund in

equities. In addition, this part of the President's plan may lead to the government holding 4% of each and every US quoted company, so raising issues of corporate governance.

Another element of the President's plan, the creation of Universal Saving Accounts, would be a step to boosting the saving of low-income families. It may be appropriate to build on the proposed voluntary individual savings accounts in order to safeguard the well-being of the elderly beyond 2059 when, even with the proposed transfers, the Trust Fund will be exhausted. To this end, the accounts could be re-designed as mandatory.

The biggest gap in current policy relates to Medicare. Progressively moving Medicare towards a managed care framework would seem appropriate, using the federal employees' health care plan as a basis for Medicare reform. In this regard, the proposals that were made by the Chairman of the Medicare Commission appear reason-



A movement with a future

able. But reform is also necessary in the area of integrating the long-term care services provided by state and federal governments and supporting more home and community-based care systems for the elderly, but with strict control over home-care assistance. Increasing participation in the labour

force is another way to provide increased resources to meet the costs of ageing. Already, far-reaching reform has substantially reduced welfare rolls and a strong economy has boosted the employment of disadvantaged groups. A lasting improvement in the position of the least advantaged will require an

Ireland's economic boom

Ireland, like the United States, is another place where times have been good. In fact, its average annual growth of 7.3% in 1990-98 was the highest in the OECD. Inflation is low and unemployment has fallen. Ireland has avoided some of the dips experienced by many other OECD economies too over the last decade. Its small open economy seems nicely balanced between the different business cycles of the United States on the one hand and the EU core on the other; whenever one has ailed, Ireland has been buoyed by the strength of the other. But this favourable disposition of the Irish economy does not explain the remarkable growth record of recent years. The OECD's

latest country survey on Ireland does. It cites favourable demographic factors, and a sharp improvement in skills and education. EU structural funds have also made a significant contribution, as has integration in the EU market. There have been important policy improvements too, not just on the fiscal and monetary side, but in industrial policy, regulation and financing. These factors, as well as the English language, have made Ireland attractive to high value-added foreign investors, especially from the United States. The export-oriented, highly skilled economy is now strong in areas such as technology, pharmaceuticals and traded services. Though most of the investment and employ-

ment is in US owned firms, German and UK firms are present. And the future? Before Ireland was the "sick man" of Europe, today the worry is how to avoid the real risk of overheating, especially as interest rates are held down by the European central bank. Also, it has to remain attractive to investors, but guard against a "dependency culture". Still, Ireland's growth remains strong. As long as the varying economic tides between Europe and North America remain favourable, its good times may last a little while yet. ■

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enhancement of their educational opportunities. The Survey points out that one way of achieving this is to lessen the extreme variations in spending among different school districts.

Elsewhere, legislation underpinning financial regulation should be reformed. The Glass-Steagall Act, dating from the Great Depression, created barriers between banks and other financial institutions, which should be removed. In addition, artificial barriers between over-the-counter markets in derivatives and futures exchanges should be lifted by relaxing the prohibitions of some activities of regulated exchanges.

A lot to do therefore. But the mathematics suggest there is little choice, as well as little time, to get the policies right. Certainly, in future years, keeping demographics close to the heart of US economic thinking and strategy would be a wise move. Neglecting it would not. Perhaps there is a clever motto in there too somewhere. ■

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A POTENT INSTRUMENT OF GLOBAL CHANGE

Mexico: looking forward with caution

BÉNÉDICTE LARRE, ECONOMICS DEPARTMENT, ECO.CONTACT@OECD.ORG

Despite a difficult global environment, Mexico's economic performance has been broadly satisfactory. The next presidential elections are in 2000 and the government will need to hold a steady course until then.

With the crisis of confidence that accompanied the 1994 presidential elections fresh in everyone's mind, what are the elections in 2000 likely to hold in store? It does indeed appear that uncertainty mounts considerably during election periods in Mexico. At least that was the case in 1994, when the crisis resulted in the depreciation of the peso by 76% between December 1994 and May 1995 and the introduction of a draconian stabilisation plan. The impact soon made itself felt: by the end of 1995, inflation was running at over 50% and GDP had fallen by an average of 6% over the year.

Since then, the situation has improved dramatically: real GDP growth has topped 5% per year since 1996 and employment in the formal sector has risen by 14% against pre-crisis levels. Another positive factor is that the economic fundamentals are considered to be broadly satisfactory. The current account deficit is only 3.8% of GDP, inflation is now at least under control, the public sector deficit currently stands at only 1.25% of GDP and go-

vernment debt, at no higher than 30% of GDP, is relatively low.

Admittedly, the financial instability triggered by the 1997 Asian crisis forced the government to steer a fairly prudent economic course. The risk of fallout from the crisis in Russia in August 1998, together with the continued decline in oil prices – the source of over 30% of government revenues – served only to harden this position. Although the restrictive monetary and fiscal policies put in place have not been totally successful in curbing the inflationary impact of the depreciation of the peso, they have been broadly effective in preserving confidence and hence bolstering the real economy.

That said, the good performance of the Mexican economy should be put in perspective. Real wages are still 20% lower than in 1994 and despite three years of growth, per capita output has risen by around only 3% or so.

Furthermore, there is an enormous development lag between Mexico and



Don't relax just yet

most other OECD countries, despite its significant progress in recent years. Clearly, given a new political and economic context, the government will have to continue to steer a careful course until at least 2000, if it is to keep investors confident and ensure a smooth transition.

The past year has brought its difficulties. Faced with continuing uncertainties on the international front, the government decided to persist with a restrictive macroeconomic policy in 1999. The crisis in Brazil in January prompted a further tightening of monetary policy. This quick response lim-

ited the contagion, since the rise in interest rates and the fall in the peso were short-lived and not nearly as marked as in the aftermath of the Russian crisis (see chart). In addition, the share index recovered by almost 40% in the first four months of the year. The news on the international front has at last also begun to look favourably on Mexico: the world price of crude oil has begun to pick up and demand in the United States, Mexico's main export market, has continued strong.

Resist lowering the guard

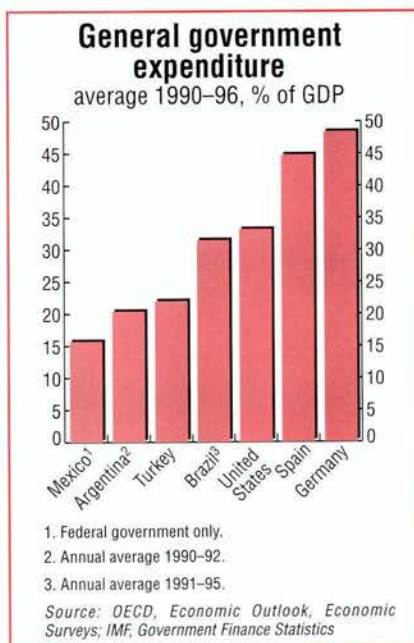
Nevertheless, the Mexican government cannot allow itself to be lulled into adopting a less cautious approach. There are still major areas of uncertainty and Mexico is still probably vulnerable to external developments. Oil prices may fall again for a start, and this would compromise tax revenue forecasts. Meanwhile, it would be foolhardy to rule out the risk of renewed turbulence on international financial markets. Lastly, a more pronounced slowdown in growth or simply a sharp interest rate hike in the United States would soon have repercussions on the Mexican economy.

How can Mexico build up market confidence? The last 18 months have, at least, given the Mexican government more credibility, which bodes well for the future. If the relatively limited impact of the recent Brazilian crisis is any indication, the markets view Mexico today as a different proposition to four years ago. There are a number of reasons why this is so. First, Mexico's adoption of a floating exchange rate has prevented the accumulation of major disequilibria, while providing enough flexibility to respond to external shocks. Second, when the government tightened macroeconomic policy in 1998 it did so on both the fiscal and monetary fronts. When the oil crisis threatened to undermine fiscal objec-

Gamma

tives, the government responded with three successive expenditure cuts to offset the shortfall in revenues and thus was able to meet its 1.25% deficit target. At the same time, it tightened monetary policy in order to stifle inflation – which had already started to fall in March 1999. All the above is evidence of good policy co-ordination and has proved effective in maintaining equilibrium in the key areas of the economy.

On the domestic front, several challenges are looming. In the short term, policy continuity will be needed to reassure the markets as the elections approach. At the end of 1998, the government unveiled its macroeconomic scenario for 1999-2000. One of the stated objectives of the strategy that it outlined was to create the climate for a smooth hand-over to the next administration. Although a tight fiscal policy is to be maintained until 2000 at least – a decisive factor in bolstering investors' confidence – a genuine medium-term framework for at least the next four years would also be advantageous.



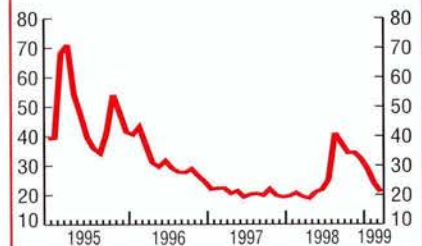
Broadening the tax base

Beyond these immediate considerations, certain specific areas require energetic action. One such area is the low level of tax revenues. Some measures have been taken this year and should boost receipts by almost one percentage point of GDP. Nevertheless, tax reform needs to continue. The priority is to broaden the tax base by keeping preferential schemes to a minimum, reducing the large number of goods and services that are exempt or zero-rated for VAT purposes, limiting the preferential treatment of corporation tax in specific sectors (agriculture, fisheries, land transport, publishing) and cutting the exemption of fringe benefits in personal income tax. Besides diluting revenue, these preferential schemes complicate the administration of the tax system and leave grey areas that make tax evasion easier. One possible option would be to limit zero-rating for VAT to a few staple products at most. This would be a much less costly way of focusing transfers on low-income groups.

Cutting spending in response to the pressure of events is costly because it postpones or reduces the scale of programmes, that would bring great economic and social benefits. Public spending in Mexico is among the lowest in the OECD area, at just 10% of GDP (excluding debt servicing). At the same time, the country is clearly lacking in physical infrastructure and is lagging badly behind in the social sector. The infant mortality rate, for instance, is almost 20 per thousand, as opposed to 5 to 10 per thousand in most other OECD countries. Also, substantial educational needs still have to be met; school-age children (five- to fourteen-year-olds) account for almost a quarter of the total population, which is double the OECD average. The government allocates 26% of public spending to education, which is the

Interest rate movements 1995–99

3-month CETES rates¹



1. Treasury bills.
Source: OECD

highest percentage in the OECD area (including Korea), but as a percentage of GDP it is substantially lower than the average spent on education.

Mexico has to make up for its lags in human resources and infrastructure provision, though to do so requires more financial resources. To avoid having to rely too heavily on oil revenues – which are highly vulnerable to world price fluctuations – the priority should be to increase revenue-generating capacity. The government should also commit itself to further structural reforms in several areas, particularly the financial sector, in order to secure strong and sustainable growth.

One of the major challenges for Mexico in the future will be to create employment for the rapidly growing labour force – nearly 1 million people enter the labour market every year. Further progress towards the government's social objectives must also be made, despite the financial constraints. Initiatives in areas such as education, health care and poverty alleviation will only deliver results in the relatively long term and must therefore not be postponed, whatever the outcome of the next elections. ■

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Modest growth prospects in world economy

World growth should pick up slightly in 2000. In OECD countries activity could slow. Though the situation is improving for some emerging countries, the risk of further crises cannot be ruled out.

The economic situation both world-wide and in the OECD area now appears more satisfactory than six months ago. World financial markets have calmed down, fears that the Russian crisis would have repercussions elsewhere have not been realised, and the Brazilian crisis has remained confined to the region. With the recovery taking hold in the emerging Asian economies and the situation in the other non-OECD regions starting to stabilise, world growth is set to remain moderate in 1999, at around 2.5%, rising to 3% next year.

In this general context and if there is no further turbulence in financial markets, OECD-wide growth should be around 2.25% in 1999 and 2% in 2000. However, the outlook varies across the main regions. In the United States, economic activity has remained exceptionally buoyant, with fast growth, low unemployment and no sign of inflationary pressures. The main question is whether the US economy can continue for much longer to operate at this level (see article). High stock market capitalisation ratios, very low household saving and a growing deficit on the current account are all signs of growing imbalances in the US economy. Output growth is set to be around 3.5% this year and activity should slow to about 2% in 2000.

Depressed by the sluggishness of exports and low business confidence, growth in the European Union should accelerate, buoyed by the pick-up in

consumption and the gradual recovery of export markets in the countries hit by the financial crisis. It could average 2% this year and about 2.5% in 2000. However, the cyclical situations of the countries in the euro area will continue to diverge widely, with the production gap narrowing sharply or disappearing in most countries, but remaining large in Germany and Italy. The unemployment rate in the European Union should fall to 10%, the lowest level recorded since the period prior to the recession at the start of the 1990s.

In Japan, the recession worsened in the closing months of 1998, but there have been a few positive signs recently which suggest improvements lie ahead. For now, though, the continuing restructuring of the corporate sector precludes a revival of domestic demand in 1999 and real GDP could fall by about 1% before stabilising in 2000.

The prospects for the rest of the OECD are mixed. Canada, Australia, Greece, Hungary, Iceland, Poland and Sweden should continue to enjoy strong growth, although it will tend to slow slightly in some cases. Activity should pick up in Korea, and the recovery in the New Zealand economy, after the recession last year, should gather pace. In contrast, the United Kingdom, Norway, the Czech Republic and Turkey will experience slight or no growth this year, and activity will slow in Denmark to well below its potential rate. Out-

side the OECD, economic performance has been varied, and the short-term outlook is hardly encouraging, even though an improvement is forecast for 2000. The situation seems to have stabilised in the emerging economies but in most of the countries affected by the crisis the recovery is likely to be only gradual next year; in China, growth should slow somewhat while still remaining high. Elsewhere, Brazil's real GDP is contracting, which should have negative consequences for the rest of Latin America, while in Russia, output is set to go on falling this year. For the moment, the direct economic impact of the conflict in Kosovo seems limited, though some uncertainty may remain.

Risks of renewed turbulence exist in some emerging economies. The Brazilian situation could deteriorate again; the economic conditions in Russia could worsen, with effects throughout the region; and the slowdown of the Chinese economy could be more lasting than initially anticipated.

Surplus capacity and weak demand in the emerging markets will keep downward pressure on world prices, though the chances of world-wide deflation appear to have receded. ■

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Sabine Weiss

Bulgaria: beginning to catch up

Bulgaria's economic performance has improved greatly compared with the situation in early 1997. But before the country can achieve sustainable growth, it will have to go through a long and difficult process of restructuring.

The "laggard" of the East European transition countries is today experiencing a prolonged period of economic and political stability for the first time since the central-planning regime was abandoned. In early 1997, Bulgaria was in the throes of a full-blown economic and political crisis. Inflation, the public debt and the budget deficit were spiralling out of control, financial markets had virtually collapsed and the Bulgarian authorities were unable to defend the national currency because of insufficient foreign exchange reserves. In this desperate economic context, the new government

that emerged from the elections of April 1997 adopted policies on the basis of an IMF agreement and embarked on an ambitious programme for fiscal consolidation and structural reform. In addition, it set up a currency board and pegged the exchange rate to the Deutsch Mark.

The results of the new economic policy, which marks a radical break with the past, have been remarkable: the annual rise in the CPI, which was close to 600% in 1997, fell to a negligible level the following year, interest rates eased

rapidly, GDP has shown some signs of recovery, and the privatisation process has received new impetus. As for the fiscal consolidation objectives, virtually all of them have been achieved or even exceeded: from 17% of GDP in 1996, the consolidated budget deficit was reduced to 5% in 1997 and entirely eliminated in 1998, while domestic debt fell from nearly 70% of GDP at the end of 1996 to under 15% at the end of 1998.

Bulgaria's macroeconomic situation and financial stability do not appear threatened in the near future. Due in part to the presence of relatively low interest rates, potentially volatile short-term capital flows have been limited. Furthermore, the balance-of-payments support provided by the IMF should be sufficient to ensure that the overall external balance is roughly in equilibrium. Nevertheless, in the medium term, the crises in a number of other emerging market economies could have a significant impact on the current-account balance. The CIS countries have still absorbed a large share of Bulgarian exports –17% in 1997 – and the currency depreciation in Russia and other countries affected by the crisis could have an impact on Bulgaria's competitiveness. To this should be added the indirect effects of the Kosovo crisis, which could still compromise the stabilisation programmes and economic reforms in neighbouring countries, even though the conflict is over. The Federal Republic of Yugoslavia is a very important transit route for Bulgaria – about 60% of Bulgaria's exports pass through it. Even though they can still go through Romania, destroyed bridges on the Danube and the difficulties of overland transport have pushed up Bulgaria's transport costs.

The Kosovo conflict may have also had an unfortunate effect on the attraction of foreign investment to Bulgaria. But important difficulties in attracting foreign direct investment were present even before the Balkans crisis. Balance-of-payments statistics show a slowdown in direct and portfolio foreign investment inflows in 1998 compared with 1997, estimated to have fallen from approximately US\$500 million to US\$300 million. While the environment for international investment in transition economies has been difficult in general during this

period, foreign investors still also complain about the instability of tax rules and other regulations.

In the banking sector, the situation has improved substantially, with a "revival of commercial banks" (see box on page 20). Broadly speaking, the Bulgarian government seems to have succeeded in laying the foundations for the rebuilding of commercial banking and the financial sector following the collapse in 1996 and 1997. But the commercial banks are still not effective financial intermediaries between domestic saving and investment.

Since the start of the crisis, they have invested principally in relatively safe liquid assets such as foreign and national government securities. A consequence of the commercial banks' low participation in the financing of the economy is that firms, especially SMEs, are faced with a serious shortage of liquidity and are unable to tap the still embryonic stock market. It is to be expected, however, that the creation of institutions to support credit markets will take time. The low level of institutional development of credit markets raises some concerns about possible future difficulties. While the progress on

The Kosovo conflict increased Bulgaria's needs in balance-of-payments support.

stabilisation facilitated a recovery in GDP after it had plummeted at the height of the crisis, it is still below its previous levels. On a quarter-by-quarter basis, aggregate output has not shown much growth since the latter half of 1997. While the Kosovo conflict increased somewhat Bulgaria's needs in balance-of-payments support, beyond that provided in the 1998 three-year agreement concluded with the IMF, sufficient additional assistance should be forthcoming. Nevertheless, Bulgaria's foreign debt remains considerable – nearly 80% of GDP – and the annual servicing of the official external debt will amount to about US\$700 million in the next few years.

While such a burden is bearable today, it could prove difficult to obtain foreign loans outside

the IMF programme unless international institutions grant new loans as part of a reconstruction strategy for the countries in the region.

In the immediate term, the revival of output, financial markets, and especially the standard of living, could prove to be a long and difficult process. The budget has been balanced partly by squeezing social expenditure to levels which are fairly low compared with most other transition countries. Such a policy may not be sustainable, given the magnitude of social assistance required. Very high inflation, the tightening of financial policy and the blocking of households' access to bank deposits during the second half of 1996 and in early 1997, had a drastic impact on the standard of living of Bulgarian households, many of which were already close to the poverty line. At the beginning of 1997, food shortages had even triggered riots in some regions. Subsequently, incomes and wages picked up slightly, but they are still below their end-1995 levels, before the crisis, and are low compared with those of most other East European countries. In addition, the rate of unemployment worsened, rising from 13.7% in 1995 to 16% in 1998. In view of the scale of the restructuring that is still required, this could pose serious problems in coming years. The population will be hit by further shake-outs in unprofitable large industrial undertakings if the private sector proves incapable of absorbing surplus labour.

To meet these social challenges, the government has provided for a substantial rise in public spending and social expenditure in the 1999 budget. But at the same time it has announced its determination to maintain a balanced budget and to restrict spending further if expected levels of tax revenues do not materialise. The degree of success achieved in economic policy since mid-1997 gives hope that the Bulgarian government will continue to meet the considerable challenges that lie ahead, assuming, however, that the fallout of the Balkans crisis remains limited. ■

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Restructuring Bulgaria's banking system

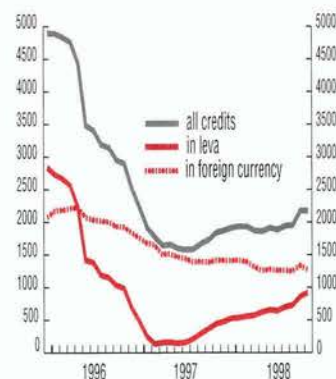
In mid-1996 the Bulgarian banking system was on the point of collapse. Commercial banks had negative aggregate net worth and extremely low liquidity, while the government no longer had the resources to bail them out. In practice, the Bulgarian government used the banks to provide implicit subsidies in the form of soft loans to loss-making state-owned enterprises. Themselves benefiting from soft refinancing, the managers of commercial banks also actively expanded credit to the new private sector, often in a context of corruption. Lending by commercial banks to the non-financial sector had reached a level unseen in any other European transition economy.

The measures adopted since then have addressed these problems. The National Bank changed strategy radically, considerably reduced bank refinancing and improved commercial banks' incentives. Prudential regulations and supervision were strengthened and made more severe. In the second half of 1997 and 1998, commercial banks seemed properly capitalised and solvent on aggregate, and the banking sector as a whole managed to show a profit. In February 1998, however, 74% of assets were still concentrated in 7 large banks, 5 of which were

in State hands, the other two having been privatised.

One of the main current problems is that the weakness of the institutional framework prevents commercial banks from playing a profitable role in financial intermediation or the development of corporate governance. They are not sufficiently equipped to take action against firms that default on payments. Furthermore, institutions to handle bankruptcies and liquidations are still very underdeveloped, despite the fact that many firms still report losses and accumulate arrears. Unless these fundamental weaknesses are addressed, Bulgarian commercial banks will most likely be very limited in their abilities to expand their loan portfolios in a profitable way.

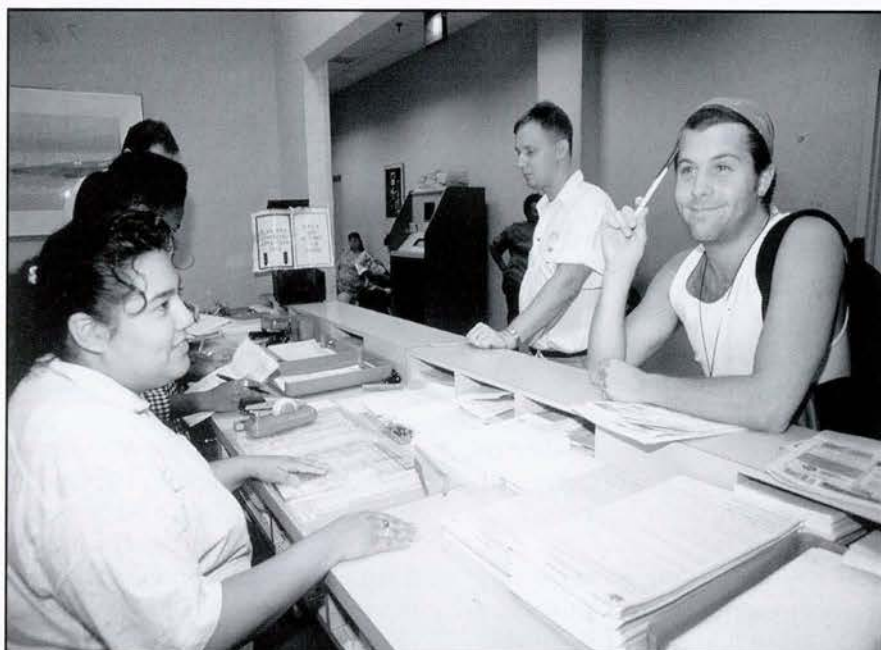
Tightening credit
outstanding commercial credit
to the non-financial sector,
real and dollar values



Source: BNP

Who pays the highest income tax?

FLIP DE KAMP, FISCAL AFFAIRS DIVISION, DAF.CONTACT@OECD.ORG
AND CHIARA BRONCHI, ECONOMICS DEPARTMENT, ECO.CONTACT@OECD.ORG



Serge Attal

Think carefully about that new job

Focusing on “headline” rates of tax can easily generate misleading conclusions about how much marginal income tax people pay and about the effect taxes can have on earner behaviour. In the second of their two-part series on taxes on income, Flip de Kam and Chiara Bronchi explain why.

It is not always high earners who pay the highest marginal rates of taxes on income. This assertion may appear to contradict what one would expect of progressive tax systems. Yet, in most OECD countries many individuals in low- to middle-income brackets find themselves exposed to higher marginal rates – that is the rate applied to the last additional dollar, yen or franc earned – than even the very rich. The

question is why? Part of the answer lies in “bubbles”, which are humps in the structure of taxes on income. Bubbles can develop in cases where income is subject to both personal income tax and social security contributions. The tax base of those contributions may be identical or similar to that used for personal income tax. But unlike for income tax, a ceiling or cap often applies; earnings

above that ceiling are not subject to social security contributions. A bubble appears if the combined marginal rate of income tax and “capped” social security contributions exceeds the marginal income tax rate applicable to income earned above that contributions ceiling. For example, take a country that imposes social security contributions at a flat rate of 15% on the first 50,000 units of income. Also, suppose the first 25,000 units earned are subject to 10% personal income tax, the second 25,000 units is taxed at 20%, and all income over 50,000 is taxed at the top rate of 30%. To judge by the headline rate alone, the latter rate of 30% would seem like the highest of the lot. But in practice it is those with taxable income in the middle bracket who pay the highest marginal rate, since the marginal income tax and social security add up to 35% of their additional earnings. But taxpayers in the highest bracket are not required to pay the 15% social security contribution and so only pay 30% on their highest earnings.

But bubbles do not just show up in “all-in” rates of the combined taxes on income. Occasionally, they appear in standard personal income tax schedules as well. In the second half of the 1980s the US federal income tax had such a rate structure. At the time, income in the first bracket was taxed at 15% and income in the top bracket at 28%. It follows that tax relief for high-income earners, which is determined by the marginal tax rate, was almost twice the tax relief for low-income earners. To recoup the higher tax relief for well-off taxpayers, lawmakers introduced a new 33% bracket which they sandwiched between the low and high brackets. The new middle rate worked like this. Suppose for the sake of illustration that the personal exemption on income tax was \$4,000 across the board. Under the old structure before the 33% band was created the tax

bill of low-income earners would have been reduced by \$600, since with the exemption they would not have had to pay the 15% tax on that \$4,000. The tax bill for those in the highest taxed bracket would have been slashed by \$1,120, because they would have been exempt from paying 28% on their highest \$4,000 of income. The difference of \$520 in favour of higher earners was clawed back by inserting a middle bracket of \$10,400 taxed at 33%, that means 5% more tax to pay than before, or \$520. So, although the tax relief for the highest earners remained at 28%, or \$1,120, by taxing middle earnings more, the new bracket effectively balanced the tax relief for those in the low and the top brackets at \$600. The rates of the federal income tax in Switzerland show a similar "bubble" today.

A job can make you poorer

Another rather curious situation which does not show up when studying headline rates is that low earners can find themselves confronted with very high marginal tax rates, in some rare cases exceeding 100%. The reason for this is that lower earners not only pay more tax when their income goes up, but in many cases they lose part of their means-tested tax relief, subsidies and benefits as well. The loss of this income acts as an "implicit" tax at the margin. The rational response of workers who find themselves in this situation is to reduce the number of hours they work. Their gross wage would of course be lower if they did, but in return they would pay less tax and receive more means-tested subsi-

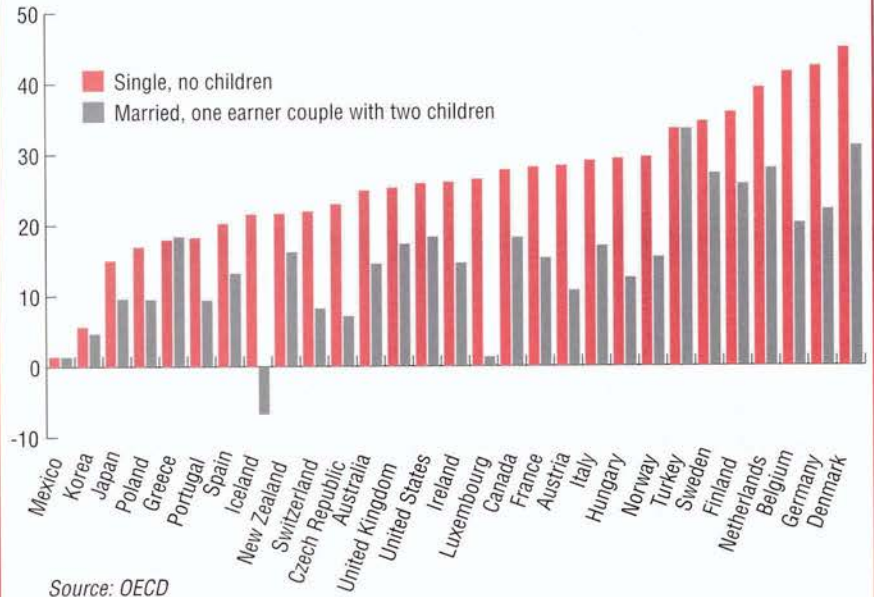
dies and benefits. As a result, their net disposable income would increase despite putting in fewer hours.

This type of situation occurs to varying degrees in different OECD countries, depending on the peculiarities of various social protection programmes. Take the example of an unemployed couple with two young children. Suppose that after five years' unemployment, one of them takes up a lowly paid job. In Finland or Sweden net income in and out of work would be the same in that case, since each unit of income earned is cancelled out by a unit of benefits foregone once employment is taken up. In other words, there is an implicit tax

rate of 100%. In the case of Denmark and the Czech Republic, the implicit rate in a similar case would be almost 100%, and in Germany and the United Kingdom it would be around 80%. In France and the United States the implicit rate would be about 50%, since half the increase in earnings is wiped out by a loss of benefits. In Japan, the implicit tax actually exceeds 140%, meaning our one-earner couple would be worse off with the new job than without it. What's more, they may have to be wary when it comes to staying in the job itself, since small wage increases can expose low-wage earners to high implicit tax rates as their means-tested benefits get cut further.

As the next chart shows, the "all-in" top rates of the combined taxes on personal income may also vary by type of income. Labour income is more heavily taxed if it is subject to contributions earmarked to finance employee social insurance. Rates of personal income tax proper may also differ, de-

Employees' social security contributions and personal income tax less transfer payments, 1997
% of gross wage earnings at Average Paid Worker level



pending on the type of earnings. For example, capital income, which is often an important revenue component of the well-off, is often not subject to most social security contributions. In addition, over the past fifteen years a number of OECD countries have introduced low, flat rates for certain types of capital income, notably interest and dividend earnings. This is the case for Belgium, the Czech Republic, Greece, Hungary, Italy, Poland and the Nordic countries. Flat rates on capital income can reduce the overall progressiveness of the income tax and undermine its redistributive effect. Moreover, any examination of the highest statutory income tax rates that does not also take these low, flat rates on capital income into account tends to overstate the tax burden of high earners.

Why were these flat rates introduced? One explanation is that they were a response to growing pressures from cross-border tax competition. Finan-

cial capital, being highly mobile, tends to flow to those jurisdictions where it is taxed at the lowest rates. To address capital flight, tax policy-makers may decide to reduce the domestic tax burden on capital income. The moves were also part of a more general strategy designed to lower the efficiency costs of taxation by reducing rates, while at the same time spreading taxes more widely along the capital income tax base.

Planning privilege

Another point to remember when looking at "statutory" tax rates, which are the tax rates as set by law, is that many high-income earners actually escape paying them. There is of course no automatic reason to assume that high-income groups are more inclined to evade taxes than are low to middle income groups simply because they are better off. Nevertheless, it is true that the self-employed, who make up a significant proportion of high-in-

come earners, are generally in a better position than other groups of taxpayers, particularly those who are taxed at source, to limit their tax obligations. This they can do legally, by using tax breaks for business, and illegally, by under-reporting their income (see Spotlight on Taxation in *Observer* 215, January 1999).

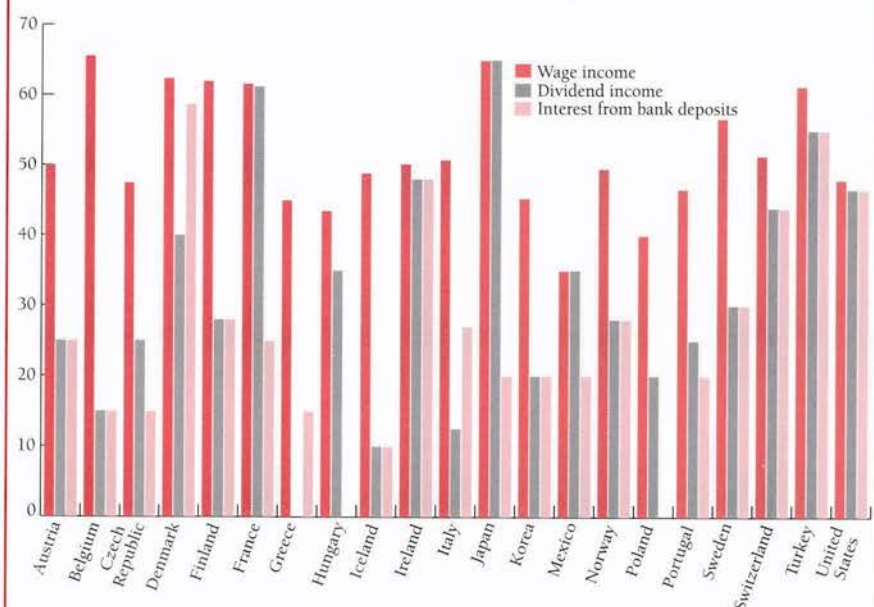
Tax planning is often used to take the bite out of high rates. If properly done, high-income earners may see their taxable income shrink, their tax bills fall and their disposable income rise. For example, in some countries the corporation income tax rate is substantially lower than the top income tax rate, providing the self-employed with a strong incentive to cloak their business in a corporate veil while paying themselves only a small director's salary. In the Netherlands the gap between the corporation and top personal income tax rates is 25 points – 35% and 60% respectively. Another practice is to transform taxable capital income into tax-exempt capital gains when the latter are exempted from personal income tax.

The fact that tax planning exists shows that there is much more to taxation than the "headline" rates suggest. Building a full and accurate picture of income taxes, particularly where marginal rates are concerned, requires information on fiscal and social security programmes, as we have shown in this mini-series of articles. In fact, it is only by looking at such areas as all-in rates, income-related relief and benefits, and other taxes, such as low rates on capital income, that we can begin to appreciate how truly wonderful the world of taxation really is. ■

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- The data in this article are drawn from the Tax Data Base: daf.contact@oecd.org.

Highest "all-in" tax rates, 1998¹



1. OECD countries where the "all-in" tax rate on wage income differs from the "all-in" rate on dividend and/or interest income.
Source: OECD

Ride the fifth wave!

According to Schumpeter's schema, digital communications is driving the fifth wave of economic growth.

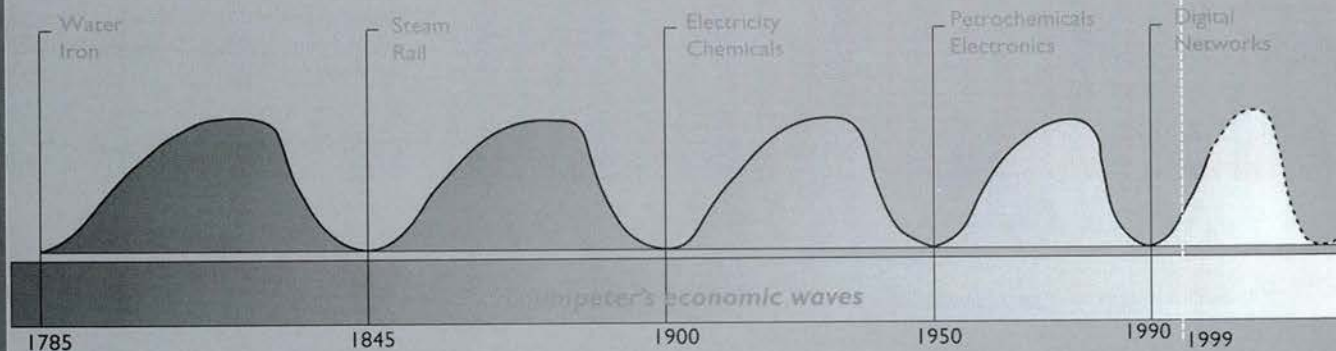
Don't get left behind!

KEY WORDS:

- Communication policy
- Performance indicators
- Communications market
- Telecommunication regulation
- Mobile communications
- Digitalisation
- Broadcasting policy
- Internet regulation
- Internet indicators
- Telecommunication tariffs
- Cable television
- Future trends



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1999



WELCOME TO THE 21ST CENTURY

Courtesy of the OECD International Futures Programme

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Pix Masterfile



The future comes soon enough

Not everyone would agree with Albert Einstein when he famously expressed his reluctance to think about the future because it came soon enough anyway. His words seem to suggest that we are all passengers hurtling forward on some ineluctable and fatalistic course, whereas in fact the future is something which humanity can shape.

The 21st century is now ticking towards us. And it offers extraordinary potential for improvement in standards of living and well-being worldwide. Yet rarely have the risks and uncertainties been quite so stark. There are economic, social, technological and environmental forces at work which drive our long-term future. These forces are all extremely complex and they are combining to generate rapid and often quite unexpected changes. But many are within our grasp to influence.

The future cannot, of course, be forecast with complete accuracy. But it is essential for decision-makers in all walks of life to be able to make well-

founded assessments of the trends and developments likely to influence the future and to consider what the implications might be. Policy-makers are no exception, for it is their job to design and implement measures today that help our economies and societies meet the challenges of tomorrow.

The OECD, as an intergovernmental organisation, has a vital role to play, not only in advising its member countries on day-to-day policy, but also in helping decision-makers inside and outside government to monitor future trends, identify and evaluate newly emerging issues at an early stage and promote strategic long-term thinking. It does this primarily through the OECD International Futures Programme (see box). This *Observer* Spotlight provides illustrations of, and insights into, the work conducted under the Programme. It presents the reader with a far from exhaustive, but nonetheless extensive, exposé of some of the key issues for tomorrow's world. The future does indeed come soon enough. So we have to act now if we are to give it the direction we want. ■



The future: what policy-makers have to think about

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The next century holds out the promise of extraordinary economic, social and technological progress. But policy-makers should be aware of the risks too.

Policies that spur the interaction of technological, economic and social change in a positive way: that is what governments have to implement as they prepare to respond to the challenge of the 21st century. There is almost no question that the profound global changes that are in store will be comparable in depth and magnitude to those which brought about the shift from the agricultural to the industrial society. Seeing such fundamental transformations as an exceptional opportunity and harnessing them successfully is the crux of the challenge we face. The reward could be extraordinary technical progress, unparalleled levels of social participation and perhaps even a new long boom, setting the world economy on a new trajectory of above-average growth rates. Already today, advances across a wide range of pervasive technologies are beginning to revolutionise the worlds of medicine, agriculture, retailing, communications and entertainment, profoundly affecting the way we live, work and spend our leisure time. With new methods of production and globalisation continuing apace, there is potential for massive increases in productivity, and for integrating many re-

gions and countries into the world economic system which hitherto have remained stranded on the margins. And there is the prospect of much improved non-material well-being finding expression in greater individual choice, new forms of social interaction, and new opportunities for creativity. In fact, it is this dematerialisation of economic activity in the advanced countries and rising per capita incomes in the developing world which could, given the right mix of policies, lead us into a period of sustainable global development.

Future promise versus new risks

However, with the promise of progress come challenges and risks – not least for policy-makers. The populations of most OECD countries are growing older for a start. As the share of the elderly population rises, the pressures on pension systems, health provision, social services and public finances in general will increase, in some countries quite dramatically so. In the developing countries, populations will continue to grow at a fast pace, exacerbating the problems of widespread poverty and food shortages. Together

with unemployment, particularly among young people, this will add greatly to migratory pressures.

Global and local environmental problems will move increasingly to the fore as efforts are stepped up to address the problems of global warming, pollution of the oceans, fresh water scarcity, urban congestion and so on. In the coming decades, the industrialising countries will become a much bigger consumer of energy and account for a significant and growing share of greenhouse gas emissions. Population growth, economic expansion and climate change could expose as many as 3 billion people to water shortage problems by 2025.

The transition towards the information and knowledge economy and the process of globalisation, together with growing international interdependence reduce both the room for manoeuvre and often the effectiveness of national economic policies. This is already happening at the macroeconomic level with respect to monetary and fiscal policy, but it also applies to the microeconomic level. National competition policies are increasingly ineffective. Excessively high taxation levels or unusually strict environmental standards can easily undermine the attractiveness of a country or region as a location for investment.

There are institutional issues too which policy-makers should worry about. The rules of the game and the social institutions which were essentially geared to the functioning of predominantly national industrial societies are fast becoming inadequate or incompatible with the emerging global information and knowledge economy. Competition laws, securities regulations and privacy protection, education and social support systems all appear to be in need of adjustment, if not wholesale reform, if they are to

have relevance and value in the age we are about to live in. New rules may be needed in some areas to spur progress in a positive fashion.

The diversification promised by the knowledge economy is one of its great attractions, but it harbours some worrying risks. For example, there is a danger that without major political effort those same forces of change with respect to knowledge and economic potential will lead to new divisions, with deepening inequalities and a fragmentation of society. A polarisation could develop between technology "insiders" and "outsiders", between those who have access to information and knowledge, and those who do not, and between those who can adapt easily to the new socio-economic environment and those who cannot. The distribution of income and wealth could become even more uneven as a result, turning this problem into a vicious circle.

There are technology-related issues to think about too. As societies become more diversified, decentralised, networked and technology-dependent, complicating, disrupting and even harmful failures could arise. The growing dependence on computers, networks and the software that runs them will expose more and more critical parts of society's infrastructure – from medical systems and sewage treatment facilities to air traffic control and financial transfer systems – to a growing risk of system-wide breakdown.

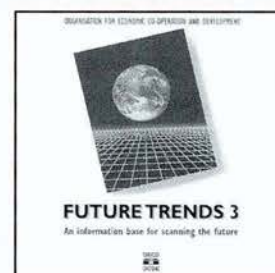
Values and mindsets

In addition to such practical problems, there are others of a more abstract, though nonetheless fundamental, nature, related to ethics, values and mindsets. Even the early phases in the longer-term development towards a new economic and social paradigm could pose unusual dilemmas to the

The OECD scans the future

The OECD International Futures Programme was set up in 1990 to help decision-makers inside and outside government to come to grips with the challenges of the future. The Programme offers improved monitoring of the long-term economic and social horizon, with early warning on emerging domestic and international issues; pinpoints major developments and possible trend breaks; gives an analytical evaluation of key long-term issues; and better dialogue and information-sharing to help set policy agendas and strategies. The programme's Forum for the Future provides a platform for informal high-level discussion on key issues, from the economy to the environment. All of this is backed up by the OECD and its International Futures Net-

work: a global network of some 600 people in government, business and leading research institutions, all with a common interest in understanding long-term developments. An information base called *Future Trends* is available on CD-ROM. *Observer* readers are invited to visit the International Futures Programme's website on www.oecd.org/sge/au/.



present-day cultural and ethical standards. Growing exposure to the outside world and to the implication of new, radically innovative technologies will put enormous strain on people's ability to tolerate the foreign, the new and the unknown.

But there is no turning back. The process of globalisation and the transition towards the information and knowledge society has taken hold. The real question therefore is what policies might be used to ensure that the benefits of the future technological, economic and social dynamism are reaped to the full and properly shared, while the dangers and risks are controlled and contained?

At the most general level, households, businesses and governments will most

likely have to embrace a culture of creativity and experimentation. Major efforts will be required to encourage individual and organisational capacity and liberty to innovate and change. Values and customs will need to be nurtured that sustain continuous discovery and adjustment to constantly changing economic, social, technological and environmental conditions. Specifically, that means identifying policies where the present thrust needs to be maintained or even strengthened and those where fundamentally new, imaginative approaches are required.

Helping the market to help itself

As far as domestic policy is concerned, the traditional orientation of macro-economic policies towards low inflation and sound public finances will

have to be upheld so as to ensure a stable framework for reducing volatility and stimulating investment, innovation, experimentation and risk-taking. And efforts to encourage structural adjustment will have to continue so as to facilitate the smooth adaptation of economic structures to changing patterns of supply and demand and ensure that resources are allocated to their most efficient uses. That means creating competitive markets for goods and services, open and transparent markets for capital and flexible markets for labour. Also important here is the continuing shift in the role of government from a direct provider of often uniform products and services, towards a regulator of more diversified, decentralised and market-driven output.

Any social or economic change clearly affects learning. Marginal improvements in education policies based on business-as-usual will hardly be sufficient. Changes in the composition of the workforce, along with the growing internationalisation of the economy, further advances in technology and the spread of new innovative models of work organisation, will demand substantial investment in human capital if the skill and qualification requirements of future jobs are to be met. Making the leap to life-long learning will demand imaginative new ways of how education is organised and how people's knowledge is validated. The present supply-led and heavily institutionalised system based on quasi-government monopolies of education may in the future give way to a demand-led, client-driven approach where learners can shop from a diverse range of sources and in ways they themselves can plan.

Ageing will pose many challenges for policy in the coming years. But even were ageing not a policy issue, major imaginative efforts would be needed

anyway to make sure that social support, pension and health care systems are adapted in ways that correspond to the needs of tomorrow's highly diverse and possibly less predictable society. Many of the old ways of risk sharing and social solidarity, such as inflexible pension schemes, which were largely adequate for the industrial society, may tend to stifle the greater adaptability, creativity and diversity that will be essential to fuel the knowledge economy and society. What is needed is a shift from a social "expenditure" to a social "investment" perspective. This entails new imaginative approaches of a public, private and mixed character which provide clear incentives to work, save and invest. Such approaches would respond well to a wider range of risk profiles, while at the same time avoiding problems of moral hazard and poverty traps.

At the international level, too, there are certain areas of policy where the traditional thrust needs to be maintained or strengthened, and others where new imaginative approaches are required. The further development of the multilateral system of trade, investment and technology transfer belongs to the former category. It needs deepening where past liberalisation discussions, such as in agriculture, have not gone far enough. And it demands widening in areas still outside the multilateral framework. The latter applies to a number of important service sectors, such as international air transport, and also to cross-border investment, which are still dominated by several hundred bilateral agreements.

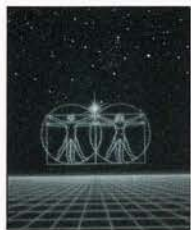
Nurturing a globalised information and knowledge economy and society, however, is a formidable task which goes far beyond the traditional challenges. There is a need for a major overhaul of competition and intellectual property laws and administration to take into account the greater im-

portance of intangible assets and global markets. New ground will have to be broken to provide global policy frameworks for the Internet and in particular for electronic commerce. The latter demand includes global solutions to such issues as consumer protection, safeguarding privacy, secure

The chances of a proper long boom occurring may well be small, but the opportunity to make one happen does appear to be there before us today. It is ours to take.

payment, verifying identity and ensuring competitive market conditions. New international rules will have to be designed and negotiated in relation to biotechnology developments. International agreements on certification procedures for and trade in genetically modified organisms may turn out to be a particularly thorny problem. And finally, breakthroughs will be needed in managing global issues, such as the proper functioning of international capital markets or dealing with the potential implications of climatic change.

This is a daunting agenda indeed, and the risks are manifold. But if properly handled, forward-looking policy responses should pay handsome dividends for all – not least in terms of further increases in living standards and social participation. The chances of a proper long boom occurring may well be small, but the opportunity to make one happen does appear to be there before us today. It is ours to take. With an open, targeted and positive approach to the future, perhaps we can send the world economy into the 21st century on a trajectory of truly exceptional growth rates and discover a future of unparalleled global levels of material well-being after all. ■



Population growth: facing the challenge

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It took 10,000 years for the world's population to reach 1 billion by the year 1800, another 100 years to double to 2 billion and less than another century to triple to 6 billion today. What will happen in the 21st century and can we cope with it?

When poking into the future, whatever the subject, demography provides perhaps one of the most useful starting points. One simple reason is that some, though not all, demographic trends are relatively easy to predict. For instance, we can form a pretty good idea today of who will be potential new entrants into the labour market 20 years from now simply by analysing who is attending infant schools today. Another reason for looking at demography first is that several major economic, social, political and environmental policy issues, such as pension reform or health spending, depend to a large degree on demographic trends. Moreover, the demographic changes that are expected to take place over the next 50 years will be greater in magnitude than at any other period in the history of mankind. It would be no exaggeration to say that demography may well become the dominant force that will shape world development and dominate the international policy agenda of the 21st century.

Upsurge in world's population

In the United Nations' latest long-range population projections (1998), the "most probable" medium-fertility scenario assumes that the fertility rate will stabilise at slightly above two children per woman. Under that scenario the world population will nearly dou-

ble from 5.7 billion in 1995 to 10.4 billion by the end of the 21st century, reaching 10.8 billion in 2150. Most countries classified today among developing countries are expected to experience a "demographic transition" from a combination of high natality and high mortality to a post-transition state of low natality with low mortality. This change will result in a substantial surge in population. By contrast, developed countries which are already in their post-transition phase will experience almost no growth in population. Hence, most of the in-

crease will be in the developing world. That means a major geographical shift in the distribution of the world population, as the proportion living in the currently developed world decreases from roughly 20% in 1995 to around 10% by the end of the next century. Moreover, declining fertility and mortality rates will, in this scenario, eventually lead to dramatic population ageing in all countries. In the medium-fertility scenario, the population aged 60 and above will increase from 10% of the total in 1995 to 30% in 2150 world-wide.



Lemoine/Sipa Press

Particularly significant from a policy perspective is the fact that the fastest increase in the world's population is expected to take place in the first half of the 21st century (from 5.7 billion in 1995 to almost 10 billion in 2050). The next fifty years will therefore be a period of maximum strain on resources and the environment, as well as being a period of economic potential and opportunity.

Ageing in developed countries

In developed countries, ageing will cause the number of young (person aged 15-24) to decline in absolute terms from 176 million in 1975 to 135 million in 2020. At the same time, the older segment of the population will increase markedly. In 2030, the proportion of those aged 65 and over in OECD countries will range from 33% in Australia (13.9% in 1960) to 49.2% in Germany (16%).

Needless to say, the economic, social and political effect of such changes will be far-reaching. On the economic front, the combination of population ageing, increasing life expectancy and labour-force trends will reduce the

amount of time that society devotes to employment. If no adjustment takes place in labour force participation, men will spend 33 years in employment by 2030, versus 50 in 1950. This, in turn, could result in lower growth in per capita incomes. One OECD study estimates that, over 1998-2050, such losses could be in the order of 10% for the United States, 18% for the EU and 23% for Japan.

Ageing will of course place an extra burden on the public purse. First, the dramatic increase in the dependency ratio – that is the number of under-15s and over-64s compared with the working-age population (15-64) – will put unsustainable pressures on the financing of pay-as-you-go public pensions. Dependency ratios over 1998-2050 are expected to increase from 52% to 65% in the United States; from 49% to 78% in the EU; and from 44% to 86% in Japan. Second, the increase in the number of old people, particularly the frail elderly, will increase the demands put on the provision of health and social services. (See article on health.)

The political implications are significant too. Ageing will clearly influence the structure of the electorate in favour of elderly voters, who stand to win a greater share of public expenditures at the expense of schools and child care. Tensions between the generations may arise as a result.

A demographic transition in developing countries

The challenge posed by population changes in developing countries will be quite different. Most developing countries are expected to experience their "demographic transition" in the next hundred years: the combination of high natality/high mortality giving way to one of low natality/low mortality, which is the position most

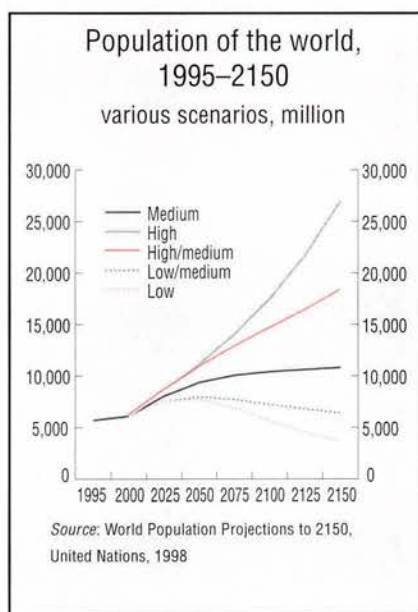
OECD countries are in. But because mortality declines faster than natality, populations in transition expand rapidly at first. Then the natality rate declines, slowing population growth down. Latin America is a good example of this. Its population is expected to reach 810 million by 2050, up from 447 million in 1990, and then stabilise as the birth rate falls.

Meanwhile, India's population will rise to 1.5 billion by 2050, up from 853 million in 1990. China's will also

The inflow of young people to the labour force in developing countries will be more than the entire labour force in the developed countries in 1990.

reach 1.5 billion, up from of 1.14 billion, while the rest of Asia's will climb to 2.4 billion, which is more than double its 1990 level of 1.1 billion. The slowest transition – hence the largest rise in population – will take place in the least developed countries. Africa's population is expected to increase from 642 million in 1990 to 2 billion in 2050, and reach almost 2.7 billion in 2100.

A major question is how to create employment for the expected large inflow of young people to the labour force – about 700 million over 1990-2010, which is more than the entire labour force in the developed countries in 1990! Indeed, by 2025, the labour force in developing countries will have almost doubled to 3.1 billion compared to 1.7 billion today. On the positive side, the demographic transition could represent a window of opportunity for many developing countries, if they take advantage of their low old-age and child dependency ratios to invest in health, education, human capital, and ensure that their fertility and



mortality rates continue to decline. Such investment would spur economic development and it would lighten the burden of population ageing in later years.

Social upheaval

Still, even in countries which successfully manage their demographic transitions, social upheaval appears inevitable. Massive migration will be triggered by changes in economic structure, and rural-urban migration in particular will continue for several decades unabated, stimulating ethnic conflicts, pollution and urban unrest. The situation will be worse for the poorer countries, which, because of their slower transition towards lower natality, will experience the largest increase in population. This could drive up poverty and force people into shanty towns or marginal lands, with disastrous environmental consequences. By contrast, in some countries, notably China, the demographic transition could be too fast, resulting in significant demographic imbalances, notably between sexes and age groups. Trying to solve these problems and all the others posed by population increase over the coming years will be a tall order. How much more difficult it will all become if corruption in politics, bribery and tribalism spread more widely too. ■

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China, a demographic time bomb



Is it a boy?

Raphael Gaillardet/Gamma

A fifth of the world's population lives in China. That proportion will not change much, and the demographic pressures on the Chinese political and social model will be tremendous.

China represents an extreme example of the problems countries experiencing rapid demographic transition will have to face in the coming decades. A recent study estimates that China's population will peak at 1.6 billion in 2040, compared with 1.2 billion in 1995. It is expected to fall below 1.4 billion by 2100. These are massive demographic fluctuations, affecting 20% of the world's population, and they raise a number of serious issues concerning food, jobs, urbanisation and ageing. Take grain production. It will need to increase by 4.47 billion kg

per year to keep pace with China's population growth between now and 2020. This will require significant improvements in agricultural technology and land resource management. China may have to increase its annual grain imports to 40-50 million tons. But if China lags in its agricultural development and research, it may find itself importing a lot more than that, perhaps as much as 300 million tons. That would be good news for its larger suppliers, such as the United States and Australia, but could be a disaster for poor people if prices rise too. As

for employment, China's working-age population will peak at 955 million in 2020 (732 million in 1995). The massive increase in the supply of labour will be directed to the urban market. This will pose severe social and environmental problems, although it will initially provide an opportunity for investors seeking cheap labour. The working age population will decline after 2020, to about 800 million towards the end of the century. This will slow the improvement in education and skill levels among the working-age population as the rate of new entrants declines, and that will bear down on labour productivity. The 21st century will be a period of rapid urbanisation for China. Some 90% of the population will live in towns and cities by the end of the century, compared with 37% in 1995. In absolute terms, the urban population is expected to peak at 1.2 billion in 2060 – which is broadly the same as today's total population for the entire country – compared with 450 million in 1995. This near-tripling of the urban population will have clear implications for construction and resource management.

Another demographic trend to watch out for is ageing, as China experiences a dramatic fall in fertility rates to below replacement level. In Beijing, births may already be down to 1.4-1.5 per woman. In Shanghai the ratio appears to be 0.96 births per female; in other words, more and more women are not having children at all. The upshot of all this will be a rapid ageing of the population. By 2025 the average age in China will be 40. In 1995 it was 27. Care of the elderly is clearly going to become a massive problem for the Chinese authorities, since the only social security system for most of the country's poor is their family, and in 2025 parents will have few offspring on which to depend. More and more Chinese parents only have one

child, and they mostly want that child to be a boy. In fact, there is an intense social, almost peer, pressure for families to make sure their child is male. Selective abortion and female infanticide are common.

Bridal angst

China's gender ratio is unbalanced as a result. The trouble is that the men which the custom of selectivity sought to "produce" will have to pay for their privilege by suffering a shortage of brides. And in future that means fewer kids.

Indeed, by 2020, the surplus of Chinese males in their 20s will exceed the entire female population of Taiwan. The gender imbalance will get worse before it gets better; selective abortion is set to increase, not just for second and third births, but also for first births. This will cause social strains. Many young men will have to accept bachelorhood, a condition which often drives men to crime, even suicide and depression. Women on the other hand, will be scarcer, though whether that will lead to an improvement in their current low and often abused status is questionable.

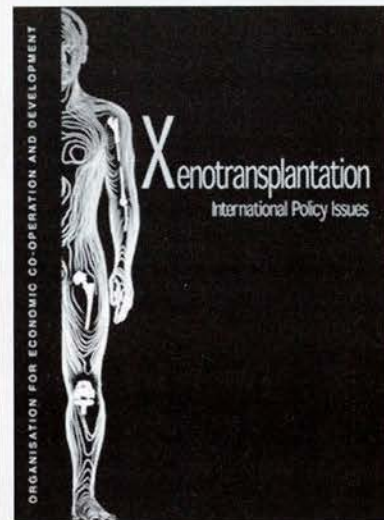
To ensure that it does, anti-discrimination laws and rules on equality and female rights will have to be strengthened. The Chinese authorities could also abandon their policy of one child per family and allow family size to grow. However, without family planning and a proper revolution in recognising the rights of women, that may simply lead back to rapid population growth again. ■ M.A.

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XENOTRANSPLANTATION International Policy Issues

A potential lifesaver...



Ethical principles are generally universal, but they need specific interpretation in the light of local cultures. Xenotransplantation gives rise to a serious debate on prevalent ethical or socio-legal concerns – for example, is organ farming consistent with a humane and fair medicine or does it conflict with efforts to develop better approaches to preventive medicine? Answering such questions will be essential if public acceptance is to be achieved. This important book may help us to do so. (OECD Observer March 1999.)

Xenotransplantation: International Policy Issues by Elettra Ronchi

OECD, Paris 1999
FF150 US\$27 DM45 ¥3200
ISBN 9264170308 (93 1999 03 1 P), 102 pages

OECD

A POTENT INSTRUMENT OF GLOBAL CHANGE

The city



in the global village

lation – the expansion of city population should slow to 4.2% per year between 1990 and 2020, compared with 6.3% annually over the previous 30 years.

Not that reduced fertility will immediately prevent a marked increase in the working-age population. As many as a billion new jobs may be needed between 1990 and 2025. Most of these jobs will have to be created in cities as the non-agricultural labour force is expected to grow three times as quickly as the agricultural labour force.

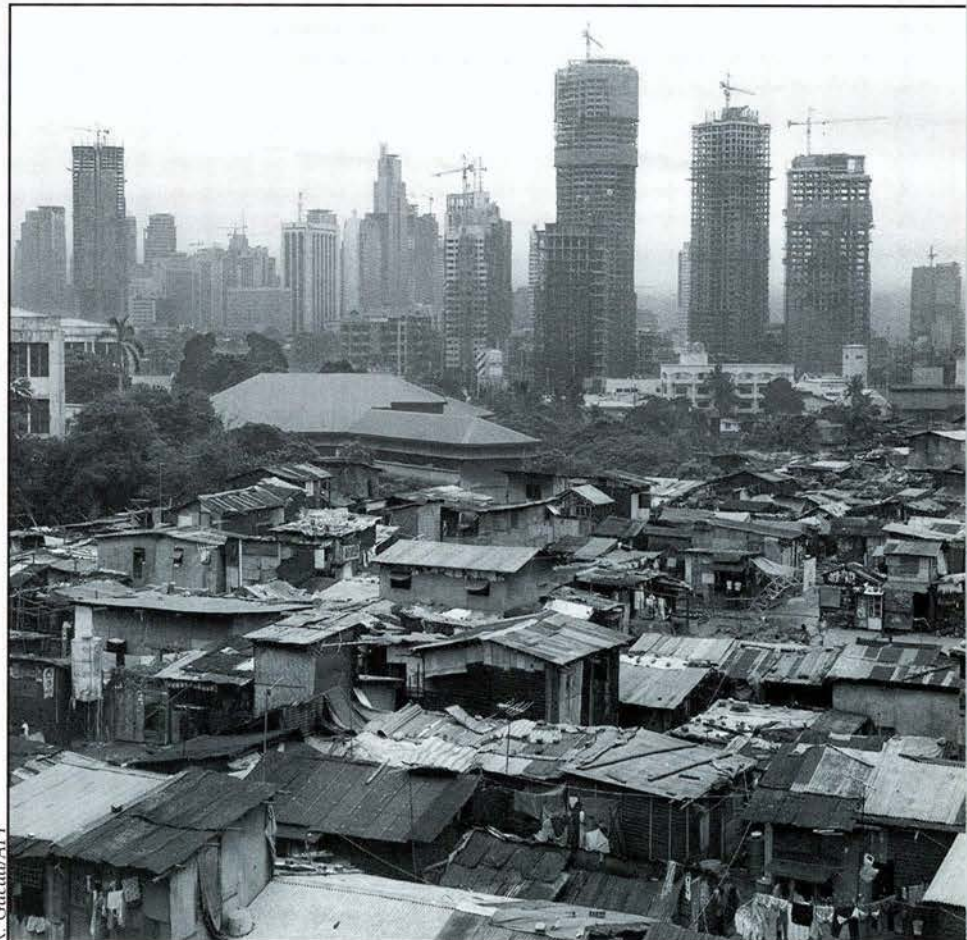
Particular attention will have to be given to nurturing the informal sector, where most of the new jobs will be, in small-scale manufacturing, serv-

Man's love-hate relationship with the city will continue in the 21st century. Love, because cities will remain a vital part of growth and development, and a vibrant part of creative human culture; and hate, because they will continue to deliver their litany of management problems in pollution, over-crowding, congestion and crime. Those costs will probably rise, but so will the advantages.

Over the next thirty years, the world's urban population could double from 2.6 billion in 1995 to 5.2 billion in 2025. Most of this growth will take place in developing countries, where some 4 billion people (over half of the total) could be living in cities by 2025, compared with 1.5 billion (37%) in the early 1990s. Particularly significant will be the growth of very large cities, so-called mega-cities. In fact, 36 or so cities around the world will have over 8 million inhabitants by 2015, and most of them will be in developing countries (see map).

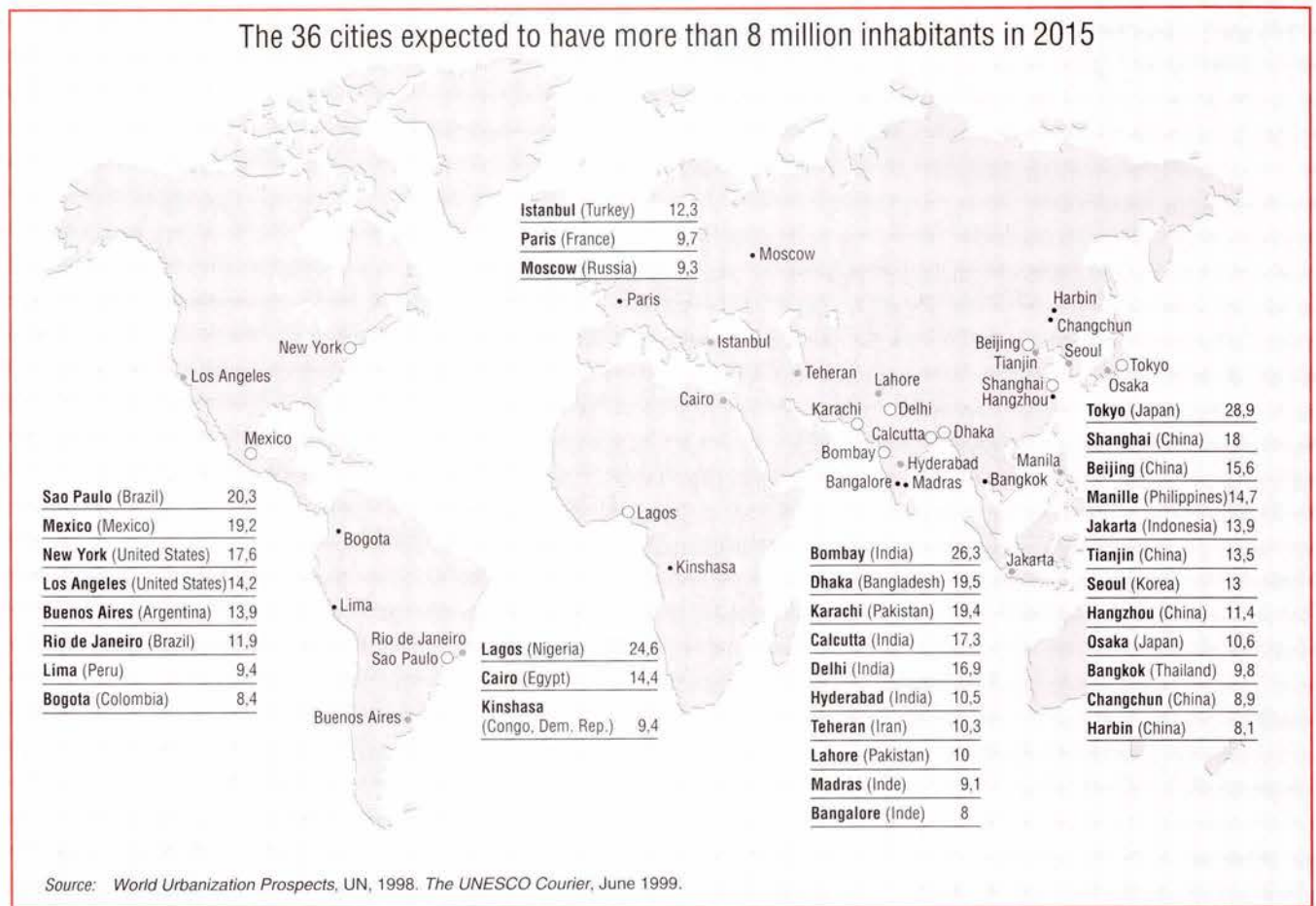
In the shorter term, rapid urban growth will be fuelled by high natural population increases within cities, combined with a high level of immigration from rural areas, reflecting the gradual shift from agriculture and other primary activities to manufacturing and services. In the longer term, the rate of urban growth should even-

tually slow as a result of lower fertility rates and a deceleration in the urbanisation process itself, as a growing share of the population becomes urbanised. For instance, in West Africa – one of the regions of the world experiencing the fastest growth in popu-



R. Giacardi/AFP

The 36 cities expected to have more than 8 million inhabitants in 2015



Source: World Urbanization Prospects, UN, 1998. The UNESCO Courier, June 1999.

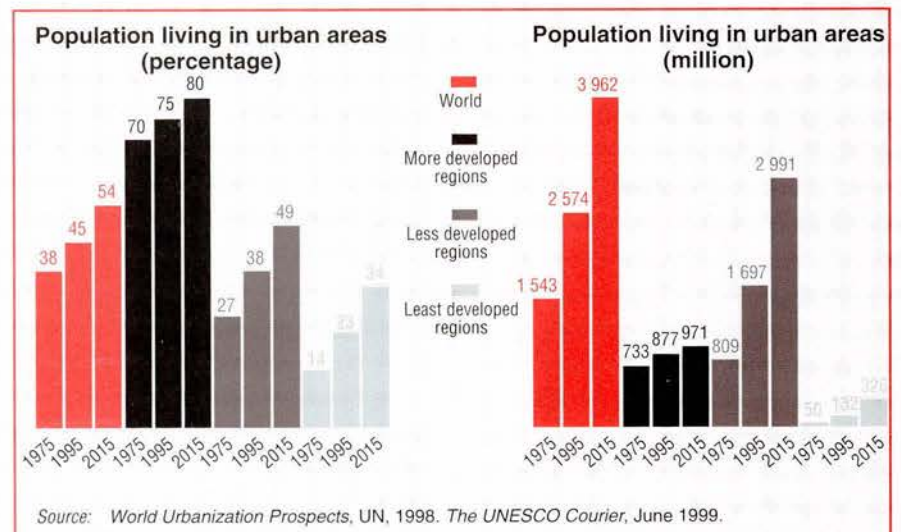
ices and trade. Boosting the productivity of poor workers would be a major help; in West African cities the informal sector could absorb as much as 44% of the population in 2020, while generating only 23% of gross regional product.

The population explosion in the world's cities will lead to serious social problems, with widespread poverty, exclusion and destitution. Remedial action will be required, with comprehensive social measures to provide basic services in education, health, nutrition, family planning and vocational training.

The environmental risks in developing world cities will be legion. Insufficient shelter, inadequate sanitation, poor water supply, air pollution and

congestion on the streets are all to be expected. Huge investments could help prevent the worst excesses of this, perhaps to the tune of \$100-\$150 bil-

lion a year world-wide. The lion's share will come from the revenues of national and local governments. Some will come from the private sector, in-



Source: World Urbanization Prospects, UN, 1998. The UNESCO Courier, June 1999.

cluding foreign direct investment. Official development assistance will at best act as a top-up, unless recent declining trends are radically reversed.

City opportunity

Problems like these have led many to dismiss the city's role in the future world economy, almost to the point of predicting its demise at the hands of new technologies. However, the potential of cities will be enormous, with urbanisation representing a major opportunity, for developing countries in particular in terms of overall spatial planning. Channelling rural migration into cities can help relieve damaging population pressure on marginal rural land. Focusing development in cities themselves will, on balance, continue to bring economies of scale, in terms of transport, waste treatment and, of course, business. And even if there are countering forces of decentralisation enabled by new technolo-

gies, other technological innovations, such as in emissions control and communications, may make cities more attractive. So, though information and communications technology may gen-

As many as a billion new jobs may be needed between 1990 and 2025, most of them in cities.

erate a greater geographic dispersion of economic activity in the future, urbanisation will continue to be a major force of economic development.

In fact, the importance of cities could well grow in the 21st century. One reason is that they will sharpen their profile in the open and competitive international space of the new global economy. The importance of cities is likely to be strengthened by the creation of global city networks. These networks will give cities greater au-

tonomy of action to tap into international markets and forge new economic links across national boundaries. The city will be conditioned by those networks, both politically and architecturally, and often to a greater extent than by their regional or national hinterlands. These networks will act as highways for the transfer of knowledge and best practice, for stimulating innovation in policy and project development; and as catalysts in economic co-operation. Cities in developing countries will have to be particularly determined that they are "plugged" into these networks so as to profit from them and to avoid being sidelined. Sao Paulo or Beijing should therefore see to it that they are as much part of the network as Paris or London, but so too should medium cities, from Bahia Blanca to Bordeaux. Networked cities are rich in promise and diversity, giving us all an urban future to look forward to. (See Society article on Learning Cities.) ■

Is growth the solution to the demographic question?



Economic development is often heralded as the solution to many of the problems associated with rapid population growth. In developed countries, growth could relieve pressures on publicly financed social services, greatly facilitating the difficult policy choices that will have to be made, such as the financing of pensions. In developing countries, growth is also considered essential for relieving poverty in the face of a rapidly rising population and for providing governments with the means to de-

velop their physical and social infrastructure.

Many experts are indeed rather optimistic about future growth prospects. In their view, thanks to technology and globalisation, the world economy could easily double in size in 1997-2020, with average living standards (adjusted for population growth) rising by 67%. Some experts even anticipate that real GDP per capita in the OECD area could be 50% to 80% higher in 2020 than in 1995. In non-

OECD countries the figures are 100% to 270%, with average GDP per capita rising from 15% of OECD levels in 1995 to 30% in 2020 in PPP terms. (See article on the Long Boom.)

However, even optimists agree that such growth is unlikely to happen unless the right policies are put in place. In developed countries, that means measures to deal with population ageing and efforts to foster increased labour force participation and a more flexible economy. In develop-

ing countries, governments will have to develop the basic institutions which are required for the effective operation of a modern economy, such as well-developed markets for land, whereby owners gain revenue to live on, and capital, thus facilitating saving for old age. They should as well introduce measures to reduce child mortality, to eradicate communicable diseases, to provide equal access to health and family planning and to raise the overall literacy of the population, particularly among women.

Others are less confident in the ability of growth to offer a solution. They fear that the rapid diffusion of information technology and economic liberalisation could lead to the emergence of a more unregulated global capitalism, a winner-takes-all world of growing social polarisation, political instability and widening income inequalities. Importantly for governments, wealth could be increasingly retained by those who earn it, particularly in the new cyberworld, undermining the taxing capacity of the state and leaving little scope for income redistribution, or indeed the public-led investment that will be needed to develop the physical and social infrastructures necessary to accommodate demographic changes both in developed and developing countries.

Sceptics are also deeply concerned that, under existing economic norms and scenarios, growth will inevitably lead to damage to the environment. In particular, they contend that the longer-term effects of growth-induced climate change will have predominantly, if not uniformly, adverse effects on health, cultural life and economic prosperity of future human populations, and raise particular questions of equity between generations. In this overall context, they oppose globalisation, first, because it transforms largely self-sufficient people living in rural areas of developing countries into consumers of capital intensive

goods and services. Second, in their view it encourages an environmentally damaging production of exports, such as timber from tropical rainforests. Moreover, as good land is given over to export production, the rural population is confined to marginal lands that are vulnerable to erosion. And then there is the environmental damage caused by the increased transportation requirements of a global economy. Finally, they question the ability of the economy to meet the food requirements of a growing world population, in the face of rapid decline

A no-growth scenario would make everyone worse off, particularly in developing countries, where poverty and environmental degradation would become widespread.

in the quality of farmland, growing shortages of water and climatic change. (See article on food.)

While these concerns need to be taken seriously, sceptics may have overstated their case somewhat. First, in the longer run, rapid economic development should ultimately relieve pressures on the environment by hastening the demographic transition in many developing countries, while growing affluence will drive up the demand for environmental quality. Second, in the shorter run, the rapid diffusion of new technologies in such countries will provide new, more effective ways to combat pollution and will promote a more efficient use of resources, including energy. And third, assuming effective environmental rules are enforced, international trade will have a positive impact on the environment overall, by contributing to allocating resources to locations where they are used most efficiently. More fundamentally, it is not clear what

would be a credible alternative, given that the "demographic genie" is out of the bottle. On balance, a no-growth scenario is likely to make everyone worse off, particularly in developing countries where poverty, unemployment and environmental degradation would become widespread.

Growth based on liberalisation of trade and investment and the rapid diffusion of new technologies offers the best hope for solving many of the socio-economic challenges posed by dramatic demographic change in the longer run. However, growth may not be sustainable without changing the way we produce and consume worldwide. Some of these changes, such as the rising demand for environmentally-friendly goods, will be triggered by price signals and will result from the normal operation of markets. Others, such as reducing industrial pollution to prevent global warming, will be much more difficult to implement because of the externalities involved. They will require decisive government action, both at the national and international levels. Moreover, the close links between the economic, social and environmental dimensions will call for a horizontal approach, involving all key stakeholders, in business and households, as well as governments. ■ M.A.

The Social Sciences at a Turning Point?



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Rethinking the social sciences

OECD

A POTENT INSTRUMENT OF GLOBAL CHANGE

Feeding tomorrow's world

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The population explosion, rapid urbanisation, water shortages and shrinking farmland – all of these factors will have to be taken into account if we are to feed tomorrow's world. Can the agro-food sector cope?

“Food scarcity is emerging as the defining issue of the new era now unfolding, much as ideological conflict was the defining issue of the historical era that recently ended”: so concludes the economist, Lester Brown, in his much-discussed work on food scarcity. His scenario may be regarded as overly pessimistic, since the agro-food sector does appear to have the ability to cope even with an unprecedented increase in food demand, at least for the next thirty years. Yet, today, some 830 million people in the world do not have enough to eat. It is a scourge which may reflect less a problem of shortages or excessively high prices per se than underdevelopment and weak purchasing power, and may only affect some sections of the world's population, particularly in parts of Sub-Saharan Africa and Asia. But while food scarcity might not be the defining issue of the next century, it is quite clearly going to be a vital one. True, the situation could deteriorate over the very long term – a century or a millennium – as uncertainties and breaks in the



F. Botts/WFP-FAO



Rejmerink/LO-BIT

Food logistics

food supply could occur, stemming from a range of factors, including drought, cataclysms (floods, hurricanes, tidal waves, volcanic eruptions), war and revolution. Such events are hard or often impossible to predict. But there is one major change that is bound to affect us within the next half century and that is the virtual doubling of the world population (see page 29).

In practice, that means food output will actually have to double by 2025, especially if average consumption per head rises in the poorer countries. And it is precisely in those countries that almost 95% of the population growth will occur. Yet, for the moment, food surpluses are concentrated mainly in OECD countries. According to an FAO study, by 2010 the OECD countries will be producing 723 kg of grain per head (a little over 1 billion tons) compared with only 230 kg (1.3 billion tons) in non-member countries. These will have to import some 162 million tonnes of grain from the OECD area, and that will have implications for their financial resources.

Another major trend is that by 2025 some 60% of the world population, or 5.2 billion people, will be living in towns and cities. Feeding them will require the kind of production, logistics and distribution structures that suit urban markets. These will be especially important because, for the moment, urbanisation and infrastructure in non-member countries appear to be following the urban model prevalent in OECD countries, where settlement patterns

Obesity may well become more serious in the developed world, while in the developing world malnutrition will persist.

require a supply chain that is complex, costly and energy-intensive, particularly in terms of packaging, transport, conservation and waste.

Food quality trends will also have major implications. Obesity problems may well become more serious in the developed world, while in

the developing world malnutrition and the deficiencies it causes will persist. WHO studies show that nutritional deficiency problems are expected to become less acute, but remain just as widespread nonetheless. There will only be a small decline in the number of people with an iron deficiency, for instance, from 3.5 billion in 1995 to 2.7 billion in 2025.

Rising standards of living in some countries outside the OECD area are also expected to make diets richer in protein, a factor that is bound to affect the demand for meat products. China, for instance, has already seen meat consumption rise from 20 kg to 38 kg per person between 1986-88 and 1993-95. And when meat consumption rises, so does grain consumption, but in far higher proportions. It takes an average of 2 kg of grain to produce 1 kg of poultry, 4 kg for the same amount of pork and 7 kg of grain to produce 1 kg of beef.

A relatively plausible scenario supported by the work of many international organisations – the OECD, the FAO and the World Bank – holds that by 2010-2020 food supply will be growing faster than demand. One of the FAO's projections up to the year 2010 sets the annual growth in output at 1.8%. This trend is not as sharp as that observed in the 1980s, but it will suffice to meet demand.

In non-OECD countries, however, growth in agricultural output will not be high enough to ensure food self-sufficiency. They will consequently have to increase their output and enhance yields, for instance by cultivating a further 130 million hectares of land. Fertiliser use could be nearly doubled, from 62 kg per ha in 1995 to 110 kg per ha in 2010. After that, by 2020 or so, and allowing for a decline in the price of staples, grain imports could be as high as 220 million tonnes and meat imports 12 million tonnes, or 20 times the 1995 levels.

But even the validity of this scenario depends on other factors too, such as the availability of land. Urbanisation is encroaching on arable farmland and will continue to do so. The decline in farmland could be as much as 15% over the next quarter century, which in global terms would mean that farmland would shrink from

1.5 billion hectares in 1999 to about 1.3 billion in 2025. If so, there will have to be a significant increase in yields if demand needs are to be met. Uncultivated land will also have to be farmed, with the risk of further deforestation. Europe and the United States appear to have opted not to enlarge their farmlands, while the Asian countries have practically ruled out

Food embargoes hamper the market's ability to do its job of regulating and achieving an optimal balance between supply and demand.

the possibility of cultivating any more arable land. In fact, the greatest potential for extending farmland lies in sub-Saharan Africa and Latin America.

Since not all available land is of the same quality, a combination of new farmland and enhanced yields will have to be envisaged if a 20% increase in grain output is to be achieved by the year 2010. All this assumes that water supply does not become a critical resource problem in the meantime (see next article). Better water use means adjusting prices to reflect costs more closely, since this would encourage farmers to be more sparing as well as more efficient in their irrigation and spraying techniques. It would also encourage the use of varieties that require less water, such as sorghum instead of maize.

Another factor to consider is technical change, which looks as inevitable in agriculture as in any other walk of life. The goal should be a more efficient mix of production factors. Thanks to progress in R & D, tomorrow's "precision agriculture" will be based on new, maybe even genetically modified, seed that is more resistant and more productive. The farms of the future will also use more scientific growing techniques, choosing the best time to plant and optimising the mix of factors, such as fertilisers, water and soil. They will also be able to look to sophisticated satellite monitoring techniques to forecast the weather, monitor the risk of drought or assess crop maturity. But all this will only be possible if farmers have the

right skills. Training, computer literacy and access to various means of telecommunications are just as important as the findings of scientific research or the availability of land and water.

Governments and markets

Government policy is clearly important in all this, but does the market have a role to play too? Yes, it does. Take the example of intervention to create emergency stocks. These are a relatively expensive solution to the problem

Countries with a high level of poverty and heavy reliance on agriculture will have to introduce agricultural development policies directed at both output and income.

of fluctuating harvests. And buffer stocks are an unwieldy solution to fluctuating prices. But a globalised market would be the best way of smoothing out these variations, both in time, by keeping buffer stocks to a minimum, and in space, by using a surplus in one area to offset a shortage elsewhere, at least up to a point. Additional production capacity can also, where necessary, be developed in OECD countries – the United States, Canada, France and Australia – and in non-member countries such as Argentina. However, for this to work, food can no longer be used as a weapon in international politics. Rather, “secure” food supplies should be guaranteed. Food embargoes hamper the market’s ability to do its job of regulating and achieving an optimal balance between supply and demand.

As to more routine market distortions, there is the question of government price controls and market intervention in the form of subsidies and tariff or non-tariff trade barriers. The trend is now towards dismantling such arrangements. Nevertheless, government will continue to have a key role to play, in helping to cope with new risks, for example, in protecting the environment and in meeting public health demands regarding the quality of food products on the market.

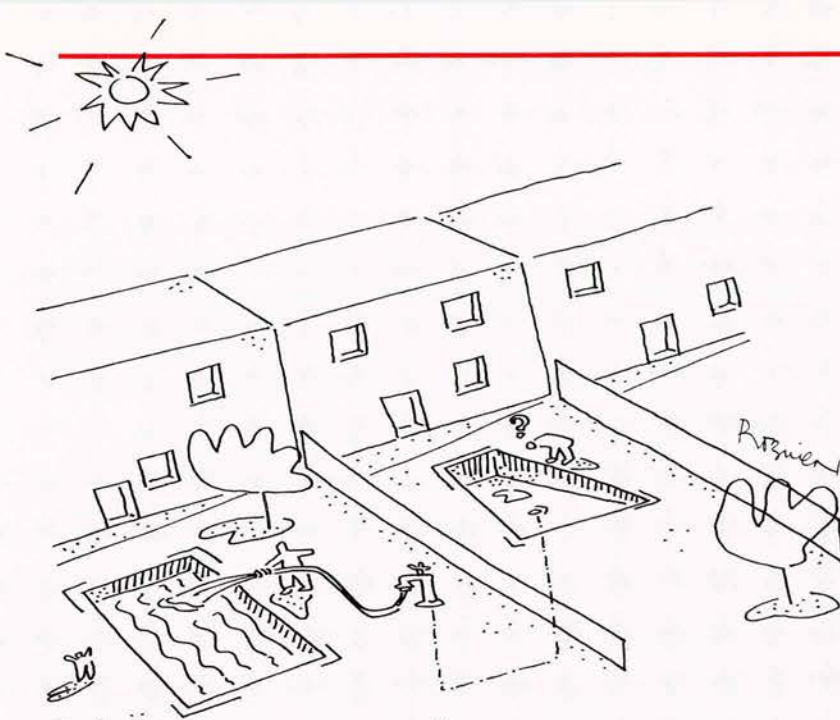
But overall the market is likely to exert an increasing influence over agro-food and the fact that markets are becoming global will reinforce

the downward trend in prices over the long term, even if some uncertainties remain as to the risk of price volatility. The geographical ramifications are important too. It is highly likely that China will account for between 20 and 50% of grain imports within a decade. Conversely, Ukraine, for example, could well become a major grain exporter. While it is still hard to predict the scale of any developments of this sort, the supply and demand situation on world markets is likely to be altered anyway. Another factor in the equation is world or regional economic growth, though such is the strength of the downward trend in prices from now to 2020-2025 that it would not be reversed by even a rapid increase in world GDP.

The agro-food sector does indeed appear to have the resources to deal with future rises in food demand. Productivity gains achieved through technological change, better diffusion of new techniques and easier access to inputs will all act in the industry’s favour. A better distribution of the fruits of economic prosperity, together with more efficient markets, will be needed for the battle against world hunger. In the meantime, countries with a high level of poverty and heavy reliance on agriculture will probably have to introduce agricultural development policies directed at both output and income. Those that cannot switch to other crops and adapt to land or water supply constraints will have to redirect their development policy towards other sectors of the economy if they are to create enough wealth to finance imports. As for OECD countries, keeping markets open to farm and non-farm imports from the rest of the world is a sine qua non of winning the ongoing battle to eradicate malnutrition and reduce the risk of famine for years to come. ■

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Water worries

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Most of the earth's population may be living under conditions of "low" or "catastrophically low" water supply by 2025. The causes of this situation are unlikely to be rectified in the foreseeable future.

Are we running out of water? Perhaps an overly dramatic question, but pressures on water supply are set to intensify and with them, geopolitical tensions are bound to rise. One source of pressure will be population growth. World population is projected to grow from 6 billion at present to 8 billion in 25 years' time. Most of that growth will take place in countries which are already exposed to water-related difficulties, such as Ethiopia, whose population is expected to more than double from 62 million today to 136 million in 2025; that is about half of the population of the United States today.

The rapid urbanisation that has accompanied such fast population growth – the urban population of developing countries will increase by a remarkable 2.5 billion over the next 25 years – will pose its own serious problems for water supply. Many cit-

ies simply do not have the resources to accommodate the extra people. Infrastructures are already under strain and the financial burden of expanding services will be immense. Probably as much as \$1 trillion of new investment would be needed to provide adequate sanitation for the urban popu-

Probably as much as \$1 trillion of new investment would be needed to provide adequate sanitation for the urban population of poor countries.

lation of poor countries. And they will have to compete for this investment as richer countries upgrade or replace their existing systems. Pressure for investment in developed countries is bound to grow in line with public awareness, not just of environmental, but of sanitary issues too. It came as a

shock to many, for example, to learn that the athletes who died after falling into a river in Tel Aviv during the 1997 Maccabiah Games did not drown, but were poisoned by the water.

One trend that is highly likely to aggravate water shortages is global warming, with a 1.5 to 3 degree rise in global temperatures expected over the next century, according to the Intergovernmental Panel on Climate Change (IPCC). More water will clearly be consumed for irrigation and drinking, but there may be indirect effects too which would be more difficult to cope with. There could be increased evaporation and reduced groundwater recharge; a higher frequency of extreme weather conditions, such as storms (which can cause water treatment systems to overload); and a shift in climate zones and seasons which could have marked effects on water supply. Even in regions where the total annual precipitation did not change much, problems could arise if rainfall became concentrated in the winter or if it shifted away from agricultural zones.

A global issue

Climate change could probably have impacts beyond those areas vulnerable to catastrophic drought or floods. Countries such as the United Kingdom are beginning to study possible repercussions in a wide range of sectors, including the implications for water management. One finding is that even under the IPCC's conservative assumptions concerning temperature increases, water resources will become a major determinant of future land use. New housing projects may have to be abandoned because of lack of economical water supply, or because of flood risk.

So what can be done? There are large-scale technical solutions, which have

helped countries like Egypt. Despite the droughts it was spared the tragic famines that struck Sub-Saharan Africa in the 1980s, even though it relies on the same hydrological basins for its water supply. And when it comes to deadly natural disasters like the flooding that killed thousands in China last year and made millions homeless, one strategy may be to build huge dams both as protection against climate fluctuations and to provide hydroelectric power.

However, interfering with nature can have unforeseen consequences. Critics of large technical solutions like to point to the Aral Sea drying up after the Soviet Union expanded cotton production by massive irrigation. For the time being at least, large-scale technical solutions are out of favour.

Smaller-scale technical solutions have also been proposed. Jordan is considering a scheme to take water from the Gulf of Aqaba on the Red Sea and transfer it by canal to the Dead Sea, using the difference in elevation to drive a hydropower plant. This plant would desalinate seawater and the brine rejected from the desalination

plant would be discharged in the Dead Sea to stem the drop in sea level. Such projects, however ingenious, are unlikely to provide major sources of new water supply.

Pricing water

Attention is focusing on demand-side solutions to promote sustainable use, with the help of market-based pricing mechanisms. OECD countries are not running out of water, but supply problems are becoming more frequent. Global fresh water resources are likely to continue to suffer from waste and mismanagement due to excessively low prices, infrastructure deficiencies, and slow uptake of better technology. A key instrument for moving towards sustainable consumption would be to ensure that resources and ecosystems are given economic value and that external costs, such as those arising from pollution, are reflected in market prices.

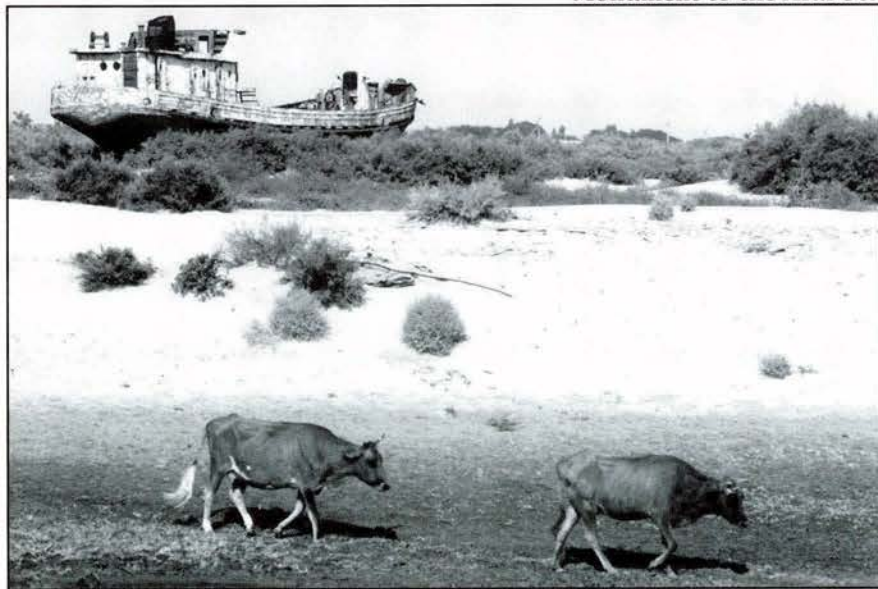
Price reform is particularly attractive on economic grounds. For agriculture, which accounts for around 70% of global water consumption, compared with industry's 20% and the residen-

tial commercial sector's 10%, some degree of intersectoral competition for scarce water resources could be entertained, as long as there was an end to subsidies and to public-led programmes to extend irrigation, except in special cases.

Tradeable rights are also a possible means of managing water resources, since it is argued that they would allow the price of water to reflect the value of its alternative uses, creating incentives to use it productively and cost-efficiently. For example, farmers selling at freely negotiated prices may have an incentive to improve their own water use efficiency in order to sell surpluses to cities, where the price is higher. However, such a system might be costly to set up and run. Laws would have to be changed, means of enforcing rights implemented, and perhaps new infrastructures built to carry water to potential customers. In any case, governments would still need to be involved in aspects such as quality standards or flood control.

Apart from the occasional restriction on watering the garden or washing the car, most people in OECD countries never give much thought to using water, and even less to how much it really costs or where it comes from. Action now to protect future supplies would ensure that this continues to be the case. Elsewhere, the situation is more worrying. Experience suggests that it will be extremely difficult to combine the political action, investment and forms of development required to ensure equitable access to adequate supplies of safe water for all. ■

Monument to the Aral Sea



Zhumatov/Reuters/MAXPPP

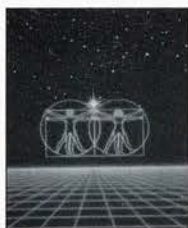
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Christensen/Reuters/MAXPPP

Cost control



Health after wealth

An ageing population, combined with changing lifestyles and the emergence of new health threats, will increase the pressure on national health systems in OECD countries. Michel Andrieu explains.

Over 65s accounted for 10% of the OECD's population in 1950; they will account for twice that by 2050. The oldest and frailest are the fastest growing group among the elderly. In France, the number of over-75s is expected to increase by 40% over 1990-2010. Because the elderly are by far the largest users of health services, this "double ageing" process will mean higher health costs and an increasing concentration of health expenditure on the aged.

By 2040 in OECD Europe the share of health expenditure accounted for by the over 65s is expected to range from 30% in Belgium to 63% in Sweden; this compares with 22% and 51% respectively in 1980.

Lifestyle changes due to rising affluence may improve personal health, but ironically the burden on health care could become heavier as higher living standards tend to raise the demand for higher quality (and hence more costly) health care as well. Also, alterations in family structure, such as a rising number of single-person elderly households and weaker inter-generational ties, can boost demand on public health provision. Moreover, the participation of women in the labour force is expected to rise in most countries, and this will increase the demand for publicly provided care.

The future will bring its health threats too. Some communicable diseases may become



Parlovsky/SYGMA

All quiet on the emergency front

virulent. There will be health risks from pollution and the degradation of the environment. With global warming some tropical diseases could reach Europe or North America, while there is no sign as yet that the condition of the ozone layer, with its attendant skin cancers, eye diseases and weakening effects on the immune system, is about to improve.

**Disability-free life expectancy
is rising too**

On balance, the quality of life should improve in the coming decades, rather as it has in recent ones. OECD data show that not only is life expectancy rising, but the number of years on disability-free life expectancy is on a steadily improving trend too (see *Observer* 216, page 60). Although the number of age-dependent chronic conditions stands to become more prevalent, advances in science and technology will boost the quality of health care, holding the promise of more effective cures for today's deadly diseases and perhaps remedies for new pathologies. Progress in biotechnology offers new opportunities to anticipate, prevent and treat a number of genetic diseases, including cancer. Surgery is also becoming more efficient, thanks to medical imaging and the trend away from major incisions to endoscopic techniques. Finally, the application of

informatics will significantly improve the availability, management and effectiveness of health care services. Telemedicine and information management will bring specialised services and expertise to the most remote areas. Artificial intelligence and expert systems will be used routinely in clinical diagnosis and will play a key role in preventive medicine.

Some of the new advances will call for more sophistication in the management of health care because of the complex ethical questions they raise, such as about genetic manipulation, or organ transplants. Some of these questions have profound cultural and political implications.

Health care is also about raising revenue and controlling costs. Indeed, health systems in most countries will be confronted sooner or later with common pressures: they will all need to adjust to changing health care needs as populations age and new health threats emerge; they will all have to contain costs and establish a financial arrangement which is viable and politically acceptable without compromising social equity.

Substantial cost savings could result from efforts to curb treatments of doubtful therapeutic value. Moving from a "fee-for-service" to a "fee-for-benefits" approach could be another way to improve quality of health care and contain costs. And a new allocation of financial responsibilities among key players, with greater individual responsibility for health, might also be the answer, provided an inequitable dual-tier system is not generated in the process to simply add to the problem of "double ageing". ■

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Energy fifty years on: time for a change?

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When assessing the future of energy, it is useful to make a distinction between the next fifteen to twenty years and the period thereafter. This is because 2010-2020 could constitute a critical turning point in the transformation of the world's energy landscape.

The energy market is unlikely to undergo any radical change in the next twenty years. That at least is the general consensus. The thinking behind it goes broadly like this. Turnover of the industrial capital stock is low and in power generation, residential construction and to a lesser extent transportation, existing technologies, from the combustion engine to gas turbine generators and railway electrification, will continue to hold sway. What is more, since the early 1980s energy demand patterns have been relatively stable and are expected to remain so for the next couple of decades. An important exception are the developing countries where population growth, rapid urbanisation and higher living standards will drive up energy use markedly. Energy supply virtually everywhere will continue to be dominated by fossil fuels – oil, gas, coal and other solid fuels. Indeed, these sources are expected to provide some 95% of additional global energy demand over the next twenty years, increasing the pressure to invest in technologies and policies that allow compliance with stricter environmental targets.

But beyond 2020, the energy picture could change dramatically. For a start, the new technologies will come on stream, and new generations of capital stock and infrastructure will have begun to make their mark, bringing significant improvements in energy efficiency. On the supply side, oil production will probably start to decrease, first in the non-OPEC and then in the OPEC countries. The output of gas will follow suit, albeit somewhat later.

The long-term geopolitical consequence will be to increase significantly the already growing share of supplies concentrated in what are today politically sensitive regions – reserves of conventional oil in the Middle East and natural gas in Russia, Iran and parts of Central Asia. Even if non-conventional oil, such as that extracted from oil shale or tar sands and gas resources fill the gap for some time, there will be growing pressure to find substitute fuels, so that in virtually all long-term scenarios, renewable sources, such as wind and solar power, are expected gradually to expand their shares in primary energy consumption.



Peter Menzel/Cosmos

Protecting the environment

Developing countries will start to play a much bigger role than at present, both with respect to energy demand and supply in terms of prices, diversification of sources and competition, and to carbon dioxide emissions. OECD countries will be a smaller player in the world in terms of energy demand, production and trade, but they will be important suppliers of technology.

The devil in the detail

That is the broad brush canvas for energy over the next half century and one that is rather familiar. However, within that big picture, a multitude of outcomes are possible that hinge on developments, trends and trend breaks in a number of key areas. Take, for example, the question of how quickly oil reserves are likely to start declining. It can be argued that given the existence of diminishing returns in oil prospecting, and the strong possibility that

estimated ultimately recoverable oil reserves (EUR) are lower than generally believed, production could start

It can be argued that oil production could start to dwindle sooner than expected, perhaps as early as 2007.

to dwindle sooner than expected. According to some estimates that put EUR at 1,800 billion barrels, it could happen as early as 2007. The consequences of a growing concentration of supplies of conventional oil and conventional natural gas in politically sensitive regions of the world could, then, be with us sooner than generally expected. However, that may not become a major problem in the coming decades, as experience in keeping supply lines open even in politically tense periods would suggest. Anyway, non-conventional sources would rapidly fill the vacuum created by any medium-

term disruptions in the supply of conventional resources, though energy costs would possibly rise as a result. Nonetheless, geopolitical surprises cannot be ruled out (see next article).

Developments on the environmental front are also extremely difficult to foresee. From a long-term perspective, the need to avoid too dramatic a change in climate points to an upper limit for greenhouse gas emissions by a future target period, which many believe can only be achieved through concerted international action. But there is disagreement on the likely outcomes of co-operative endeavours. Take, for example, the 1997 Kyoto Protocol, which obliges developed countries – subject to entry into force – to reduce emissions for six greenhouse gases by a total of about 5% below 1990 levels by the years 2008-12. Some experts doubt that those obligations will be upheld, not least because of the difficulty of setting up a viable emissions trading system. Others are confident that the Kyoto obligations will be met and that they will serve as stepping stones for further stricter, legally binding agreements at a later date.

Can technology be the answer to the efficiency and environmental challenges of the coming decades? Some technologies will probably not be available, or at least not for a long time to come. There has, for example, been some excitement about the possibilities offered by nuclear fusion. But it is still not commercially viable. A pilot plant is still at least fifteen years away and it could take up to fifty years to gain a meaningful market share. Nonetheless, there is no doubt that technologies can make a significant contribution. Renewable energies, nuclear fission and cleaner use of fossil fuels hold out good prospects for helping to meet tighter environmental requirements and promote sustainable development.

There is considerable potential for improvements in energy efficiency, in such areas as transport, with lean burn engines and fuel cells for example, and in making smart buildings, with heat pumps, high-tech windows, heat exchangers and so on. More generally, the trend to greater fuel efficiency could be further enhanced if rising glo-

it seems safe to assume that, even though developing countries will not bypass steel, machinery, chemical and other industries, the changing nature of production and user technologies – especially the pervasiveness of micro-electronics – will ensure they do not repeat exactly the industrialisation pattern of OECD countries. There

balised markets; shifting power structures, new players and new forms of co-operation in the world economic arena. But perhaps the most crucial issue raised by taking a fifty-year perspective is that many end-use devices and systems, such as industrial plant, parts of the building stock and transport and communications, as well as many existing power stations, will have reached the end of their lifetime and will have been replaced by new technologies.

Over the coming decades there is a risk of a fourfold increase in energy demand in the developing countries as population growth, urbanisation and industrialisation take hold and accelerate.

bal affluence continues to lead to higher demand for environmental quality.

The average per capita consumption of energy in industrialised countries is up to 20 times higher than in developing countries. Over the coming decades there is a risk of a fourfold increase in energy demand in the developing countries as population growth, urbanisation and industrialisation take hold and accelerate. To exacerbate matters, high energy use in industrialised countries is driving increases in global energy use through the world-wide diffusion of life-styles and technologies.

Trend breaks to make the difference

But there is no iron law that dictates replication of economic and social patterns over time. Trends do break, and if they occur over the long run, such as in the relationship between industrialisation and energy intensity, or between energy use and communications infrastructure, the impact could be telling.

The expected structural composition of economic growth in non-OECD countries over the coming decades is a useful illustration. At the very least

could be some "leap-frogging" so that the catch-up process between some developing and developed countries could prove faster than foreseen, with the former shifting rapidly to light industry and service activities. Energy intensity in those countries could decline faster than expected. Similarly, in the more advanced countries the shift to the information and knowledge society that is so widely anticipated could have far-reaching implications. The spread of telework, teleshopping and teletrade, for example, and the deep changes that information technology is likely to bring about in the organisation of work and leisure, in mobility patterns, and in urbanisation trends, could radically improve energy efficiency.

Getting the infrastructures right

Envisioning the future so far ahead is clearly a tricky business. But the common thread of almost all projections over this time scale is that the political, economic, social and environmental context in which energy supply and demand will unfold over the next half-century could be very different from today's. It will be characterised by new production and consumption patterns and different communication and information systems; a very much more diversified energy mix; more glo-

It is the re-casting of such infrastructures in the broadest sense – energy infrastructures, urban settlement, the construction of dwellings, transport systems – that offers perhaps the greatest opportunity for setting the evolution of both the economy and society on a much more energy-efficient path. Infrastructures tend to lock societies into distinct, slow-to-change patterns of travel, work, leisure and life-styles in general, thereby acting as a brake on the transition towards a different energy-environment paradigm. Their renewal requires long lead times, as witnessed for example by the transition from steam power to electricity which took several generations. Now is the time, therefore, to plan and start putting in place the infrastructures which shape the global energy landscape. It is a task which demands imagination and creativity, with a stronger emphasis on environmental and social responsibility. Given the magnitude and importance of the changes required, fifty years may not seem such a long time after all. ■

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The changing face of energy geopolitics



AFP/Archives/UT

Empty? Oh la la!



Anyone trying to forecast oil prices twenty or twenty-five years ago would have noticed that the world economy was slowing down. It would have seemed reasonable then to predict that oil prices would start to drop. Of course, the opposite happened. The 1973 Arab-Israeli war and the 1979 Iranian revolution were followed by “oil shocks” as prices rose suddenly and significantly. And the 1991 Gulf War led to all sorts of price predictions, mostly pointing upwards. Today, prices are hovering around historically low levels – oil is actually cheaper now in real terms than before the shocks. Still, it is important to remember that energy prices are determined by geopolitics, not just by economics. Two regions, the Middle East and the Caspian Basin, hold the key to understanding that geopolitics and, not surprisingly, they are watched closely by industry and government everywhere, not least at the OECD.

Middle East will be more important

The shared perception of those experts is that the importance of the Middle East producers will grow, not decline. And as in the past, politics could prove to be every bit as important as

geology and resource sustainability, at least in the next 50 years.

Let’s take the question of Islamic fundamentalism. It is often quoted as a potential threat to oil supplies, but experience with the fundamentalist regimes in Iran and Saudi Arabia suggests that their need for oil revenue will keep them tied to the market. The absence during the Gulf war of Arab solidarity (as expressed previously in the use of the “oil weapon” in the 1973 war with Israel) supports arguments that pan-Arabism is a tired force politically and unlikely to gain sufficient strength to provoke further price shocks.

Paradoxically, the Gulf region could be the source of new shocks, not because of sudden price hikes, but rather if the oil price collapses. If prices continue to decline, many non-Gulf producers would become uneconomic, causing serious problems in countries that are highly dependent on energy exports for hard currency. At the same time, world dependence on the Gulf would grow. While this would guarantee an in-flow of cash to the petromonarchies in the long term in the medium term revenues would suffer, and the social pact

that is financed by oil money could break down. Civil strife could follow, leading to the disruption of oil supplies. Eventually, the oil would come back on-stream again, but it is worth remembering that the 1979 shock came after Iran's production was disrupted for only a few months. Oil companies (and the governments of countries that rely on oil imports) are thus faced with a dilemma. Depending on a region as volatile as the Gulf is hardly ever going to be risk-free, but investing heavily in developing non-Gulf reserves will probably not be necessary for the next decade or so.

A Caspian delicacy

Continuing low oil prices could have particularly serious consequences for Russia, most of whose hard-currency earnings come from oil and gas exports sales. Oil revenues from traditional customers would fall. This would have the dual effect of hurting incomes and undermining the argument that customers should switch to natural gas. And that would make it harder for Gazprom, the Russian authority, to meet its European export target of 190 billion cubic metres by 2010, versus 98 billion in 1991.

To have any chance of achieving that target, money would have to be found to build pipelines to carry the extra 100 billion cubic metres, and this may prove difficult given the uncertain outlook for the investment and the crowding out by the investment commitments elsewhere in the former Soviet Union, notably the Caspian Sea area.

Proven reserves in the Caspian basin are 15-31 billion barrels of oil. That's 2.7% of world reserves. Some 230-360 trillion cubic feet of gas are also estimated, which is 7% of world reserves. Estimates of possible oil reserves vary from as little as 20 to as much as 200 billion barrels. Assuming that optimistic assessments of 20 to 30 billion barrels in the shallow waters of the Kazakh offshore sector are correct, total regional production could reach 3.5 million barrels a day (mbd) in 2010, with 2.5 to 2.8 mbd exported. In 1997 production was 0.9 mbd, with 0.3 mbd exported.

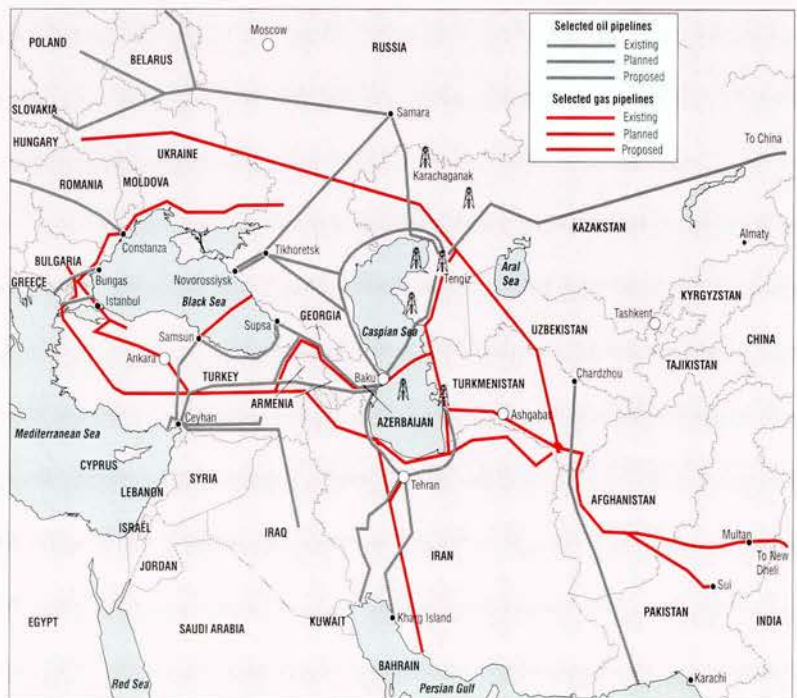
Oil demand in 2010 is projected to be 94 to 103 mbd, depending on assumptions for de-

mand growth. This implies that OPEC may have to shut capacity to defend prices. Moreover, if the projection model assumes that technologies will promote convergence towards energy-saving processes, world demand would only be 89 mbd in 2010.

Given that Caspian reserves are unlikely to have a great influence on world markets, and will face enormous difficulties in even getting out to these markets, it is worth asking why so much attention is being focused on this region. Part of the explanation lies in the instability of the Middle East: Caspian energy supplies could bridge any gap that would open up if supplies from another major producer were interrupted for a certain time.

The Caspian Basin is also important geographically and politically. The restrictions on Iraqi capacity may offer Iran an opportunity to yield renewed influence in the region, especially as it could also be a key player in opening up the Caspian's oil and gas fields to international exploitation. With Iran, the coming years may thus see Western governments moving away

Caspian oil and gas pipelines



Source: IEA

from sanctions and towards “constructive engagement”. United States oil companies would encourage such a strategy, especially since their competitors are already strengthening their position on the ground.

Moreover, the US and Europe are not alone in wanting to build links with the region. China sees it as part of its plans to resurrect the Silk Road, which could re-awaken old rivalries in a new “Great Game”, similar to the power struggles of the 19th century. This puts Russia in a difficult position. If it seeks revenue from investment in the Caspian and transit taxes on pipelines crossing Russian territory, it would encourage a rival to its indigenous industries. If it takes an aggressive stance, it risks opening its sensitive southern flank to influence from its political and economic rivals.

A disturbance in the Caspian region would thus have repercussions far beyond its immediate shores. For example, if oil companies lose money due to political upheavals, they will be more reluctant to fund new projects in other areas of perceived instability, including those that could have provided the extra capacity that will be needed early in the 21st century. More directly, if pipelines crossing this region are cut for whatever reason, the shortfall in supplies to major markets could have drastic consequences for those countries which have decided to run down, or even eliminate, their strategic reserves.

The Caspian is thus important not only because of a potential contribution it can make to world energy markets, but also because the competition for its reserves reflects a wide-ranging network of interrelated domestic, regional and global-scale rivalries, all of which are helping to draw the geopolitical energy map of the 21st century. ■ P.L.

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21st century technologies: a future of promise



An exciting period of technological change lies ahead. But how will these new breakthroughs affect economy and society as a whole and what are their implications for policy? Wolfgang Michalski, Director of the International Futures Programme, offers some answers.

The interaction between the evolution of technology and the development of economy and society has always been an important dimension of human history. This applies to the Iron and Bronze Ages as well as to modern times. The transition from the agricultural society towards the industrial society provides the most pertinent illustration of the profound implications which the full diffusion of new technologies can have on family structures, work relations, settlement patterns, economic and political power configurations, and also on behaviour patterns and value systems. The relationship between technology on the one hand and economy and society on the other is not



KITLUWONGSAKUL/AFP

a few. New possible combinations and interactions of the various technologies will also be of major importance. Prominent examples include information technology and telecommunications as well as energy and environment technologies. However, only a few of these technologies appear to be pervasive enough or to provide mankind with new basic capacities for them to have a major impact on society.

In a thirty-year perspective, genetics technology as well as energy and environment technologies could hold this potential. But looking ahead towards the next ten years or so, the main driving force for economic and social change will be information technology. After a quarter of a century of gradual development and diffusion, many believe that information technology is on the verge of a new take-off. This is partly due to genuine technology evolution; however, it is also partly the result of changing economic and social structures.

uni-directional. Not only does technological progress result in the continuous change of economic and social structures, but the latter, including the evolution of attitudes and values, has at the same time a major impact on the direction and the speed of technology development. The industrial society of today, characterised by mass production, mass consumption and mass government, is in many ways a complex incarnation of the technologies of the 20th century. But there is no doubt that the profound change in political, economic and social structures has provided the conditions to enable the transition to a new paradigm.

Breakthroughs will drive change

Looking at technology developments at the turn of the 21st century, there seems to be once again a broad range of new technical breakthroughs in reach. Further rapid progress is expected in information technology, new materials, genetics technology, environment protection and energy technologies, to name just



Mychele Damiani/AFP

These are increasingly adapting to the new organisational and institutional patterns required for the full and most effective use of the new technology, thereby contributing now to the push for further technological progress.

The networked economy

Beyond the convergence of computers, television and telephones, tomorrow's powerful desktop computers will be characterised by the

use of sensory input and output devices, by the use of intelligent agent software and, most importantly, an all pervasive network connectivity. In particular, the latter will lead to another important feature of tomorrow's information technology, notably universal "smartness". In the longer term, people will be used to having networks connecting everything. They will experience smart furniture, kitchens and offices, they will live and work in smart buildings, and they will drive sensor-conducted smart cars on smart highways. A further highly promising application is imaging, which will be used for highly sophisticated bar codes, video marketing and virtual goods. Complex technical products, such as automobiles, skyscrapers or aircrafts, will as a routine matter be designed, planned, built, tested and evaluated in cyberspace before being manufactured for real. A decade from now, information technology will in all probability have penetrated every aspect of human activity. Once again, the interaction between the evolution of technology and the development of economy and society will have led to profound changes with regard to when, where and how people work, play and rest; to how, where and what people consume and produce; and to when, where and how they interact with other people, with business, social organisations or government.

Computer-enabled electronic commerce is likely to modify significantly current ways of doing business. Anyone with a computer and Internet access can benefit from the enlarged choice and the competitive supply on the global market place. Performance is difficult to measure in this context, but it is interesting to know that *Amazon.com*, a well-known Internet bookseller, holds 13 million titles, whereas the biggest bookshops in New York arrive at no more than 180,000. Estimates of world-wide electronic commerce revenues vary sharply, but there is no doubt that they will rise dramatically – certainly by about 1000% over the next four to five years. Electronic commerce will also lead to modifications in value chains: some will be dismantled, and others re-assembled. Most importantly, there will be a process of dis-intermediatisation. Many intermediate agents between producers and consumers will have

to change their role or disappear. Examples include travel agencies, insurance brokers, local bank offices and many sectors of retailing.

Towards a creative society

There will also be major implications for social organisation – in private life, business and government. The advanced power of computing, coupled with low cost telecommunications, may lead to new kinds of communities – both real and virtual. The possibility of teleworking, teleshopping and telelearning may result in a move away from the big urban agglomerations and give rise to new developments in settlement patterns. Easy access to interactive global networks together with further simplification of computer use, will enhance the spread of today's embryonic "cyber" communities. In business, there may be a strong tendency towards bi-polarisation of company structures – a trend towards very big global players on the one side, and very small, highly specialised companies on the other. In business and government, many foresee the end of the traditional hierarchical command and control structures. These may be increasingly replaced by horizontal networks and cooperative teams, providing members with greater freedom and responsibility in decision-making. All this will increase efficiency further, but at the same time, will provide scope for growing diversity, for greater individual choice and for many new opportunities for people's self-determination and self-fulfilment.

Nonetheless, technological advances in themselves provide no foregone conclusion as to the extent and manner in which they will be used. In order to realise the promises of 21st century technologies – in particular information technology – individuals, business and governments need to embrace a culture of creativity, experimentation and openness to change. Policy at national and international levels has to ensure that the benefits are shared by society as a whole. It should also see to it that, wherever possible, potential risks associated with the new technologies are controlled and undesirable side-effects contained without unduly impairing technological, economic and social dynamism. ■



Hulton Getty/Fotogram-Stone

A better future for work?



It appears that with every passing age work in most societies has got better and less exploitative. Now, with new technologies profound transformations within the firm are again in store. Will those changes deliver new benefits and improve the quality of life as before?

The impact of information technology (IT) on work is a question which probably worries us more than we care to admit. Will information technology be a liberating force on the individual and the herald of a new social and economic contract? Or will it cause a drastic cut in jobs and massive unemployment? Will the quality of life be improved by opportunities both inside and outside the workplace, or will the work experience deteriorate into a race, with the jobless in

search of unstable, unpredictable and above all insecure contracts?

To start with, it is most likely that IT - as with other forms of technological changes in the past - will have an impact, not so much on the overall employment level, as on its makeup. The nature of working relations will also be deeply affected by IT, as it brings about a radical transformation in the organisation of production. There will be a reduction in the layers of man-

agement and virtual organisations will emerge without fixed locations and with flexible, demand-oriented, production networks.

As to the composition of employment, many jobs are likely to be destroyed, notably low-skill repetitive jobs and middle management posts, as organisational structures become flatter. Even highly qualified professionals, such as medical doctors and lawyers, will not be immune to the onslaught

of IT. At the same time, new forms of employment will become more prevalent; notably, participation in task-specific team production and teleworking will usher in a new type of job tenure, a sort of "jobless" employment market.

These changes will bring new challenges for employees and for employers alike. Employees will have to be prepared to upgrade their skills on an on-going basis and to switch jobs, perhaps several times in their career, as a matter of course. They may have more frequent spells being unemployed, or on time-out between jobs. Overall, employees will need to be more entrepreneurial in their career development and will have to adjust to a new working environment where the very concept of job, as we know it, will have evolved and may even disappear.

But employers too will need to adjust. With innovation, rapid product cycles and high quality as basic requirements for success in the market place, firms will have to find new, flexible ways of employing knowledge workers effectively. In this context, resolving tensions between the need for a secure environment to nurture employee initiative and the potential insecurity due to unfamiliar work relationships will be important. This will call for managerial innovations in the way both work schedules and job descriptions are tailored to the needs of employees. Notably, employers will have to pay particular attention to the needs of "core knowledge workers", who are workers charged with knowledge production who will probably insist on less linear, less hierarchically defined career paths. In a more competitive environment where human capital will play an increasingly dominant role, such workers will be in a strong position to negotiate their fees and their working conditions. Firms will have to bid for employee time, which may

drive up wages for certain skills, though boosting efficiency and improving business-partner relations.

Job satisfaction

As the job market changes, the workplace experience will change too. The question is in which direction, good or bad? According to some, it will deteriorate. Just as mechanisation resulted in the dehumanisation of work in assembly line industries, it is feared that future workers will become mere extensions or servants of computer-driven production processes. As system software increasingly controls and defines the work to be done, computerisation may turn many contracts into mind-numbing McJobs, with individuals being systematically stripped of their capacity for human involvement and judgement.

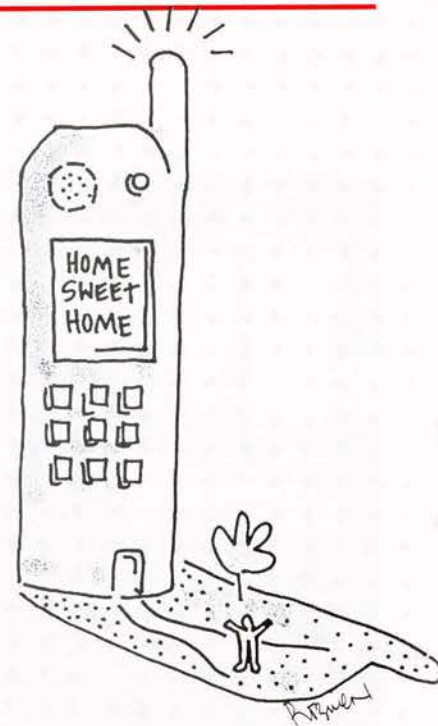
Optimistic technophiles, on the other hand, argue that the quality of work will improve for most of us and that those who are left out will still be able to enjoy a higher level of income. This sounds perhaps a little utopic, though

Noteпад laggard?



Innoye/AP/Boomerang

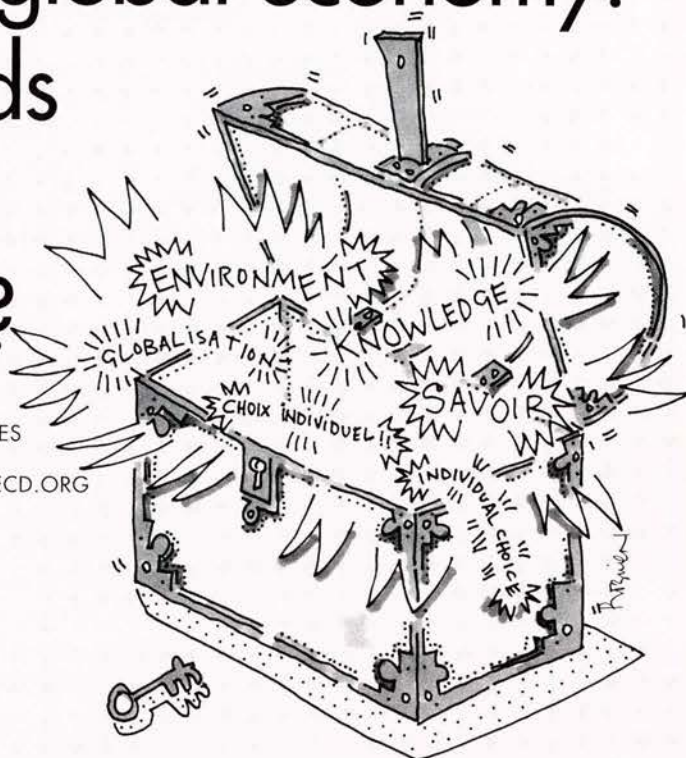
there is a logic to it. The argument is that increased prosperity brought about by progress in information technology will result in a major increase in leisure time, which in turn will translate into more fulfilling lives. Not only will individuals have more time out for themselves and more money to enjoy it with, but also work itself will become more rewarding. Indeed, for some workers the distinction between work and leisure will become blurred as they find they are able to work at what they enjoy doing. This is because "intelligent" machines and systems will do the dirty, dreary work, replacing manual labour and some of the more mundane intellectual work too. Decision support programmes will provide essential help for more complex intellectual work, allowing individuals to focus on the most satisfying tasks. In this vision of the future, work will increasingly become a means to satisfy higher order needs, part of one's self-fulfilment. In other words, work could become a hobby for more and more people. In this optimistic scenario, even those who cannot find the jobs they want will be better off as the rising tide of affluence lifts all boats, improving welfare programmes and ensuring that the basic needs of society are indeed met.



On balance, there is good reason to believe that IT can bring about a period of unprecedented material prosperity to the world. Indeed, it is quite possible that, after a period of painful adjustment, workplace improvements will spread globally in the longer run, albeit perhaps in an uneven way, with some periods and places witnessing faster progress than others. As the technophiles argue, our pay cheques and welfare payments should on the whole become fatter. However, there is no guarantee that everyone, or even most of us, will benefit. Indeed, if current trends in income are a harbinger of things to come, income inequality may very well increase in the future, possibly becoming a source of serious social upheaval. So, will IT favour only an affluent highly skilled small elite, while the less skilled become poorer as they are automated out of the equation and cornered in dumbed-down jobs? That is a key question and it is one on which the true promise of new technology will be judged. ■ M.A.

The future of the global economy: towards a long boom?

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Observers Past

Some of the basic assumptions underlying [earnings] incentive systems have been called into question by technological developments; in the most automated jobs, workers have been removed altogether from the physical process of production and made into machine minders, maintenance men, or technicians. Hence, management objectives in designing a wage scheme have shifted: in particular, there is growing concern with encouraging workers to accept technological change and to learn new skills and techniques.

OECD *Observer* No. 40, June 1969

The world stands on the threshold of a tantalising opportunity – the possibility of a sustained long boom over the first decades of the next millennium. It is an opportunity we should not miss.

Long booms are exceptional events. There have been relatively few in the history of human economic development. Two rapid growth periods of the last 130 years – one in the latter decades of the 19th century and the other in the period after the Second World War – made major contributions to lifting the long-run historical average to a higher level. The anatomy of previous long booms reveals two basic characteristics. The first is that a boom's above-average pace of development tends to be part of a longer, century-spanning flow. This is a distinct phe-

nomenon not to be confused with shorter business cycles that fluctuate up and down around the historical trend.

The second feature of a long boom is the coincidence of diverse forces which work together in a specific historical conjuncture. Most recently, this occurred during the 1950s when the post-war reconstruction boom coalesced around the diffusion and development of innovative technologies, advanced methods of mass-production as well as new economic and institu-

tional frameworks. Such a constellation of forces helps to spark and sustain the unusually fast rates of socio-economic change and productivity growth that characterise a long boom.

Harmony and dissonance

Not necessarily. Certainly, strong growth in investment, in the capabilities of the labour force and in trade are crucial for very long periods of sustained economic development. But the dynamic element that drives change forward is the systemic chemistry that either catalyses the process or stifles it.

History has cast the role of system functionality or dysfunctionality into stark relief. The dire consequences of systems failure are evident, for instance, in the demise of Soviet command planning or the post-1970s "debt crisis" which plunged many countries into even deeper poverty. On the other hand, system functionality normally brings immense benefits. This can be seen in the convergence of income levels between North America, Europe and Japan, and the impressive economic take-off of many Asian countries over the last two to three decades.

What are the ingredients of a functional system that allows it to militate against stagnation and maintain its capacity to change over time? The answers can be grouped into three areas. First, there are the aspirations and imperatives that emerge when democracy and a competitive market place are allowed to develop together. Second, there is the capacity to innovate and adapt that can flourish only when there is pluralism, transparency and openness. And third, there is a whole range of cultural values, such as a respect for both civil liberties and social obligations, which underpin the constant search for ways of balancing co-operation with competition, security with risk taking.

Of course, systems that are hierarchical, closed and intolerant are capable of short bursts of development, even over several years. This is particularly so if the technological, organisational and social structures are imposed from above, for example, during wartime, or during a period of forced industrialisation. But, as the

record this century shows, these are not dynamic systems capable of sustaining long-run economic development.

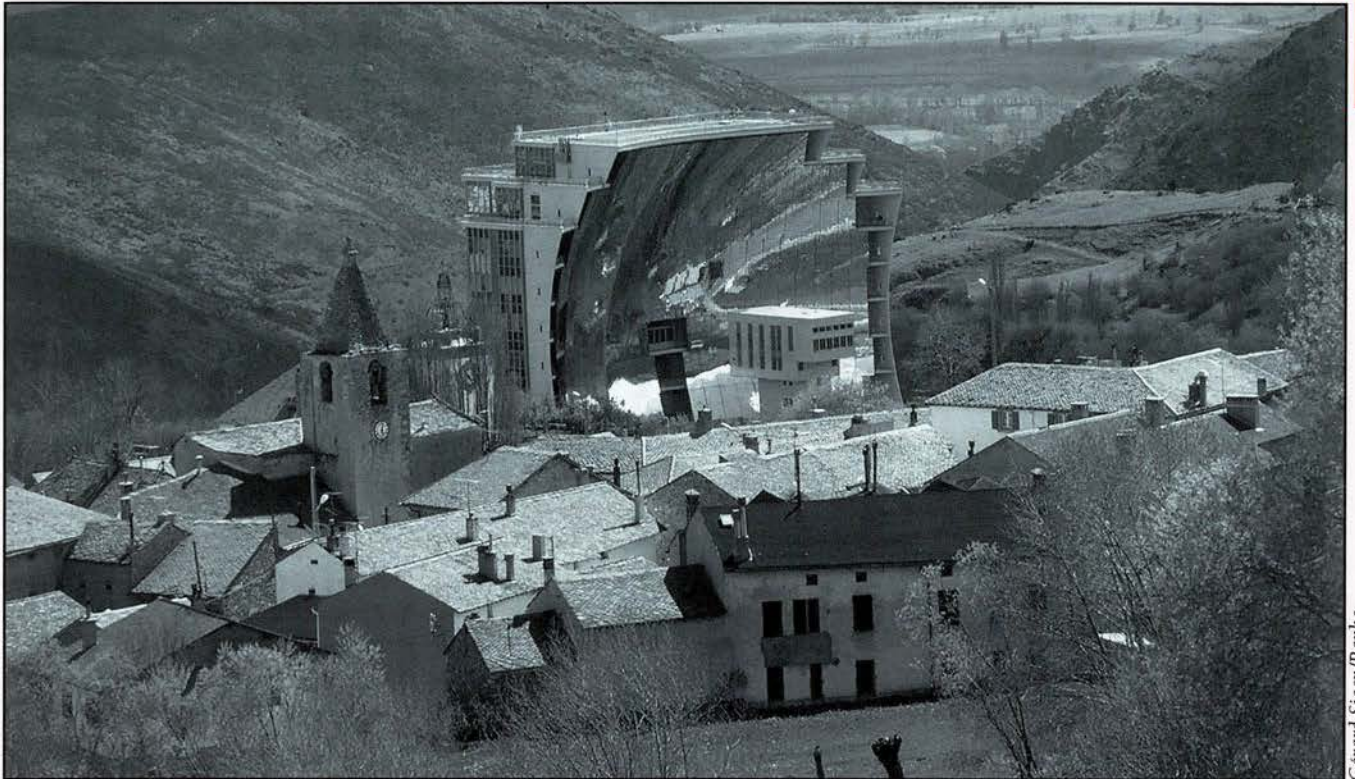
The fact that some systems fail does not mean that all systems must be the same or that functionality can be assured by clinging to what worked in the past. The ways of sustaining long-run economic dynamism change over time. The 19th century's rather narrowly defined democracies and trading institutions offered

A shift to an economy dominated by the production and consumption of intangibles, such as the trade in know-how and ideas, could spur the above-average growth rates of a long boom.

tremendous scope in that era. The same can be said of the organisations of mass production, mass consumption and mass government that have dominated the 20th century. However, these institutional and organisational forms are hardly adequate to the conditions and tasks of the 21st century, when meeting a growing diversity of demand will mean encouraging an ever greater diversity of supply. That, in turn, depends on more initiative, customisation and a further relaxing of centralised controls.

Sustaining the prevailing tide of long-run economic dynamism is a necessary, but not sufficient, condition for sparking a long boom. A confluence of specific technological, economic and social factors will have to fall into place to push the global rate of per capita income growth into the 3% and above range of a long boom. To reach this target over the next few decades, sufficient progress will have to be made in three critical areas: the knowledge society; integration of global markets; and environmental sustainability.

Regarding the first set of forces, the transition to a knowledge economy and society, there is a close parallel to the powerful growth-inducing impact of this century's development of mass production, mass consumption and mass government. In the 21st century, a shift to an economy dominated by the production



Gerard Sioen/Rapho

Harmonious future: here, solar power in Odeillo, France

and consumption of intangibles, such as the trade in know-how and ideas, could spur the above-average growth rates of a long boom. The more difficult question is whether or not this catalyst will be sufficiently strong both to drive change forward in as rapid and diffuse a manner as possible and to overcome any constraints on the way. Just the prospect of laboratory breakthroughs and product innovations offers no assurance of wide diffusion of new technologies nor the equally important reorganisation of the ways in which people work and live.

Momentum for change does appear to be building in several areas. With the explosive growth of the Internet and electronic commerce, attention is now turning to building the frameworks needed to enable a deeper and faster transition. The global infrastructure for overcoming inadequate privacy safeguards, payment systems and intellectual property laws is now being designed. Should this infrastructure fall into place, there is a good chance that decentralised market competition and knowledge diffusion will accelerate the transition process.

However, improving the ease with which people and firms everywhere can enter markets – both on the demand and supply sides – is only part of the solution. Constraints, such as limited access to easy-to-use, “appropriate” technology and out-dated methods for improving, assessing and attributing value to human capital threaten to slow change or render it too shallow. The intangible economy’s radically new organisational patterns of production, consumption and human settlement will take hold only if people are helped to overcome their fear of both unfamiliar technology and the prospect of new, possibly disruptive economic and social changes.

The second set of developments that could power a long boom spring from the possibility of an accelerated and much fuller integration of global markets. There is good reason to believe such integration would bring positive results. After all, the creation of national or regional spaces for the free flow of goods, services, finance and technology have had telling effects on long-term growth. Extended world-wide, such integration offers huge scope

to improve both the efficient allocation of resources and the competition of ideas that are the key ingredient of knowledge societies. But numerous constraints block the way, from having to use existing frameworks for resolving trade disputes, to having to reform or invent institutions that can manage the volatility of global financial markets.

In addition, the rapid and much fuller integration of global markets required for a long boom is unlikely to be politically feasible without mechanisms for compensating losers and introducing minimum standards regarding both human and workplace rights. Here the notion of social values plays a decisive role. Negotiations to merge markets and establish much higher degrees of transparency swiftly confront issues like the value attached by many to preserving national sovereignty or the willingness to tolerate other people's social norms.

The drive towards environmental sustainability is the third factor that could contribute to sparking a long boom over the first few decades of the next century. The job of lightening tomorrow's ecological footprint of wealth creation compared to today's industrial societies could, if the policies are designed appropriately, spur the rapid development of both the intangible, environmentally benign, side of the economy, and improve the eco-efficiency of the more traditional forms of production and consumption. Such policies could help to accelerate the diffusion of new technologies, like hydrogen fuel-cells that can generate electricity for both home use and transportation needs. Perhaps even more importantly, they could help to paint tomorrow's long boom green by making good use of the opportunity afforded by new technologies to reorganise economic and social life.

On the other hand, moving aggressively towards an environmentally more sustainable economy and society might turn out to be more of a constraint than a catalyst. Using economic incentives to change consumption and investment behaviour may be highly effective, as experience during the oil shocks demonstrated, but the adjustment costs are often prohibitively high. These costs could end up compounding the drag exerted by trying to use global insti-

tutions that are still somewhat immature for the daunting tasks of the future. Those tasks could include negotiating the attribution of rights and the redistribution of income as part of a new form of global ecological citizenship.

Provoking a long boom

The key factors needed to spark a long boom do indeed appear to be present today. However, its prospects depend first, on the condition of the underlying systemic "motors", such as the competitive markets, social openness and political democracy that create the foundations for long-run economic dynamism, and second, on the extent to which the balance between historically specific catalysts and constraints – of the knowledge society, global markets and environmental sustainability – can provide the necessary fuel. Provoking a long boom will be contingent on inducing as many of the available catalytic forces as possible and making them work together. In concrete terms that means coherent and integrated policies to accelerate the emergence of the knowledge economy, globalisation and a new environmental sustainability. It also means making the best of the possibilities open to humanity on the eve of the 21st century.

Unfortunately, opportunities are not always grasped. There is now a rare chance to realise a period of rapid, widely shared growth and to reverse the trends towards deepening inequality and exclusion that have marked recent decades. These are two very good reasons for making the exceptional economic and social policy efforts required for the long boom to become reality. ■

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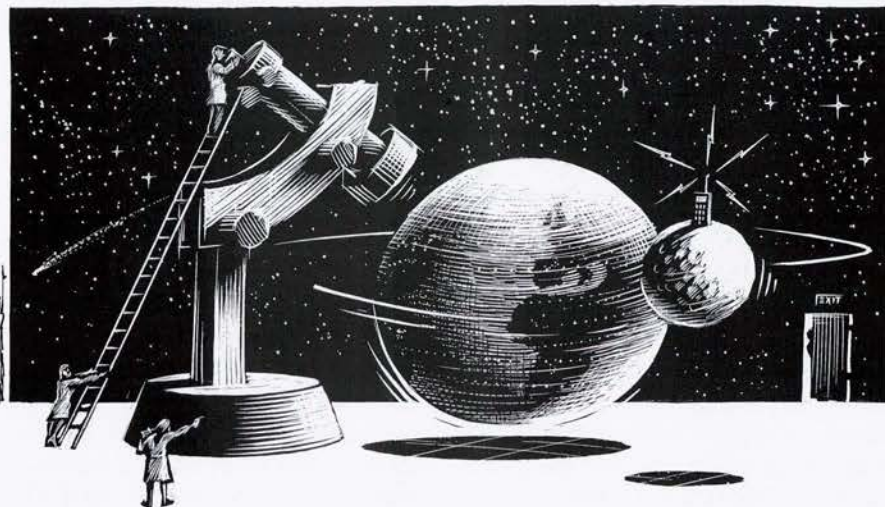
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From Big Science to Little Science: it all counts

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In late 1995 the managers of the Hubble Space Telescope took a bold step. Normally, astronomers from around the world compete vigorously for the right to use this multi-billion dollar instrument for a few precious minutes. But this time, for ten whole days, the telescope was pointed at nothing – the emptiest possible part of the sky. To the delight of the Hubble team, the resulting picture was very far from blank. Some three thousand objects could be seen, each one a galaxy containing hundreds of billions of stars. The galaxies that are relatively nearby exhibit their structure, but the faintest, most distant, ones are mere tiny smudges. Light from these barely visible galaxies has been travelling towards us for several billion years. Since the entire universe is only some 12 billion years old, these are actually the

very first galaxies that ever were. Looking for older and more distant objects may now be fruitless – there is (or was) nothing more to see: scientists had, at long last, taken a picture of everything that has ever existed, looking back to almost the beginning of time.

Also in 1995, a group of excited physicists announced the discovery of an elementary particle that had eluded them for many years: the fabled Top Quark. It's a monster among particles, weighing in at almost 200 times the mass of the garden-variety proton. To coax it into existence required the full power of the world's biggest atom-smasher, the billion-dollar Tevatron at Fermilab near Chicago. With this discovery, scientists who study the physical world at the most fundamental level could, at long last, confirm the

so-called Standard Model, the theory that explains everything on the smallest scale in terms of the most elementary constituents of matter: quarks and leptons.

Small is beautiful too

These two great discoveries are among the many triumphs of "Big Science" – expensive, complex, multi-year projects that are targeted at some of the most difficult challenges that confront modern science. Huge facilities are not always the hallmark of Big Science. For example, the vast Human Genome Project involves coordinating the work of a large number of medium-sized, independently-funded research groups in many countries. Still, a typical Big Science effort requires the expenditure of large amounts of money, and the management of multinational teams of scientists and engineers over many years. One must not, of course, forget about "small science"; after all, the most important technological breakthrough of the century occurred on 16 December 1947, when the first transistor was assembled on an ordinary tabletop at Bell Laboratories.

The role and significance of Big Science projects and programmes continue to evolve, based on the changing needs of scientists and of policy-makers. Many researchers in "small science" fields, such as condensed matter research, are now the primary users of very large facilities, such as neutron sources and synchrotron radiation sources. In public policy, in areas such as health, food production or environmental protection, there is a growing need for the results of large-scale research, for example, genome mapping and Earth-observing systems. Thus, though research budgets are under scrutiny in many OECD countries, governments face the ongoing challenge of maintaining strong

megascience programmes. And with reason, for there are urgent questions to deal with.

Static radio

Take the case of radio astronomy. It is a classic instance where science policy interacts with other policy issues, and which by its nature absolutely demands international consultation by governments.

Astronomers require access to extremely clear, interference-free portions of the radio spectrum to study the faint signals from cosmic radio sources. This access is threatened by the enormous increase in the commercial use of the radio spectrum. Until recently, radio astronomy observatories could be protected from most man-made interference by being located in remote areas. Even so, as the spectrum becomes more crowded, instances of interference occur more often, and precious and expensive telescope time is increasingly lost. Of greatest concern are the transmissions from large numbers of global, low-or-

bit telecom satellites now coming online. These may completely block access to spectral regions that provide unique information on some astronomical phenomena. This new situation cannot be remedied by geographical isolation and thus adds a new dimension to radio astronomers' struggle with manmade interference. An appreciation of the magnitude of the problem can be obtained by consider-

the next generation of radio-telescopes now being planned. These instruments will be a hundred times more sensitive than current telescopes – sensitive enough to permit observation of nearly the entire history of the Universe back to just after the Big Bang.

It is increasingly difficult to deal with interference issues within existing national and international regulatory

If a simple hand-held mobile phone were located on the Moon, its signal would appear on Earth as one of the brightest radio sources in the sky.

ing a simple hand-held mobile telephone unit. If this unit were located as far away as the Moon, its signal would appear on Earth as one of the brightest radio sources in the sky at its particular transmission frequency, compared with naturally emitting astronomical objects. The signals from a commercial satellite can be a *hundred million times* stronger, making observations at those and adjacent frequencies effectively impossible. The problem may become much worse for

bodies. Radio astronomy, whose progress is in the public interest, and satellite service providers who benefit the public, must find a way to coexist and prosper. The technical and regulatory provisions for coexistence can only emerge from a dialogue between all those involved: national and international regulatory bodies, the worldwide radio astronomy community, and the telecommunication companies. The Megascience Forum at the OECD is taking the lead in preparing and initiating the dialogue, probably with the help of an unofficial task force with participants from industry, astronomy, regulatory bodies and governments.

The beginning of time



NASA/Galaxy Contact

What future for megascience?

It is customary when speculating about the future and megascience to invoke the unpredictability of the scientific enterprise, and the way that actual progress almost always exceeds both the expectations and imaginings of prognosticators. The spectacular advances of the 20th century, and the timidity (in hindsight) of predictions made a hundred years ago, justify high hopes regarding the next hundred years, combined with caution about the details of the discoveries that lie ahead. Still, it should be somewhat sobering to note that many of the most

profound questions that baffled scientists in the 1890s are still unanswered. How big is the Universe? How and when did it begin? Will it ever end? What are the most fundamental constituents of matter? What is the true nature of space and time? How did life originate on our planet? Is there life elsewhere? How does the mind work? These questions, perfectly intelligible to scientists of three, four, or ten generations ago, must still be recorded in the "Don't Know" column. Science itself has added new items to the roll: how can quantum mechanics be reconciled with gravitation? Why does Nature appear to be exquisitely fine-tuned to permit (or perhaps require) the existence of life and even minds?

Complicating matters as we approach the end of this century of great discoveries is the observation that there are still some embarrassingly large gaps in our knowledge. What, for instance, is the Universe made of? After all, about 90% of it appears to be missing, and there are few good guesses as to what or where it may be. Sometimes, doubts remain even in those areas where most scientists want to declare a hard-won victory. The dogma of the Big Bang, for example, appears to most observers as a certainty, but others point to a few cracks in the edifice which could still, conceivably, come tumbling down. High expectations and lingering uncertainties mean that the "End of Science" is nowhere in sight. One thing is certain: Big Science will play its part in filling in the blank spots on the map. ■

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Megascience, the OECD and the new global forum

Basic scientific research may be one of the highest expressions of human reason, but the conduct of science is not exempt from the down-to-earth laws of economics. Although science and technology are obviously essential for economic well-being, they must take their place in line when competing for scarce resources. The world-wide distribution of these resources, and of information and talent, means that international consultations by science policy officials are essential for undertaking timely, informed decisions on science policy issues, especially those concerning very big projects - megascience.

Every important technological innovation has its origins in basic research that was driven by pure intellectual curiosity. Unfortunately, the converse does not apply, since not all basic research leads to useful applications - hence the need for science policy. That is why scientific research has a natural place at the OECD. Article 2 of the Organisation's Convention states that member governments "*agree that they will, both individually and jointly: [...] in the scientific and technological field, promote the development of their resources, encourage research and promote vocational training.*"

Scientific and financial stakes

Since 1992, the Megascience Forum has provided a venue for regular consultations about Big Science among senior science policy officials of 27 out of the 29 OECD countries, plus the European Commission. In addition to

regular exchanges of information about policies, plans and priorities, the Forum has delivered practical, action-oriented recommendations for strengthening scientific co-operation across a wide range of fields where big scientific projects play a major role. In each instance, the benefits of working together, such as pooling resources and avoiding duplication, are weighed against the costs, such as overheads, language issues and travel. In practice, international co-operation on anything but the smallest scale, is rarely straightforward, nor is internationalisation an end in itself. Individual countries have created their own political procedures and structures for priority-setting, scheduling, funding and evaluation of research. These have to be harmonised and co-ordinated for joint efforts to be undertaken.

When the Megascience Forum was first being organised, the governments approached the proposed activity warily, given the scientific and financial stakes. After all, most big projects come to their attention after extensive discussions among scientists, not via intergovernmental organisations such as OECD. International collaboration, if it is to take place at all, is usually pursued on an *ad hoc* basis with bilateral, trilateral or other arrangements as needed.

Governments were not alone in their wariness. The scientific community too was quite prepared to cast a jaundiced eye on the prospect of a group of officials deliberating on scientific projects outside the range of their scru-

tiny. Thus, in designing the procedures of the Forum, a careful balance had to be struck between providing a channel for input from scientists and the desire of beleaguered government officials not to have the meetings turn into a stage where scientists would chant their unvarying mantra - "more money!"

A busy decade

Despite all these constraints and requirements, the Megascience Forum has been able to convene five working groups and two workshops over a period of three years since 1995, with a total of over fifty international meetings involving hundreds of delegates. One workshop, for example, was dedicated to strengthening co-ordination between scientists conducting underwater studies of ultra high-energy neutrinos – elusive elementary particles that arrive on Earth from deep outer space and whose origin is a mystery to astronomers. The other was devoted to optimising large-scale, multidisciplinary scientific assessments of global issues, such as the threats to biological diversity.

The working groups have been very active. For example, a shared global vision of the future of nuclear physics was developed, including the identification of opportunities for co-ordinated or co-operative development of radioactive nuclear beam facilities, heavy-ion colliders, electron accelerators, and facilities that produce multipurpose beams of exotic elementary particles for nuclear research. Some applications of nuclear science were also examined, notably nuclear waste transmutation and medical imaging.

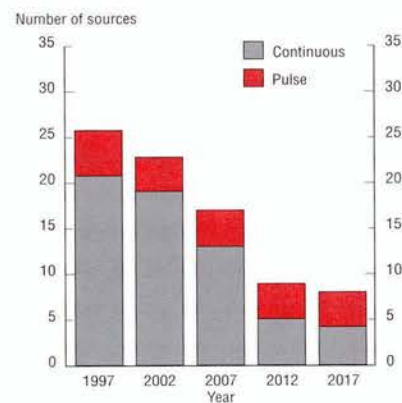
On biodiversity informatics, a work plan was developed for the implementation of a multinational Global Biodiversity Information Facility (GBIF) for policy-makers, researchers

Neutron drought ahead

The outlook for the supply of neutrons is not encouraging. Why is this important, you might ask? Scientists and engineers use beams of neutrons (elementary particles that, together with protons, are the constituents of all atomic nuclei) to study the properties of materials such as semiconductors, superconductors, and biological specimens. In other words, they are essential tools for basic and applied research. Neutrons are produced at large expensive facilities. The Megascience Forum has found that most of the existing neutron sources will have to shut down during the next twenty years. That goes mainly for reactor-based neutron sources (gray bar), whereas the number of accelerator-based sources (red bar) will decline less sharply. The Forum has made specific recommendations to governments regarding the construction of new sources, based on a desired world-wide

regional balance and the projected demand across a wide range of disciplines, from the life sciences, to geology, to fundamental physics. After the Forum's deliberations were completed, a number of important decisions were made for example, the United States decided to build a 1.3 billion dollar accelerator-based neutron source in Tennessee.

Declining neutron supply



and business. And on neuroinformatics the Forum developed recommendations for promoting international co-operation in the application of information science to the study of the brain.

Improving access to large scientific facilities, and overcoming obstacles to international co-operation are a constant objective of the Forum, which has developed guidelines for governments on the rules underpinning existing and future large facilities. Recommendations for overcoming impediments in the transfer of scientific equipment and the mobility of personnel were also made.

The Forum's work, which has been subject to exceptional scrutiny by independent experts, is now regarded as a success. Not surprisingly, OECD

governments have decided to endorse the establishment of a follow-on body, dubbed the "Global Science Forum" to continue the job. Only this time, in the spirit of the needs of basic research, very large projects will not be the only concern. ■ S.M.

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Promoting innovation – does it matter?

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There is no doubting the importance of innovation to economic performance. But like economies, innovation has to be allowed to thrive too. What can OECD governments do to help?

Innovation is the heartbeat of OECD economies. Without it firms cannot introduce new products, services and processes. They find it hard, if not impossible, to gain market share, reduce costs or increase profits. In effect, if the pulse of innovation is missing, firms quite simply die.

In the past, larger firms and corporations may have had the muscle to insulate themselves from change, holding off innovation and living off successful product lines for many years. But in today's globally competitive environment, no firm, large or small, can survive without innovating. In all sectors of the economy, firms need innovation to grow and to stay ahead in the market. It helps producers to satisfy diverse and fast changing consumer demands, and enables improvements in health, communications and the quality of life generally. In other words, innovation is the driving force of progress.

Affording innovation

Innovation is costly. In 1996 OECD business expenditure on research and development (R&D) topped US\$300 billion. Large manufacturing and service firms such as Ford, Siemens, IBM and Microsoft spend billions of dollars a year on R&D. And R&D expenditure is only part of the total cost of innovation. In manufacturing, R&D amounts to between a third and half of all business expendi-

ture on innovation. But in services, R&D is often less than a third of the total cost of innovation. Large com-

panies, stronger competition, the growing impact of information and communications technology, and the high

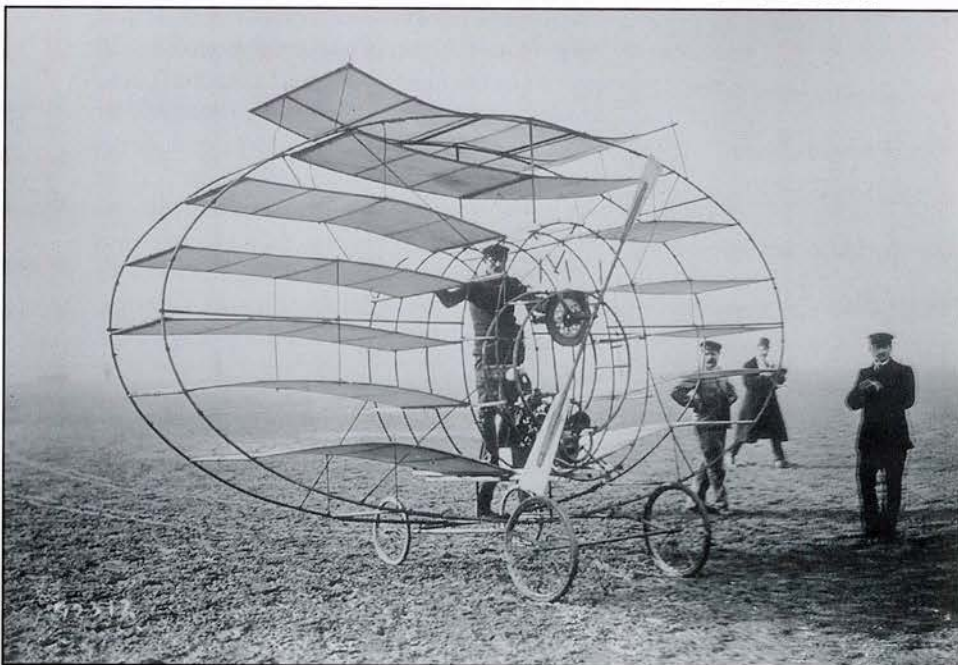
No firm, no matter how large, can find all the knowledge and information it needs in-house or even within the boundaries of its own country.

plementary investments in equipment, training, licences, marketing and organisational change are needed to make innovation work.

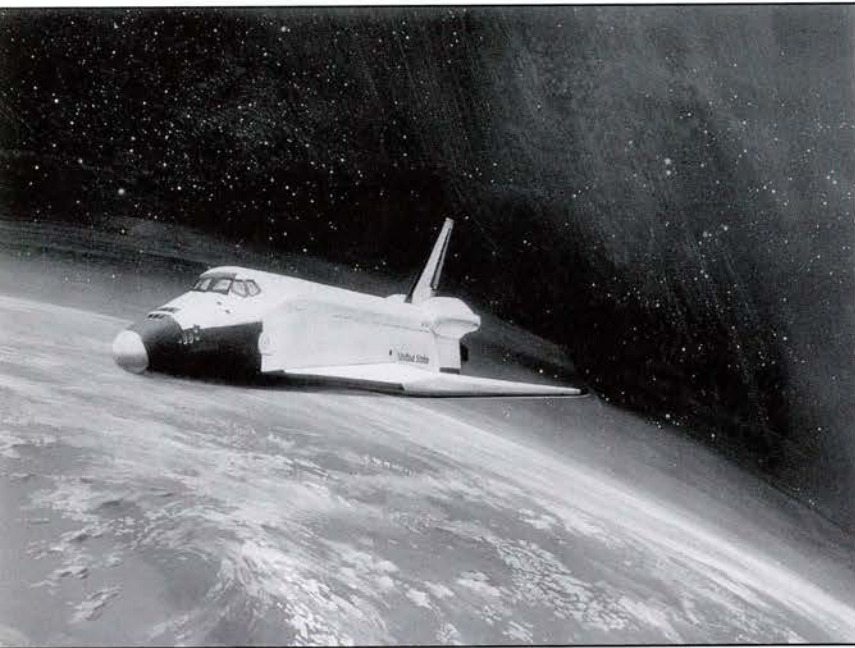
The innovation process has changed markedly over the past years. Firms innovate more rapidly, due to globali-

zation, stronger competition, the growing impact of information and communications technology, and the high pace of scientific and technological change. This is leading to more effective business R&D, but is squeezing out private investment in long-term applied research. Surveys for the United States suggest that firms' average R&D cycle has fallen from 18 months in 1993 to only 10 months in 1998.

Innovation has flown us from here ...



Hulton Getty, Fotogram-Stone



NASA/Cosmos

... to here

The paradox of innovation is that while it is driven by competition, it can not flourish without co-operation, sometimes even between competing firms. The costs, complexity and risks of innovation are high and no firm, no matter how large, can find all the knowledge and information it needs in-house or even within the boundaries of its own country. The development of a new pharmaceutical drug may cost hundreds of millions of dollars, and only some of the drugs under development will ever reach the market. To share risks and costs, to access new knowledge, and to ensure that innovation responds to consumer needs, firms join in networks, alliances and clusters. They work with universities and research institutes, with clients and regulatory agencies, and even with competitors. Many of these networks and alliances, in areas such as cars, airlines, telecommunications and retailing, now have a global character.

Where governments come in

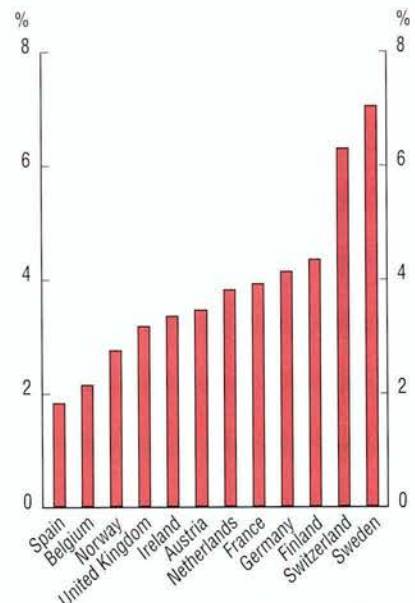
While firms drive innovation, they depend on government to perform three core tasks. The first is to invest in basic scientific research, which is essential as the foundation for new ideas, methods and products. Major advances in scientific research are the source of many of

the breakthroughs in information technology, like the Internet, and in biotechnology, including genetic engineering. The long gestation period, high cost and uncertainty involved are among the key difficulties firms face in generating any worthwhile financial returns from basic science. The onus would appear to be on governments to continue supporting such vital long-term research. All OECD countries recognise this, and several, including Japan, Korea and the United Kingdom, have recently increased their support for basic scientific research.

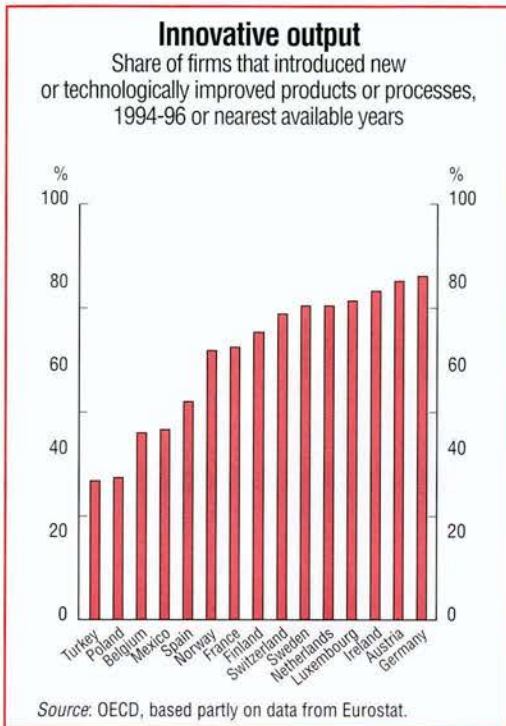
The second task for government is to lay the right conditions for business innovation. That includes a stable macroeconomic environment with properly functioning financial, labour and goods markets, and a regulatory set-up that promotes competition and innovation. It means helping people to acquire the education and skills needed to adapt to a higher pace of technological progress. It also means protecting intellectual property rights in a manner that both encourages innovation and the diffusion of new technology throughout the economy.

Business expenditure on innovation

As a share of total sales,
1996 or latest available year



Source: OECD, partly based on data from Eurostat.



tific research and the innovation process. Other bottlenecks require action too, such as rules that prevent university researchers from working with the business sector or regulations that unduly inhibit co-operation between firms themselves. Access to venture capital appears to be another problem in need of government attention. In short, the barriers to innovation are several and a detailed analysis of the functioning of a national innovation system is often needed to identify the possible policy responses in each individual country.

A new responsibility

Many countries are now aware of the growing importance of innovation and knowledge. But in a number of OECD countries reform efforts to reflect that awareness remain piecemeal. They could look at the case of the booming economy of the United States, which already has the type of business climate where innovation can flourish (see article on the US economy). They would also do well to learn from countries like France, Mexico, Japan, Korea, Finland and Austria, which have taken comprehensive policy initiatives to strengthen their innovation systems. Measures to ease access to venture capital and to enhance the commercialisation of public-funded research are major elements in these initiatives.

Clearly innovation does matter. And learning from each other is important too. One reason is that innovation has to be shared for it to thrive. Equally importantly, governments have a new and responsible role, which is to build the coherent policies needed for innovation to flourish and the knowledge-based economy to grow and prosper. ■

Government's third task is to help improve the innovation system itself. Innovation no longer depends only on how firms, universities, research institutes and regulators perform, but on how they work together. Institutional and organisational rigidities can stifle innovation and deliberate government policy is needed to break such strictures down. Obstacles that prevent co-operation and networking have therefore to be reduced and collaboration between universities, public research institutions and business promoted.

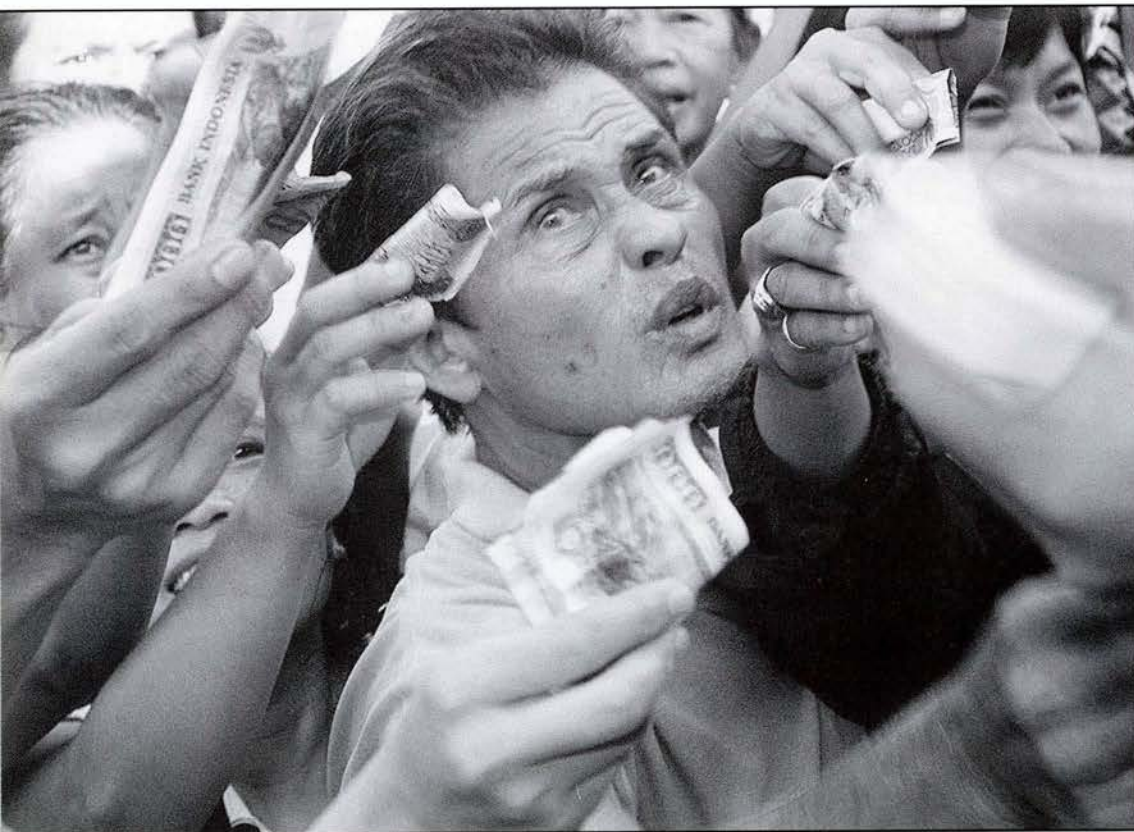
In many OECD countries, university researchers do not have the right incentives to engage in research that has potential commercial applications or to co-operate with the business sector. The United States was among the first countries to recognise the need to unblock this. Since the passage of the Bayh-Dole Act in 1980, US universities have been allowed to patent the results of federally-funded research. Previously, patents would be assigned to the federal government. In Japan, recent legal changes also assign publicly-funded researchers half of the patent rights for their inventions. These are regulatory improvements that stimulate innovation and strengthen the link between scien-

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Asia's industrial crisis: what really happened

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The crisis which swept the globe in 1997-98 was not just a financial one. In fact, problems in industry were among its root causes. Understanding those problems will help governments to reduce the risk of such a crisis occurring again.

Unease in Indonesia

On 2 July 1997, the Thai government abandoned its efforts to defend its country's currency, the baht. Pressures on many fronts had become unbearable. Following a period of massive inflows of short-term private capital, asset prices were declining and construction was slowing. Export growth had decelerated too, in part reflecting the sharp downturn at the time in world demand for semiconductors. Also, with the baht tied to the buoyant dollar, its value was rising against the ailing yen. It was the nail in the coffin for Thailand's exchange rate policy, destroying any argument

there might have been for protecting the baht's link with the dollar. Investors initially cheered when the link was abandoned, reversing a prolonged slide in share prices. But their enthusiasm was short-lived. Rather than float steadily, the baht sank. By January 1998, when it bottomed, it had lost more than 50% of its value. The crisis was not limited to Thailand. Similar pressures affected Indonesia, the Philippines and Malaysia, with similar results. The horror arose of a contagion that would envelop an ever-widening number of countries, both regionally and at a global level. Korea suc-

cumbed in late 1997. Russia fell prey in August 1998. Brazil followed suit in January 1999. But was the crisis only a financial one? The financial aspects of the crisis have received most of the attention, the accepted diagnosis being that the domestic financial institutions in the affected economies in Asia were not sufficiently developed to respond to either rapid globalisation in financial markets or the periodic whims of investors. Most policy strategists have focused on reforming the international financial system, to make it less vulnerable to "hot" or sudden short-term capital flows. There has also been some focus on developing and improving domestic financial institutions.

But the crisis was far more than a financial phenomenon. It had a fundamental industrial dimension as well. Key structural weaknesses had developed, which had been mostly concealed in the vaporous heat of some extraordinary economic performances in Asia. Yet, a closer examination shows that signs of strain were becoming increasingly evident in 1996 and early 1997.

The first sign was growing over-capacity, in numerous sectors. Several Asian economies had for a long time been pursuing ambitious development programmes that targeted investment in heavy and high-tech industries, such as steel, automobiles, and electronics. Relatively little regard was given to the effect all this targeting was having on the sectors them-

selves. The additional capacity, combined with declining trade barriers world-wide, intensified competitive pressures. Moreover, the enthusiastic efforts governments were making to lead their economies into high-tech businesses often occurred before acquiring the necessary technical expertise to support the new enterprises. The result was a heavy reliance on imported inputs and technology. This lack of technical expertise resulted in many new facilities operating at below their potential. It also made it difficult for firms to innovate, which is the life-blood of today's knowledge-intensive, high-

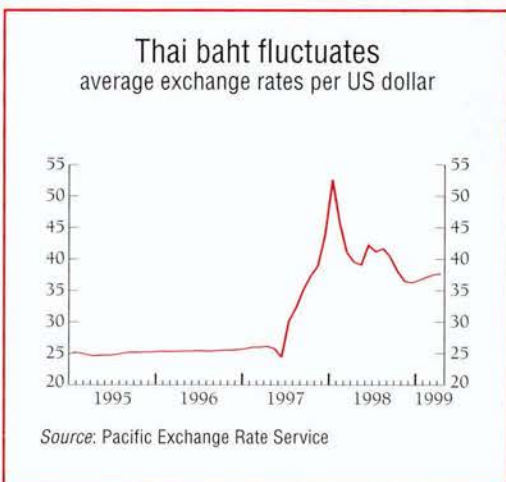
Managers had an inordinate amount of discretion to grow their businesses, often with cosy political support.

tech sectors. At the same time, competitiveness began to slip as rising economic activity put upward pressures on wages, while real, dollar-tied exchange rates became overvalued as the dollar rose.

With easy access to credit and weak loan criteria, companies found it easy to borrow money for good and bad projects alike. This contributed to highly leveraged industrial conglomerates. Prior to the crisis, debt for non-financial corporations was two to three times higher than equity in Indonesia and Thailand, with the ratio generally rising during 1995 and 1996. The debt-equity ratio in Korea at the end of 1997 was over 500% for the 30 largest conglomerates (or *chaebols*). This high-debt leveraging was sustainable as long as capacity utilisation was high but when utilisation tumbled, over-extended firms found themselves in serious financial trouble, with many falling into bankruptcy. In Korea, for example, corporate insolvencies soared from 9,500-14,000 per year during 1992 to 1996, to close to 23,000 in 1998.

Poor corporate governance

Corporate managers had an inordinate amount of discretion to grow their businesses in a highly independent fashion, often with cosy political support. There was a distinct lack of sufficient oversight by banks and regulatory



authorities, and little accountability to shareholders. The owners valued expansion more than profits, a strategy which was strongly supported by workers, clients and suppliers. The closed nature of the firms slowed the transfer and adoption of foreign technology and management know-how. There was a general lack of transparency, with minority shareholders given little attention. As a result, a good number of low-quality investments gradually worked their way into the portfolios of companies.

SMEs lost out

The emphasis of targeting larger industries came at the expense of small and medium-sized enterprises (SMEs) and the linkages between larger and smaller enterprises which underpin industrial development in most OECD countries failed to develop. Larger firms had to rely even more on expen-

sive imported technology and, with SMEs out of the picture, the deficiency in innovative capacity worsened. Both targeted firms and smaller firms could only suffer from this dichotomy in industrial policy and they began to lose competitiveness, as evidenced by slowing exports. With general wage levels rising, these economies may simply have lost their comparative advantage in low-wage industries too quickly.

The financial crisis was a systemic shock that devastated well-managed and poorly run companies alike. Domestic and regional demand for goods and services collapsed. The cost of imports rose sharply in domestic currency, as did debt payments on foreign-denominated loans. Interest rates rose as governments took action to bolster their currencies, while credit availability was reduced because of cautious lending, particularly to SMEs.

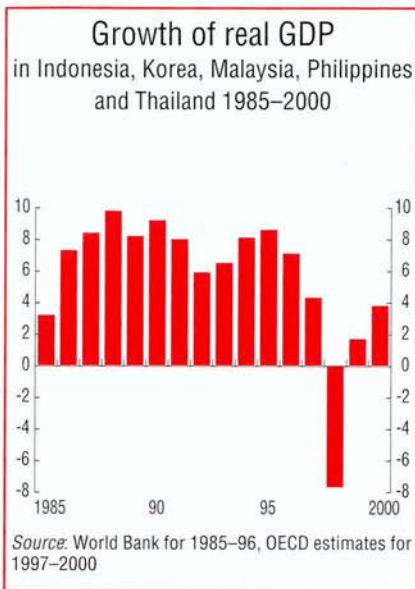
A hard lesson



The upshot of all this was to drive sales lower and costs higher. Domestic demand, for example, declined by 8.0% in 1998 in the Philippines, and by 20% or more in Indonesia, Malaysia, Korea and Thailand. By mid-1998, large parts of the corporate sector were either insolvent or suffering severe losses. Faced with a slump in domestic and regional demand, companies in such situations would generally try to increase exports, as in Mexico in the mid-1990s. In the case of Asia, trade shifts occurred too, but not to the extent needed to offset the crisis. While export volumes rose, their value actually fell somewhat in dollar terms. At the same time, the dollar value of imports plunged by about a third. The net result was a hefty US\$130-US\$135 billion shift in the five countries' combined trade balance, which swung a merchandise deficit of US\$50 billion in 1996 into a trade surplus of about US\$80-85 billion in 1998.

While the financial crisis initially had little effect on most OECD countries, its broadening scope and depth eventually took its toll. Economic growth in the OECD area fell from 3.3% in 1997 to 2.3% in 1998, due largely to the crisis. Growth in trade also slowed markedly, with sharp downturns occurring in exports to the crisis economies, particularly those to Asia.

There have been notable effects on some sectors, such as commodities. While there has been significant recovery in recent months, metal prices, already under pressure, fell by as much as 45% between July 1997 and December 1998, while oil prices fell by about 40% over the same period. In addition to commodities, the crisis has had a pronounced effect on the steel and shipbuilding industries. In steel, sliding prices and shifts in trade flows have heightened trade tensions, giving rise to an increase in anti-dumping and



related restrictive trade measures world-wide. In the European Union, for example, imports rose by 43% in 1998, to 23.4 million tonnes, while exports eased by 15%, to 24.0 million tonnes. Similarly, in the United States, imports surged by 33%, to a record 37.7 million tonnes, while exports slid by 8.5%, to 5.0 million tonnes. As regards prices, spot quotations for imported and exported hot-rolled sheets, which is a major item in international commerce, fell by about 30% during the crisis (through the end of 1998). In shipbuilding, order books have been full, but low prices are putting strains on companies. With shipowners advancing their purchases to take advantage of the low prices, the strains could well increase significantly, when new orders slow.

The crisis has had positive effects too. It has no doubt played a role in accelerating the restructuring of several industries, through mergers and acquisitions. This is the case of the oil industry, where the sluggish market has become a driving force behind a wave of major mergers (for example Exxon-Mobil and BP-Amoco-Arco). The decline in commodity prices has also helped to keep OECD inflation

in check, and has had a favourable effect on some companies' costs. Consumer prices in 17 OECD countries, for example, rose by less than 2% in 1998, which is noticeably below prior levels. But there are risks that deflationary pressures, which are already present in Japan (and China), may expand. If this occurs, competitive pressures would intensify in a growing number of sectors, which could precipitate a rise in corporate failures, job losses, and intensified pressures for more profound industry consolidation and restructuring. In the wake of the crisis, the five Asian economies have taken steps towards impressive reform programmes, including financial sector reform, privatisation, and liberalisation of investment regimes. They are also working to improve corporate governance by strengthening rules to improve disclosure and to protect shareholders, while exploring ways to resolve the corporate sector's debt problems. Reforms have been made in the weak bankruptcy laws of Indonesia, Korea and Thailand. Finally, governments have started to pay attention to the importance of SMEs. Credits have been channelled to them in order to mitigate the consequences of the credit crunch, and there is a new commitment to strengthen this sector.

With the improvement in general economic conditions now under way, there is still the danger that the reform process will slow. Governments should act quickly to prevent this from happening, by ensuring that reforms are fully implemented, while they still have the leverage to do so. The guiding principle should be for governments not to micro-manage change, but to put in place framework conditions that encourage market-led change. At the same time, industrial policy will have to be adapted in the light of shifts in the structure of the economies. While traditional manufacturing will remain important, the driving force for future

growth and job creation lies to an increasing extent on knowledge-based activities, and in services. Governments should take this on board and adopt policies to promote innovative SMEs and improve their links with larger corporations. They should broaden policies with respect to innovation so as to extend beyond traditional R&D in manufacturing, and strengthen the interface between science and industry. Governments should also seek to make labour markets more flexible, foster upskilling and life-long learning and improve conditions for entry in product markets.

One of the most important challenges will be for governments to resist protectionist pressures. That implies enhancing policies to facilitate industry's adjustment to the global economy by, for example, developing effective programmes to retrain and re-deploy workers whose jobs are at risk because of restructuring. It also means sharpening up co-operation between OECD and non-OECD countries in areas ranging from corporate governance to fostering innovation, entrepreneurship and the development of SMEs. In the final analysis, the crisis has reminded us that if something looks too good to be true, it probably is. The Asian miracle produced remarkable results over an extended period of time, but when the bubble burst, the signs of underlying weaknesses became apparent. What is encouraging is that global co-operation is playing a major role in facilitating a recovery, and that the reforms being made in the crisis economies will lay the basis for more open, competitive markets – which is a “win-win” proposition both for them and the countries they trade with. ■

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Japan and Asia: developing ties

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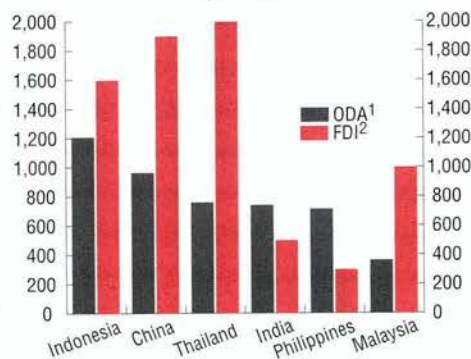
Despite its present economic turmoils, Japan is still comfortably the world's second largest economy after the United States. A perhaps lesser-known fact is that it is also the world's leading bilateral aid donor. Japan's total net Official Development Assistance (ODA), which comprises grants and low interest loans for development, to developing countries reached US\$9.36 billion in 1997. This was more than the United States, which spent US\$6.9 billion in the same year. The grant element, which is equal to or near 100% in most countries, was about 40% of total ODA for 1996-97 – Japan has lowest grant share among ODA donors.

Most of that ODA is targeted in its own regional sphere of south, central and east Asia. In fact, since the beginning of the Japanese aid programme, the share of its bilateral ODA to

Asia has not changed much, standing at 69% of the ODA total in 1997, down just 4 percentage points on the position in 1976-77. The rest is shared by Africa (13%), America (11%), Middle East (5%), Oceania (2%) and Europe (1%). Moreover, according to OECD data, the top ten recipients of Japanese ODA were Asian countries, and the top five of those received over 40% of Japan's total bilateral ODA outlay (see table). So while Japanese official bilateral aid is directed mainly at Asia, there are marked concentrations of aid within the region too.

The main reasons for this concentration of Japanese aid in Asia are clearly both historical and geographical, as well as economic. Aid, in the form of grants and low-interest loans, is mainly aimed at promoting the economic "take-off" in recipient countries and to promote economic stability in developing regions. While Japan has invested quite a bit in hospitals, sewage facilities and rural water supplies, its overall investment in basic human needs, such as rudimentary education and health, has been poor. Most of the aid has been aimed at building the economic infrastructure of the region and improving industrial production and services. Moreover, reflecting the importance of economic interests in its aid policy, a large portion of Japan's ODA has been consistently directed towards lower-middle income countries, which is followed by low income and then least developed countries. But Japan is not just an important aid donor. It is also an important generator of foreign direct investment (FDI), reaching US\$13 billion in 1997. This accounted for a half of the nation's total outward investment. Private sector investment has been strong in the Asian tigers of Singapore, Hong Kong, China, Korea and Chinese Taipei, and has spread throughout the ASEAN area, which is

Main recipients of Japan's bilateral ODA and FDI
\$million



1. Gross Disbursement 1996-97 average, current US dollars.

2. Balance of Payment statistics, converted to US dollars using yearly average exchange rates adapted by OECD.

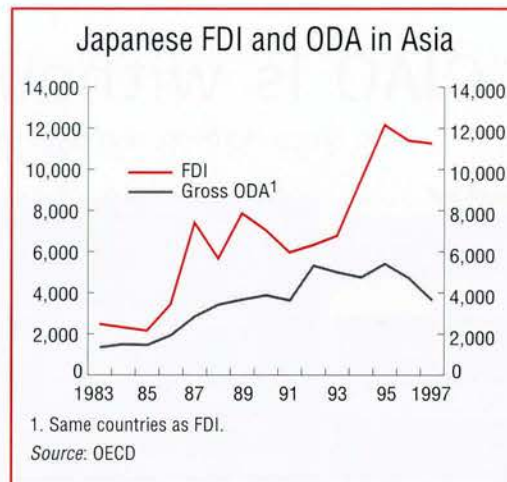
Source: OECD, Japanese Ministry of Finance

the loose trading block linking Asia and Oceania. More recently, China has been a favourite destination of Japanese FDI.

The Asian continent has traditionally been attractive to investors for its cheaper production sites, but its attractiveness as a market has been increasing too. Japan is now the largest single investor in terms of stock in Thailand, Indonesia and Malaysia, and the second largest in the Philippines after the United States. And while Japan has helped to expand Asia's productive capacity in the last few decades, it has also played a key role in boosting the inflow of technology, know-how and human resource development in the region.

The economic and financial crisis in much of South-East Asia has not jolted Japan's commitment either. In fact, since the financial crisis started in Thailand in mid-1997, the value of Japan's rescue packages to the region came to US\$80 billion, of which about US\$10 billion was in the form of ODA, which is still being disbursed. The packages were aimed at economic recovery, structural reform and social assistance. Japanese investment, particularly in the manufacturing sector in these countries, grew in yen terms in 1997, but it fell in dollar terms. One important reason for this is that as the re-invested earnings declined, parent firms in Japan have had to boost remittances to buoy their investment operations abroad. However, another reason is that firms have turned the recent financial crisis to their advantage by developing their Asian export platforms on the back of steep currency devaluations. This was particularly true of Japanese consumer electronics companies in Malaysia, Thailand and Indonesia, whose cost competitiveness vis-à-vis China increased.

It is worth noting the strong support of the Japanese government for continuing FDI. In fact, the economic rescue package for Asia included the injection of funds into the Export-Import Bank of Japan to help finance it. The funds have provided some relief for firms, given the climate of tighter bank lending conditions in Japan. So, what of the future? One trend to note is that Japan's FDI flow to South-East Asia has increased dramatically, widening the gap between ODA and FDI. However, both flows



have fallen in recent years, reflecting fiscal and economic pressures in Japan (see graph). The squeeze is likely to continue. Aid, in particular, is likely to decline when the special assistance provided through the rescue packages comes to an end.

This raises two important issues for both recipient countries and Japan. One is how to manage the FDI and aid flows more efficiently. The OECD has already noted that the four Asian countries – Malaysia, the Philippines, Thailand and Indonesia – which were hit hardest in the crisis, would have benefited more from FDI had they had a more balanced policy towards foreign investment, in particular in the areas of improving linkages with local industry and developing the region's human capital. The second point concerns mainly Japan, namely that it might channel more of its ODA into promoting the basic needs of social development and poverty reduction and allow more of the economic, financial and infrastructural requirements to be satisfied through the market. Some of this can be achieved by shifting more aid to social sectors and by focusing more on the most needy recipient countries. The change would boost the effectiveness of Japan's ODA and FDI commitment in Asia. It would also reduce the risk of future turbulence in the region as a whole, benefiting not only Japan, but the world economy as well. ■

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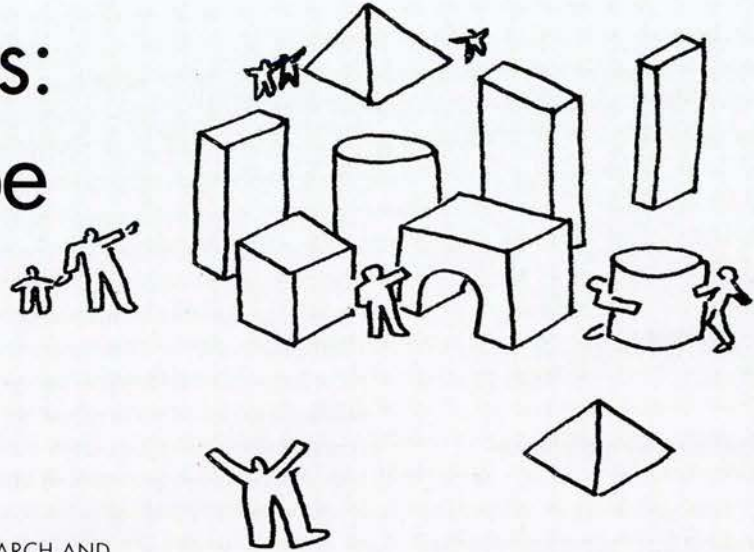
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Learning cities: the new recipe in regional development



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The concept of a “learning” city or region is relatively new, but yet it is at the core of a growing number of regional development strategies. What exactly is a learning city? And does it work?

The city is dead. Long live the city! Those who have rushed to pronounce the city’s demise in today’s globalised communications world may have to eat their words. For cities – and their regions – can offer just the right mix of resources, institutional structures, modern technology and cosmopolitan values that allow them to serve as incubators and drivers for the knowledge-based societies of the 21st century.

There is no single definition of a learning city or region, though the concept draws on theories about innovation and systems that promote innovation. What learning cities and regions have in common is an explicit commitment to placing innovation and learning at the core of development. All seek to sustain economic activity through various combinations of lifelong learning, innovation and creative uses of information and communication technologies.

The term “learning” in “learning cities” covers both individual and institutional learning. Individual learning refers to the acquisition of knowledge, skills and understanding by individual people, whether formally or informally. It often refers to lifelong learning, not just initial schooling and training. By learning, individuals gain through improved wages and employment opportunities, while society benefits by having a more flexible and technologically up-to-date workforce.

Learning for competitiveness

However, lifelong learning is only part of what is needed to build a learning city or region. Being able to deal with a global and international economy is important too. That means other strategies are required to make regions competitive. The challenge is to link individual learning to a larger environment in which institutions also are aware of the need to innovate and

learn, and are capable of doing so. Networking and partnerships are key ingredients, since collective learning and robustness depend on a continuous exchange and flow of information about products, processes and work organisation. The links happen usually between organisations, which have a long-standing relationship based on stability and trust, but also between towns, cities and regions themselves.

The changes occurring in the shift from an industrial economic base to one that is knowledge-based show a pattern and these are outlined in the box. Moreover, a study of those identifying themselves as learning cities or learning regions turns up several common elements.

Partnership is essential

The first is that they have a clear, sustained commitment on the part of all partners – whether public authorities,

private enterprises, education and research institutions, civic organisations or key individuals – to placing learning and knowledge dissemination at the centre of development. In fact, their sense of common purpose, identity and trust between the various actors is a driving force in cultivating shared values and networks within the city. This can be described as social capital and it is vital to making learning cities work.

Learning by experience

Another common feature of learning cities is their determination to create globally competitive, knowledge-intensive industrial and service activities and to base their work on the local capacity for learning, innovation and change. Lifelong learning lies at the heart of their formal and informal

training at all ages and levels, as do the objectives of social cohesiveness and sustainability, which are central parts of the development of any learning city or region. Despite certain common features, case studies show that each city or region has put together its own particular mix. Like any good recipe, both the quantities and ingredients have been adapted to suit what's available locally. Different socio-economic circumstances have been taken into account, reflecting the specificity of history, culture and circumstance. What are some of the different strategies and how is each city or region building its own model of development and change? Cutting edge information and communication technologies may be an important element, but the ability to internalise learning strategies that promote innovation, interaction and exchange

across all sectors of society are even more so. But in each case, the goal is to be competitive in a global marketplace through learning and innovation and to tool up for the new century.

The German city of Jena offers the example of an economic and cultural transition. Before 1989 and German reunification, Jena's economy was dominated not only by its position as an East German city, but also by the Carl Zeiss optics and instrumentation complex. This technological basis was clearly useful as a catalyst for today's learning city. The Zeiss complex employed 23,000 local people out of a total of 68,000. Today the figure has dropped to 4,500. But now a new development strategy is promoting Jena as a high-tech region and some 200 companies have already set up shop there. The biotechnology sector employs 1,000 people and is growing. These sweeping economic and cultural changes have all occurred with remarkable speed. In just six years, Friedrich Schiller University has replaced 85% of its faculty, with most professors now coming from the former West Germany. Primary and secondary education has undergone upheaval. All teachers in Thuringia – about 32,000 – have been evaluated professionally and politically.

The French example of a learning region is around Poitiers. This predominantly rural area has set its sights on development through communication technology, multi-media and a highly skilled work force. A theme park called Futuroscope, combining research and development with education and leisure activities, is the focus of its strategy. Thus far, it has attracted 70 firms and created 1,500 jobs in the park and 12,000 jobs indirectly in the whole region. It is also a major tourist site, drawing visitors from around the world. Most of the development is funded by public money.

From mass production to learning economy

	Mass production nation/region/city	Learning nation/region/city
Basis of competitiveness	<ul style="list-style-type: none"> comparative advantage based on natural resources physical labour 	<ul style="list-style-type: none"> sustainable advantage based on knowledge creation continuous improvement
Production system	<ul style="list-style-type: none"> mass production physical labour as source of value separation of innovation and production 	<ul style="list-style-type: none"> knowledge-based production continuous creation knowledge as source of value synthesis of innovation and production
Human infrastructure	<ul style="list-style-type: none"> low-skill, low-cost labour maximising worker efficiency and productivity fixed task education and training skilled elite 	<ul style="list-style-type: none"> knowledge workers continuous improvement of human resources continuous education and training
Physical/communication infrastructure	<ul style="list-style-type: none"> domestically oriented 	<ul style="list-style-type: none"> globally oriented electronic data exchange
Industrial governance system	<ul style="list-style-type: none"> adversarial relationships command and control regulatory framework 	<ul style="list-style-type: none"> mutually dependent relationships network organisation flexible regulatory framework

Source: Richard Florida: 'Learning regions', *Futures*, Vol. 27, No. 5

The Oresund region of Scandinavia straddles two countries and is poised to move from traditional to knowledge-based industries of the 21st century. This symbolic passage will become a reality in the year 2000 with completion of a 16-kilometre-long bridge and tunnel linking the city of Copenhagen in Denmark with Malmoe in Sweden. The cross-border region will offer the greatest concentration of research facilities, first-class educational institutions and technological know-how in Scandinavia: 175,000 firms employing 1.4 million people out of a regional population of 2.8 million. Regional innovation systems on each side of the Oresund differ somewhat and co-operation between the Swedish and Danish regions has not been as strong as it might be. The new bridge, by bringing the two regions together and effectively transforming them into one, probably makes a rapprochement inevitable, in research, education and indeed investment policy.

The Andalusia region of Spain offers another kind of development model. Facing Africa and benefiting from a mild climate, ancient seaports, extensive agriculture and a rich cultural

Geographical and territorial dimensions do seem to matter and should continue to. Place underpins the concept of learning cities and regions.

heritage, this historical melting pot and tourist attraction is not one of Spain's wealthiest regions. It is now consciously working to diversify its activities. Recent investments in communications, technology and research, combined with the presence of well-established universities and cities like Seville, Malaga, Cadiz, Cordoba and Granada should provide a magnet for new companies and enterprises. Re-



Pressens Bild

Oresund: the interlink in a knowledge region

gional co-operation and networking among the cities are proving to be important tools in carving out this learning city region.

One of the largest redevelopment projects in Europe is located in the Kent Thames-side area east of London. Some £4 billion is being invested over thirty years to transform this former industrial site – once home to a cement factory employing 15,000 people. Apart from laying the necessary infrastructure and commercial developments – a rail centre will provide a high-speed link with continental Europe, while 30,000 new homes and various office complexes will put residents and 50,000 new employees within easy reach of London – Kent County Council has laid considerable emphasis on its plan to create a veritable learning region. Some 20 primary schools and 10 secondary ones are to be built, for example, with the support of the private sector. The above examples clearly pour cold water on the popular notion of “place” being no

longer important in globalisation, even if arguments in favour of a technology-driven decentralisation are strong. Geographical and territorial dimensions do seem to matter and should continue to. Place underpins the concept of learning cities and regions. Why? There are many advantages in sharing geographically defined labour markets, regional conventions, norms and values. Close interaction with suppliers, customers and even rivals also has benefits. Michael Storper, in his study on the region as a nexus (see bibliography), speaks of “untraded interdependencies” and describes the region as a key element in the “supply architecture” for learning and innovation. Given the social, and often tacit, nature of learning and innovation, it is not surprising that vitality is often best generated when partners are in sufficient proximity to allow frequent interaction and the easy, informal exchange of information.

As our examples above show, firms and knowledge institutions clustered in the

same location have greater opportunities to share a culture and understanding that facilitate the process of social interaction and learning. This saves time and money. It can help promote trust between parties and discourage opportunistic behaviour by individual firms. The flow of propriety knowledge, which is fundamental for innovation, is also facilitated. Globalisation makes cities, regions and countries more vulnerable to external shocks and economic restructuring. Yet all cities and regions have resources which can be used to drive local economic development, provided they are part of a sustained regional development strategy that emphasises long-term goals over short-term gains. In a learning society, and in the microcosm of a learning city or region, no institution has a monopoly of knowledge. This has profound implications for education and training. It must itself be an agency for lifelong learning and provide the high levels of group orientation and teamwork required for knowledge-intensive economic organisation. It must actively seek new partnerships with other "regional knowledge institutions".

The learning city strategies only indirectly address the most immediate issues of high unemployment and social deprivation, but as liberating weapons they may help to overcome these problems too. ■

Into the future with social sciences

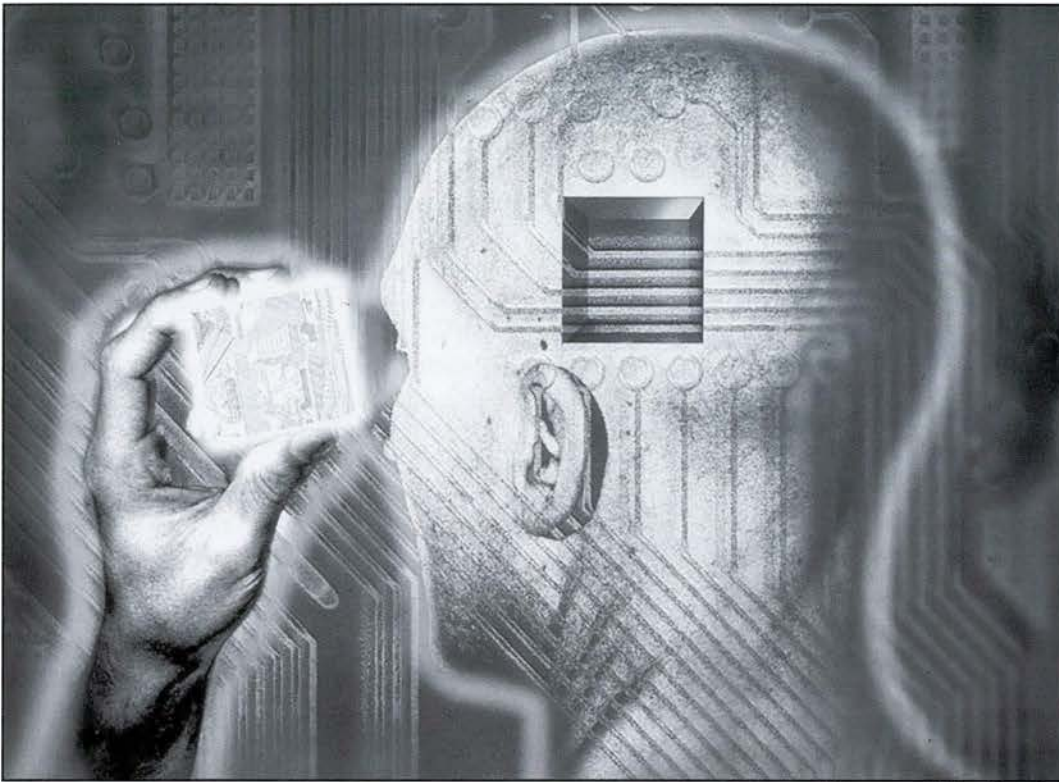
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Increasing violence, ageing, ethnic strife and global warming – these problems present the often misunderstood social sciences with a chance to prove their worth. But should they change first?

It is not forbidden to dream of building a better world, which is by and large what the social sciences try to help us to do. How to make cities more harmonious, reduce crime rates, improve welfare, overcome racism, increase our wealth – this is the stuff of social sciences. The trouble is that the findings of social sciences are often dismissed as being too theoretical, too ambitious or too unpalatable. The methods of research are also often attacked for their lack of rigour, and critics are quick to point out that the people who make the important decisions pay little attention to what social scientists have to say anyway. This would change if the social sciences made themselves more relevant and ready for the society of the 21st century.

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New social scientist

Social sciences began to take shape in the 19th century, but came into their own at the beginning of the 20th century, when a number of well-established disciplines, including economics, sociology, political science, history and anthropology really made their mark. Geography and psychology could be added to that list. However, only sociology, political science and economics have succeeded in consolidating their position in the social sciences mainstream. The others were virtually all marginalised. Moreover, powerful institutional barriers now separate the various disciplines.

Hardly the right atmosphere in which to grow and deal with the harsh criticism which the social sciences have come in for from many quarters, including governments and international commissions. Radical measures are now being suggested to turn things round, from how to award university chairs, to setting syllabi and raising funds.

The need for decompartmentalising and striking a new order in the relationship between the disciplines concerns all of the social sci-

ences, though perhaps economics most of all. Only it has acquired a dominant position in management and public affairs. Some would say it has fallen under the sway of "unitary thinking", with little room for debate, for example, on the question of debt reduction or monetary tightness. Moreover, many people do not believe that economic science forms part of social sciences at all. This is a somewhat problematic position to uphold, particularly as economic developments are largely determined by political, social and cultural factors. Yet, economists often have difficulty understanding or taking such factors into account. This has left economics exposed to attack, for example, over its prescriptions for development and its analysis of events, such as the causes of the Asian crisis. To many, economics relies too heavily on hypothetical and sometimes unrealistic assumptions.

It seems clear that to explore the socio-cultural foundations of economies rigorously and methodically, one must draw on the other social sciences. Take anthropology, for example. It is a discipline which can attempt to explain the

Economics has been exposed to attack over over its prescriptions for development and its analysis of events, such as the causes of the Asian crisis. To many, economics relies too heavily on hypothetical and sometimes unrealistic assumptions.



Sung/Rapho

A society of individuals

influence of value systems, institutions, family structures and even religious backgrounds on the behaviour of individuals. But for many years, anthropology and its related offshoot of ethnology were confined to the study of exotic societies. However, it can also throw light on the functioning, if not the future, of our own societies. So does that mean it is high time to give fuller backing to the study of an anthropology of contemporary societies? Probably yes. The discipline has not only begun to acquire academic legitimacy, it has already attracted the serious attention of businesses eager for a detailed understanding of the behaviour of households, investors and the like. This is particularly true of multinational enterprises dealing with cross-cultural operations. A survey commissioned by IBM in the 1970s in over 60 countries where the company had subsidiaries is a perfect example of this. Many surveys since then have highlighted the influence on management of socio-cultural factors, such as the degree of individualism, control over uncertainty and attention to hierarchical structures and gender balance in employees' behaviour.

Apart from the multi-disciplinary qualities of the social sciences themselves, there is also the proposition of a closer relationship between the social sciences and natural sciences. There is already an overlap as a result of what is hap-

pening in the development of neuro-sciences: for example, research centres in this discipline have biologists, doctors, psychologists, sociologists, mathematicians and philosophers working closely together. Another example features the quality of the environment, the availability of natural resources, and even the productivity of marine environments: all are strongly influenced by human, or anthropogenic, factors. Now, world-wide programmes conducted in fields such as the study of global warming bring researchers in natural and human sciences together at the same table. There is no question that the demand for people who have been well trained in both types of science will increase from now on, and academic programmes will have to be introduced to meet this need.

Governments have a sense of how social sciences can help in the management of societies. They are also relying increasingly on the social sciences to deal with particular problems they are now facing. The UK government runs research projects on young people in urban environments and the findings of these studies have had a powerful influence on the design of government programmes for combating social disintegration, exclusion and unemployment. It would not be foolhardy to suggest that the research helped to forge the climate of opinion that marked the 1997 general elections.

Still, the circumstances in which the social sciences have been integrated into political debate vary from country to country, although numerous recent initiatives have been influenced by a desire to bring researchers and users closer together. The Canadian government has, for example, set up a national network of centres for research into issues like immigration, with the close co-operation of local authorities, immigration services and other concerned bodies.

Generally speaking, the social sciences will wield more influence in the management of public affairs and will find their proper role when the right conditions exist for democratic and informed debate at every level, whether national or local. Currently, dialogue between social science researchers and "society" all too often takes the form of one-way lecturing, with

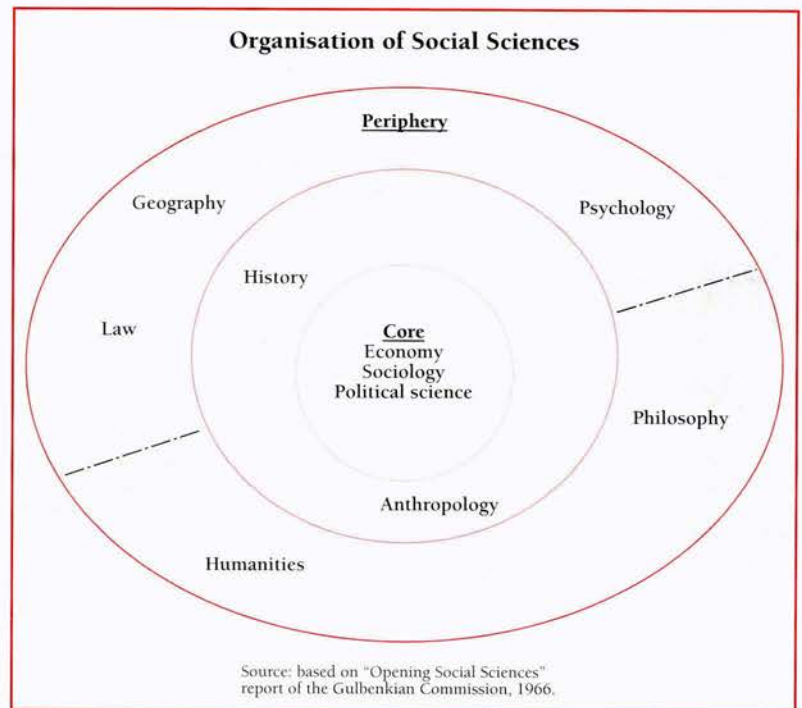
researchers given little opportunity for interaction with social groups. Sweden has acted on this by recently launching an important programme that involves the social sciences in the question of sustainable development, and which expressly provides for in-depth consultations between researchers and civil society.

IT can make a difference

There is every reason to believe that social sciences will be transformed – maybe more so than natural sciences – by advances in information technology and the ability to collect, process, stock and disseminate enormous quantities of data. It is beginning to be possible to link existing data bases in many fields in different countries, and to carry out large-scale, integrated, comparative analyses. Huge surveys can now be conducted on an extensive range of subjects on the Internet, which is clearly helpful in studying the perceptions and behaviour of a wide variety of people. And IT has opened up the possibility of working in virtual laboratories that link up large numbers of research teams on a worldwide network.

This is no technological fantasy of the social scientist. Through the National Science Foundation, the US government has already instituted experimental initiatives in several fields. For example, a virtual research centre on violence has been set up to collate and supply information from dozens of researchers in some 20 institutes working in all disciplines from psychology and criminology to economics, biology and statistics. In some ways, the potential technology holds for the social sciences can be compared to the effect it has had on climatology. A few decades ago climatology relied on information that was provided haphazardly and intermittently by observatories scattered round the world. Now, with the use of satellites, our understanding and forecasting of climatic phenomena has improved immeasurably.

So can social sciences bounce back and assert themselves in the 21st century? We will probably not be able to tell for a few decades, since the ways in which societies analyse themselves develop very slowly. After all, the social sciences are rarely given to sudden discoveries and headline breakthroughs like some other



sciences. What is more, social sciences may continue to face the stout resistance of established institutions defending their own territory and opposing innovation and change. Could it be that society, which by definition seeks stability, has an inbuilt resistance towards indulging in any form of self-analysis? Few people have an appetite for hard truths. But perhaps in the information age and in the dematerialised economy of the knowledge world, all that could change. Perhaps society will discover a pressing need to know itself much better, if only to survive. Social sciences will then be very much in demand. ■

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- Note: Two seminars on the future of social sciences are being organised by the OECD in the year ahead to focus on the question of social sciences, one on large-scale infrastructure for the social sciences (Ottawa, autumn 1999), a second on the interdisciplinarity of social sciences (Bruges, spring 2000).



Facing forward together: lessons from the 1999 Council Ministerial

JOSÉ ÁNGEL GURRÍA,
MINISTER OF FINANCE AND PUBLIC CREDIT OF MEXICO, CHAIRMAN OF THE 1999
OECD COUNCIL MEETING AT MINISTERIAL LEVEL

Few of us could have foreseen, back in 1994 when Mexico joined the OECD, that only five years later we would have the opportunity to chair the Organisation's most important annual event. Mexico welcomed this opportunity, which we regard as an acknowledgement of our firm commitment to the OECD and of our country's progress in promoting economic and structural reform over the past few years. It was my privilege as Mexico's minister of finance to chair the OECD ministerial council, the summit in the OECD calendar, held on May 26 and 27 in Paris, alongside Giuliano Amato of Italy and Poland's vice-prime minister, Leszek Balcerowicz. The dialogue and the consultations that take place at these yearly gatherings are crucial for the definition of the Organisation's agenda. They also provided an opportunity for busy governments to exchange views about current developments in the world economy and, in particular, to discuss issues of economic co-operation and development that enhance the policy making process of member countries and foster greater co-ordination among them.

I do not wish to elaborate on the conclusions and policy recommendations that emerged from our meeting – they are by now widely known and are summarised below. Rather, I should like to focus on two points which seem to

me to pose particular challenges to the work of the OECD.

In my view, one of the greatest challenges faced by our Organisation stems from ever increasing global interdependence. The time when OECD member countries could seek to influence world economic affairs in relative isolation has gone for good. In recent years the Organisation has sought to meet that challenge in a

Globalisation is irreversible and the OECD must take greater account of the views of non-member countries.

number of ways, which include an enhanced dialogue with non-members and the addition of new members, such as Mexico, Poland, Hungary, the Czech Republic and Korea. The OECD is evolving, as it must do, in order to keep up with ongoing developments in the global economy. Economic and financial developments over the past years have proven that economic interdependence reaches well beyond the OECD's present membership. In other words, we are all in the same boat and we need to work together if we wish to ensure that our sailing goes smoothly. Thus, one feature that made this Ministerial meeting particularly significant was the special dialogue



JOSÉ ÁNGEL GURRÍA,
MINISTER OF FINANCE
AND PUBLIC CREDIT OF MEXICO.

held with ministers from seven non-member countries, an initiative that Mexico was proud to launch. The non-members attending the summit were Argentina, Brazil, India, China, Indonesia, Russia and the Slovak Republic. They are all key players in the world economic stage and their role in the global economy is likely to increase over the coming years. The special dialogue allowed all participants to share their views on the world economic outlook and on global policy challenges related to the promotion of growth, sustainable development and social cohesion. This innovative tool of communication is in itself an acknowledgement that globalisation is irreversible and that the work of the Organisation must take greater account of the views of non-member countries. The second point that I be-

lieve has particular relevance to our work is the need to view social cohesion as a central goal of economic policy. Despite the economic and social progress achieved by most OECD countries, it is still necessary to extend those benefits to millions of our citizens. This involves the need to reduce the high levels of unemployment that prevail in some member countries while providing adequate safety nets. But it also involves the need to ensure that all members of society have a stake and receive a fair share of the fruits of growth and development. It is important to remind ourselves that the ultimate goal of our policies is to promote not just economic growth but, above all, social well-being.

In the words of Donald Johnston, Secretary-General of the OECD, we are

“building momentum for global growth and social progress into the new millennium” where economic growth, good governance and social cohesion will be essential to reach a virtuous circle. Dialogue, co-operation and shared responsibility will be the main elements of this circle.

I look back on this ministerial with great satisfaction. I feel proud for the contribution that Mexico was able to make. We have confirmed once again the value of this common house, the OECD, where we can learn from each other and through a better understanding of our needs and concerns, continue to face the challenges ahead together. Only then will we be able to strengthen the capacity of our economies to adjust under a changing international environment. ■

The annual OECD summit

OECD Council Meeting at Ministerial Level, Paris, 26-27 May 1999

For the first time ever, seven non-member countries – Argentina, Brazil, China, India, Indonesia, the Russian Federation and the Slovak Republic – were invited to the OECD Council Meeting at Ministerial Level, held last 26 and 27 May at the Château de la Muette in Paris. This initiative showed the growing importance of the emerging and developing countries in the world economy and, above all, their interdependence with the OECD countries. “The 29 member countries and the seven invited countries account for no less than 68% of the world population and 90% of world GDP” the chairman pointed out, adding that

the “time when the OECD countries could manage the world economy is a thing of the past... we are now all in the same boat”.

The non-member countries for their part seemed quite satisfied with the proceedings. The Indian minister for external affairs, Jaswant Singh, said in an interview with the *Observer* that many, if not all, of the core areas of interest at the OECD, whether it be corporate governance or e-commerce, were naturally of great relevance to economies such as India and therefore it made perfect sense to hold the dialogue. It should of course be empha-

sised that the OECD's co-operation with non-member countries is not exactly a recent development. What was new was the presence of non-members at the council itself. In the late 1980s the OECD had initiated a policy dialogue with a number of major players in the world economy, particularly in Asia and Latin America. And after the fall of the Berlin Wall in 1989, the OECD launched a programme for the transition economies of Central and Eastern Europe. Then, in 1991, it initiated a co-operation programme with the Newly Independent States, and in particular with the Russian Federation. This ongoing dialogue is today man-

aged by the OECD's Centre for Co-operation with Non-Members, which was created in January 1998.

It was in the discussions on the next round of multilateral trade negotiations at the WTO that the invited countries participated most actively. Although all the governments represented broadly supported the future "millennium round", and agreed that this time it should not be allowed to drag out too long, there is still some disagreement about the topics to be discussed. Some European countries wish to include issues such as investment, competition, the environment and social standards, while the emerging countries want to limit discussions to agriculture and services. Argentina and Brazil were highly critical of a number of OECD countries that oppose imports of agricultural products. Fears of renewed protectionism were also mentioned during the review of the economic prospects of OECD countries, since the imbalances caused by the growth differentials between the United States, Europe and Japan could lead these countries to rely increasingly on trade restrictions. Janet Yellen, chief economist at the White House, said that "the blood pressure of the US economy is excellent", though the OECD experts encouraged the United States authorities to "maintain sound policies and remain vigilant for signs of overheating". Ms Yellen called on Japan and Europe to take measures to accelerate growth in order to prevent a further deterioration of the US current account. The OECD is forecasting a record US balance of payments deficit of US\$ 300 billion this year and US\$ 320 billion in the year 2000. Japan was asked to step up the reforms in the banking sector in order to stimulate demand-led economic growth, while Europe has to maintain "an appropriate mix of macroeconomic policies and vigorous structural measures". Trade union representatives at



Throwing light on the discussion, OECD Paris

the council meeting expressed fears that "the global economy would be plunged into deep depression" if "the US locomotive were to stall". The OECD experts considered that on the whole growth in the OECD area and

throughout the world remained insufficient. And although confidence and financial stability have improved in a number of emerging economies, "the situation continues to require attention". ■

Some highlights of the 1999 ministerial conclusions

For the complete communiqué,
consult: www.oecd.org/news_and_events/releases/nw99-52a.htm

■ **Economic perspectives and policy requirements:** Ministers asked the Organisation to study the causes of the disparities in the cyclical situations in major OECD economies and to identify factors and policies which could strengthen long-term growth performance. Expressing concern at the continuing high levels of unemployment in some OECD countries, they agreed to continue to implement reforms consistent with the OECD Jobs Strategy, which aims in particular at promoting flexible labour markets in tandem with effective safety nets.

■ **Sustainable development:** Global challenges, such as climate change, the sustainable management of natural resources and the conservation of biodiversity are key objectives for OECD countries. OECD countries will continue to co-operate with non-OECD countries to improve policy and institutional frameworks. OECD will report to Ministers, with policy recommendations, in 2001.

■ **The multilateral system and the new WTO round:** Ministers reaffirmed the multilateral trading system as a keystone of the world economy and endorsed the need of a new round; supported early accession of applicants to the WTO and increasing integration and participation of developing and transition countries in the multilateral trading system.

■ **Tax competition and money laundering:** Ministers welcomed the establishment of the Forum on Harmful Tax Practices and looked forward to receiving a report on the identification of tax havens. They also welcomed the dialogue initiated between the OECD and the Financial Action Task Force to

explore how anti-money laundering systems could contribute effectively to dealing with tax-related crime, without undermining the effectiveness of these systems.

■ **Electronic commerce:** OECD's Action Plan on electronic commerce, endorsed in Ottawa in October 1998, was seen as a basis for further policy discussion and technical analysis in taxation, communication infrastructures, privacy and security. Ministers welcomed the follow-up conference to be held in October 1999.

■ **Agriculture:** While progress has been made in agricultural policy reform, overall levels of support and protection remain high and trade disputes and tensions persist. It is necessary to pursue the long-term objective of substantial progressive reductions in support to this sector. Ministers endorsed the OECD's work on fisheries' sustainability.

■ **Biotechnology:** It is essential to safeguard human health and the environment while enabling people to enjoy the benefits that flow from advances in biotechnology. The OECD was invited to continue its examination of the various dimensions of the issue.

■ **Good governance:** Ministers requested the OECD to elaborate a proposal for a "good governance" initiative in order better to share the results of the Organisation's existing work in this field with interested non-member countries. Ministers endorsed the OECD Principles of Corporate Governance and welcomed the completion of the Organisation's reviews of regulatory reform.

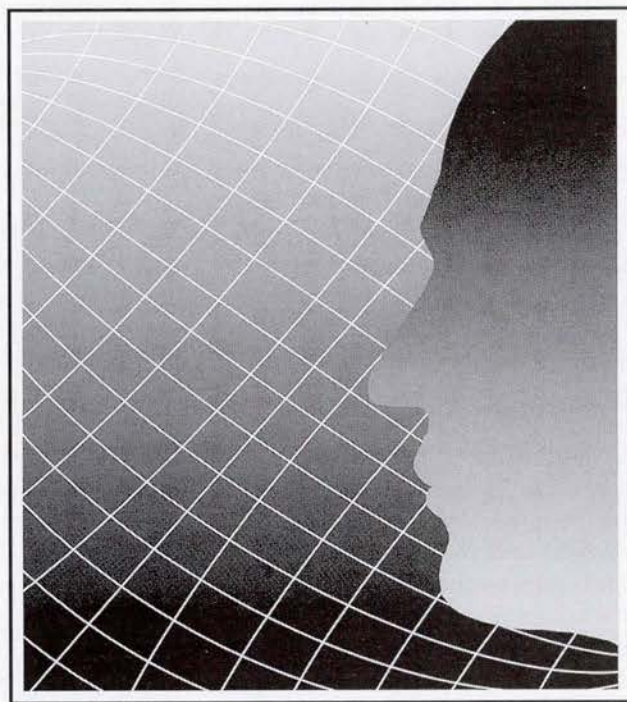
■ **Combating bribery:** Ministers, through OECD, will actively monitor the effective implementation of the Convention on Combating Bribery of Foreign Public Officials, which entered into force on 1999. They urged all signatory governments which have not yet done so to ratify the Convention and fully implement it.

■ **Relations with non-members:** Ministers underlined the need for deepened policy dialogue and welcomed the Special Dialogue with non-members (see above). The OECD remains open to new members sharing the same values, while remaining selective and preserving its high standards for membership. Ministers looked forward to the conclusion of the process of accession of the Slovak Republic to the Organisation.

■ **South Eastern Europe:** Ministers pledged the OECD's active participation in the efforts of the international community through its contribution in advising the affected states in the region on the development of macroeconomic, structural and social policies, legal and institutional frameworks and promoting integration into the regional and global economy. The OECD's co-operation with countries in the region should be strengthened, and the Organisation should launch, when practicable, programmes with other affected countries.

■ **Development:** Ministers welcomed the strengthened dialogue with multilateral institutions to improve aid co-ordination. They noted the downward trend of official development assistance over recent years, and regretted that, despite some progress, the conditions were not yet fulfilled to conclude an agreement on untying aid. ■

Scientific and Technological ministerial: taking stock



The increased globalisation of R&D and innovative activities, the emergence of global issues transcending national boundaries, as well as the growing costs of scientific research, pose new challenges to policy-makers, ministers were told at the OECD Committee for Scientific and Technological Policy (CSTP) at Ministerial level on 22-23 June 1999. Ministers recognised that in order to reap the potential benefits from globalisation, national S&T policies would have to be directly embedded into an international perspective so as to increase the capacity of economies to access and exploit the results of global scientific and technological activity. They emphasised stronger S&T

linkages with non-OECD countries. Agreeing that global environmental issues are important for international S&T co-operation, Ministers welcomed Korea's proposal to host an international symposium in Seoul to discuss ways to promote and facilitate the sharing of environmental technologies between the developed and developing countries.

José Mariano Gago, minister of science and technology of Portugal, chaired the two-day summit meeting, which provided a timely opportunity to discuss new policy challenges arising from the expansion of scientific and technological knowledge, its increasing influence on the patterns and the dynamics of economic growth, and its contribution to sustainable development and social well-being. Ministers recognised the need for increased communication with the scientific and business communities and society at large, and gave high priority to measures that could strengthen the innovative performance of economies and provide new job opportunities.

Biotechnology is an important part of the OECD's work programme and ministers acknowledged the important contributions made by the CSTP Working Party in the areas of health, industrial sustainability and the development of scientific infrastructure. Moreover, initiatives aimed at establishing an international co-ordinating body that would implement a Global Biodiversity Information Facility were encouraged. For more information on the outcomes of the CSTP ministerial, please visit: www.oecd.org/subject/cstp/1999/. ■

Ten years of combating money laundering

INTERNET: WWW.OECD.ORG/FATF/

“From May 1994, two people used an accounting firm to launder the proceeds of sales of amphetamines. They regularly handed over to their accountant, brown-paper envelopes or shoeboxes containing US\$ 38 000 to US\$ 63 000 in cash, without any receipt being delivered. The accountant had set up a company and opened trust accounts for his clients, as well as personal bank accounts in the name of their parents. Some of the funds were used to buy lorry parts abroad, which were then resold in the country of origin, some were used to buy real estate. According to the investigation, the accountant and three of his colleagues had laundered about US\$ 633 900 in return for a 10% commission”. This case, which is a classic example of a simple money laundering scheme, is quoted in an annex to a report by FATF, the Financial Task Force on Money Laundering, whose secretariat is located at the OECD.

FATF is celebrating its tenth anniversary this year. Established at the G-7 summit in Paris in 1989 FATF currently comprises 26 countries – both

OECD and non-OECD – and two international organisations. It is funded by contributions from its member countries. In April 1990 FATF issued a report containing forty recommendations designed to provide a complete blueprint for action against money laundering, covering the criminal justice system and law enforcement, the financial system and its regulation, and international co-operation. According to the IMF, money laundering represents between 2% and 5% of world GDP, which is between US\$ 590 billion and US\$ 1.5 trillion for 1996. FATF's recommendations are designed to get that figure down. They do not constitute an international convention. Rather, each FATF member has made a firm political commitment to combat money laundering. In 1996 the recommendations were modified to take account of recent trends in money laundering and potential future threats.

Besides monitoring, via mutual evaluations, the progress made by countries in implementing measures to counter money laundering, FATF must continually review the latest trends in

money laundering techniques and counter-measures. To take one example: when the euro is introduced in the form of notes and coins between 1 January and 30 June 2002, money launderers may try to take advantage of the huge volume of transactions to “inject” criminal proceeds. The experts are also worried about the possibility that the burden of work on financial institution employees during this period may be such that they will be less likely to detect evidence of money laundering. FATF has also stressed the importance of off-shore centres which are reluctant to cooperate, and the role of providers of professional services – lawyers, accountants, financial advisors and agents who set up front companies – in money laundering. In coming years, one of the main challenges facing the authorities responsible for combating money laundering will be posed by the development of new payment technologies. Online banking, for example, makes it possible to conduct some types of financial transactions via a web site. But it is not always possible to check the identity of the person carrying out a transaction on the Internet.

The gold market is another vehicle for possible money laundering which FATF countries are increasingly aware of. Gold is both a commodity and, to a lesser extent, a means of exchange for covering transactions involving criminal proceeds between Latin America, the United States and Europe. There are also other money laundering channels in the world, notably between the Gulf States and certain South Asian countries. It is for this reason that the ministers of member countries have asked the FATF to promote the implementation of a worldwide network against money laundering, including new countries (see News Brief) and FATF-type regional bodies engaged in the same combat. ■

Brazil and privatisation

PRIVATISATION IN BRAZIL: THE CASE OF PUBLIC UTILITIES
RIO DE JANEIRO, 29-30 APRIL 1999.

Privatisation continues to arouse fresh interest among decision-makers in a good number of emerging markets, including those in Asia and Latin America which have experienced far-reaching financial crises. That was certainly the impression given at a seminar held recently in Rio de Janeiro. It was equally understood that privatisation could not be seen as a substitute for broader financial and fiscal consolidation.

There must be few venues as suitable as Brazil for discussing matters of public utility reform; despite some regulatory drawbacks, revenues generated since the start of the national privatisation programme there in the early 1990s amount to nearly US\$90 billion, one of the highest figures in the world. The impact on public finances of the proceeds generated depends, moreover, on the use to which they are put by government. Between 1996 and 1997 total proceeds from Brazilian privatisation rose from US\$4.7 billion to US\$27.7 billion. While they more or less served to pay off unofficial government liabilities, they had relatively little impact on the public sector debt/GDP ratio. Last year proceeds again rose – to US\$37.5 billion – but it remains to be seen how the government will decide to use these receipts. Another important point is the confidence of investors – both domestic and foreign – which is vital. The revised estimate of privatisation proceeds for 1999-2000 amounts to US\$36 billion. The privatisation process had suffered from the economic and political uncertainties affecting Brazil during the

previous year. However, the successful sale of Comgas, the San Paulo gas company, which yielded US\$1 billion – more than twice the minimum price – has been interpreted as signalling a return of investor confidence. However, while the Brazilian *real* crisis is now more or less under control, the environment remains uncertain. One of the Brazilian authorities' current priorities is to set up the sort of regulatory framework which will attract private investors. The impressive results seen in the telecommunications sector are in large part attributable to the fact that new market-friendly regulations had been put in place before the sale of Telebrás, the former State monopoly, in July 1998.

It is in the electric power sector, however, where the rather unwieldy regulatory situation comes into view. Reform there has been introduced only gradually. The complexity of the institutional and regulatory environment surrounding the sector is due to the fact that different segments were owned by different levels of government: the federal government controlled generation and transmission, while distribution and some vertically-integrated utilities were in the hands of state governments. Many of the state-owned utilities had debts, preventing privatisation going ahead as a single transaction. For the electricity sector, and also for other sectors, such as transport and water, the stakes are considerable: with a market of 160 million consumers, demand for this type of utility is constantly growing. For the time being, the Cardoso government, which took office in 1995,



FERNANDO HENRIQUE CARDOSO,
BRAZIL'S PRESIDENT

will probably continue, even accelerate, the privatisation of Brazil's public utilities. The institutional aspects have been strengthened, with the creation of a state-level privatisation programme and of the cabinet-level National Council for Privatisation, which has the task of extending the programme to the public utility and mining sectors. The Concessions Law, voted in February 1995, paved the way for the privatisation of new sectors: telecommunications, electricity, gas, rail transport, motorways, ports and airports, water supply and basic sanitation services. Still, progress remains uneven across sectors, especially as regards the regulatory side: this is one of the problems that the government will have to try to remedy if it is to complete its reform. The seminar, "Privatisation in Brazil: the Case of Public Utilities", was organised jointly by the OECD Development Centre and the Brazilian Development Bank, 29-30 April 1999. Brazil is not a member of OECD, but is a member of the OECD Development Centre (cendev.contact@oecd.org). ■

Calendar of upcoming events 1999

Please note that many of the meetings mentioned are not open to journalists and are listed as a guide only. All meetings are in Paris unless otherwise stated. For a complete list, please contact the Media Relations Division or consult the OECD website at www.oecd.org/news_and_events/

JULY

- 14-16 Social Safety Nets in Indonesia, Malaysia, the Philippines and Thailand workshop organised by the Directorate for Education, Employment, Labour and Social Affairs and the Special Asia Programme of the Centre for Co-operation with Non-Members (CCNM), Darwin, Australia.
- 22-23 Trade Negotiation Round: Examining the Agenda for Seattle, Secretary-General participates in the preparatory meeting, New York, USA.

AUGUST

- 10-12 Seismic Risk in Nuclear Installations, workshop organised by the Nuclear Energy Agency, Tokyo, Japan.
- 13-17 Competition Enforcement, seminar organised by the Directorate for Financial, Fiscal and Enterprise Affairs and the CCNM Russia Programme, Moscow, Russia.
- 23-25 Approaches for the Integration of Human Factors into the Upgrading and Refurbishment of Nuclear Power Plants' Control Rooms, workshop organised by the Nuclear Energy Agency, Halden, Norway.
- 30-31 Transfer Pricing, conference organised by the Directorate for Financial, Fiscal and Enterprise Affairs, Johannesburg, South Africa.
- 30 - 3/9 Harmful Tax Practices, forum organised by the Directorate for Financial, Fiscal and Enterprise Affairs.

SEPTEMBER

- 6-7 Information and Communication Technologies and the Quality of Learning, meeting organised by the Directorate for Education, Employment, Labour and Social Affairs.
- 6-8 Access to Financial Information: Maintaining Confidentiality and Meeting the Needs of Tax Authorities, roundtable discussion organised by the Directorate for Financial, Fiscal and Enterprise Affairs, and hosted by the Italian Ministry for Finance, Rome, Italy.
- 6-10 Competition Policy, workshop organised jointly by the Korean Fair Trade Commission and the Directorate for Financial, Fiscal and Enterprise Affairs, Seoul, Korea.
- 6-12 China, official visit of Secretary-General
- 10-11 Making Work Pay, workshop organised jointly by the Economics Department and the Directorate for Education, Employment, Labour and Social Affairs.
- 13 Climate Change, high-level meeting organised by the Economics Department and the Environment Directorate.
- 13-14 Implications of Disability in Older Populations: Measurement and Social Policy Challenges, meeting organised by the Directorate for Education, Employment, Labour and Social Affairs.

SEPTEMBER (continued)

- 14-15 **Government for the Future: Getting from Here to There**, symposium organised by the Public Management Service.
- 14-15 **Taxation and Electronic Commerce**, forum organised by the Directorate for Financial, Fiscal and Enterprise Affairs and the CCNM Emerging Market Economy Forum.
- 15-17 **The Safety of Novel Foods and Feeds**, task force meeting organised by the Environment Directorate.
- 16-17 **The Practical Application of Tax Treaties - Discussion between Member and Non-Member Countries**, Workshop organised by the Directorate for Financial, Fiscal and Enterprise Affairs and the CCNM Emerging Market Economy Forum.
- 20-21 **The Role of International Investment in Development, Corporate Responsibilities and the OECD Guidelines for Multinational Enterprises**, meeting organised by the Directorate for Financial, Fiscal and Enterprise Affairs.
- 20-22 **Privatisation, Capital Market Development and Pension Systems Reform**, meeting organised by the Directorate for Financial, Fiscal and Enterprise Affairs and the CCNM Emerging Market Economy Forum.
- 21-23 **Money Laundering**, plenary meeting of the Financial Action Task Force, Oporto, Portugal.
- 22 **Secretary-General addresses the Council of Europe**, Strasbourg, France.
- 26-28 **Annual meeting of the Boards of Governors of the World Bank Group and the International Monetary Fund**, Prague, Czech Republic.

27 - 1/10

Principles of International Taxation, seminar organised by the Directorate for Financial, Fiscal and Enterprise Affairs and the CCNM Emerging Market Economy Forum, Mexico City, Mexico.

27-28

Barriers to Trade in Goods and Services in the Post-Uruguay Round Context, workshop organised by the Trade Directorate.

29-1/10

Combating Corruption in Asian Economies, meeting organised by the Directorate for Financial, Fiscal and Enterprise Affairs and the Asian Development Bank, Manila, Philippines.

OCTOBER

4-8

Tax Evasion and the Underground Economy, workshop organised by the Directorate for Financial, Fiscal and Enterprise Affairs and the CCNM Emerging Market Economy Forum, Ankara, Turkey.

6-8

Large-Scale Infrastructures for Social Sciences, workshop organised by the Directorate for Science, Technology and Industry, Ottawa, Canada.

6-8

Modernising Tax Policy to Adapt to Open Financial Markets, meeting, organised jointly by the Tokyo Institute of the Asian Development Bank, the Inter-American Development Bank, and the OECD Directorate for Financial, Fiscal and Enterprise Affairs, Tokyo, Japan.

7-8

Policies for the Development of Agro-Processing Industries in China and OECD countries, symposium organised by the Directorate for Food, Agriculture and Fisheries and the CCNM China Programme, Beijing, China.

10	Anti-Corruption, conference organised by Transparency International, in co-operation with the Directorate for Financial, Fiscal and Enterprise Affairs, Durban, South Africa.	18-20	Biodiversity: Economic Aspects, working group organised by the Environment Directorate.
11-12	Improving Relations Between Government Administration and the Public, meeting organised by the Public Management Service, Naples, Italy.	18-22	Competition Law and Policy, Committee meeting organised by the Directorate for Financial, Fiscal and Enterprise Affairs.
11-15	Taxation of Financial Innovation in a Global Economy, workshop organised by the Directorate for Financial, Fiscal and Enterprise Affairs and the CCNM Emerging Market Economy Forum, Chonan, Korea.	21-22	Workshop on Corporate Governance, organised by the Directorate for Financial, Fiscal and Enterprise Affairs and the CCNM Baltic Regional Programme, Vilnius, Lithuania.
11-15	Application of Tax Treaties of the Chinese State Administration of Taxes, seminar organised by the Directorate for Financial, Fiscal and Enterprise Affairs, Beijing, China.	25-28	Changing Infrastructure of Tertiary Education, seminar organised by the Directorate for Education, Employment, Labour and Social Affairs, Quebec City and Montreal, Quebec, Canada.
12-13	China in the 21 st Century: Challenges of Global and National Economic Integration, conference organised by the Development Centre in co-operation with the Chinese Academy of Social Sciences, Kunming, China.	25-29	Tax Treaties for Countries of Francophone Africa, seminar organised by the Directorate for Financial, Fiscal and Enterprise Affairs, Libreville, Gabon.
12-13	Forum on Electronic Commerce, organised by the Directorate for Science, Technology and Industry.	26-30	Investigative Journalism, workshop organised by the Directorate for Financial, Fiscal and Enterprise Affairs and the CCNM Transition Economies Programme, Istanbul, Turkey.
12-14	Assuring Nuclear Safety Competence into the 21 st Century, workshop organised by the Nuclear Energy Agency, Budapest, Hungary.	27-29	Maritime Transport Policies, workshop organised by the Directorate for Science, Technology and Industry and the CCNM Emerging Market Economy Forum, Kobe, Japan.
12-14	Evaluation of Development Assistance for Poverty Reduction, workshop organised by the Development Assistance Committee, Edinburgh, Scotland.		
13-14	Urban Public Transport Funding, seminar organised jointly by the International Union of Public Transport and the European Conference of Ministers of Transport.		

Getting European workers moving



Mobility is highest among professionals

Why is it that European workers are more reluctant than their counterparts in the United States to move out of their region, town or city to find work or change jobs? The issue of obstacles to the mobility of workers in the euro area is one of several key questions raised in an in-depth analysis of the OECD's current best-seller, *EMU: Facts, Challenges and Policies*. The principal authors, Jonathan Coppel and Alain de Serres, examine other pertinent questions too, concerning monetary and budgetary policies and the challenges facing the euro area. Yet, it is in the debate about the labour market that the authors present perhaps

their most stimulating case and sound their sharpest warning.

The launch of the single currency on 1 January 1999 has created the second largest monetary zone in economic terms after the United States: the 11 countries that make up the euro area account for no less than 16% of world GDP, and have some 290 million inhabitants. That makes it bigger than the United States in population terms. Sound precautions were taken before setting up economic and monetary union (EMU) – the establishment of an independent European Central Bank and the drive for macroeconomic convergence between all par-

ticipating countries, for instance. Nevertheless, the tough part is only beginning and exactly how individual countries will react to external and internal economic shocks is not yet clear. For example, how will it be possible to respond to disruptions in supply and demand in one EMU region or country from having an impact on the monetary area as a whole? The answer, say the authors, is to make labour markets more flexible. That means introducing not only more responsive and rapid salary adjustments, but also greater mobility of workers within the EMU area.

The trouble is, if there is still relatively little workforce mobility in Europe there has to be a reason. Although all EU nationals have the right to work and live in other member states, only 5.5 million citizens – 1.5% of the total population – have opted to settle in another country. By contrast, in existing monetary zones like those in the United States or Australia, for example, there is far greater mobility geographically, which plays an important role when labour markets have to adjust to changes in the economy. In other words, people are prepared to move long distances, whether to change jobs or to find work.

This is an important point, even if it is one that is not unfamiliar. However, some people might argue that this is not comparing like with like. Despite their ethnic and

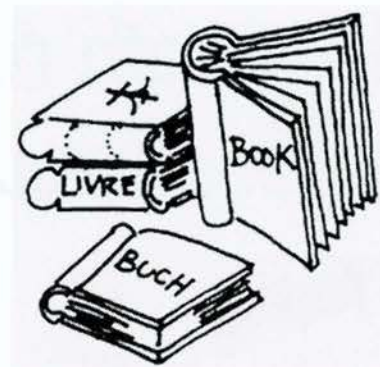
REA/Pascal Sittler

cultural differences, all US citizens belong to a single country, and quite an old and established one at that. This is not true of the European Union, which is a recent construction. The freeing up of labour movements is foreseen under the Treaty of Rome, but its full implementation has been only gradual. Apart from that, the euro area incorporates a large number of different cultures, traditions, history, religious beliefs and prejudices. An unemployed French person who wanted to go and find work in the Netherlands where unemployment is low would have numerous barriers to surmount, not least of which would be the language. Perhaps comparing labour mobility in North America as a whole with Europe would throw up some interesting comparisons.

Nevertheless, the authors come up with a few trumps to hammer their argument home. For instance, even at national level most European countries do not demonstrate much in the way of geographical mobility: in Italy and Spain, migration rates average about 0.5% of the regional population. In the Netherlands and Germany, migration is almost three times as high, but it is still considerably lower than in the United States, or Australia, another OECD country where labour mobility is an important feature. The fact is that while considerable progress has been made in reducing the legal and institutional obstacles to

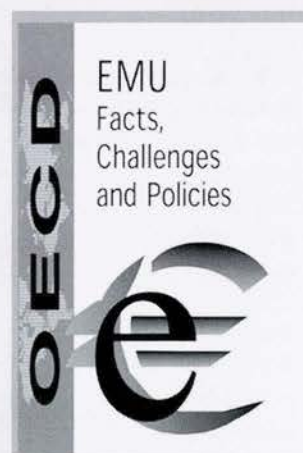
mobility in the European Union, the movement of workers is still limited by a number of structural obstacles. These include differences in tax systems, education systems and the non-recognition of some professional qualifications, and problems relating to housing policies, uniform minimum wages and restrictive practices in the workplace. The economic incentive to migrate has also diminished as a result of convergence of incomes between countries in the euro area and higher unemployment throughout the monetary union. "It is unlikely that labour mobility will increase greatly within the euro area over the next few years", the authors argue. "The capacity of wages to adjust rapidly to a change in labour market conditions", they urge, "is critical".

EMU countries have less room for manoeuvre than before, since the euro implies a common monetary policy operated by the European Central Bank. So other adjustment mechanisms have to be strengthened, and the capacity of wages to adjust to changing labour market conditions improved. To reinforce reforms in the labour market, product markets have to be made more competitive too. Prices and wages would then be able to respond quickly to new circumstances, leading to better efficiency and more sustainable economic growth. That, some would argue, was the purpose of the EMU project in the first place. ■



EMU: Facts, Challenges and Policies,
by Jonathan Coppel
and Alain de Serres, OECD

EMU Facts, Challenges and Policies



More than just the facts...

ISBN 92-64-17027-8
FF200 US\$36

To help you understand the economics and issues facing the European **Economic Monetary Union**.

OECD
A POTENT INSTRUMENT OF GLOBAL CHANGE

In-depth review of the telecommunications sector

Who would have thought, even a few short years ago, that mobile phone operators would be making staggering profits? Yet the UK company, Vodafone, which announced an almost 50% increase in its annual profits in a recent interview with the BBC, has done just that. According to a Vodafone executive, the company expects to increase its customer-base from its current 15 million to 30 million by the end of 2002. Fact or fantasy? One thing is certain, the revenues that the telecommunications sector is generating today are perfectly real: over \$1 000 billion, according to the latest edition of the OECD's *Communications Outlook*. This sort of performance warrants an in-depth look at this most lucrative of industries. In addition to a wide range of performance indicators for the various communications networks and companies, the above report gives data on service charges, investment and employment. It reviews the major changes and future trends in the industry in detail. It tells us, for instance, that the share of mobile phones accounts for 20% of

all telecommunications expenditure. With the expansion of networks and the liberalisation of the market in the majority of OECD countries, mobile communications have cornered the mass market. In early 1992 there were fewer than 15 million mobile cellphone users. By 1997 there were over 173 million: a real boon for telecommunications operators, which are relentless in their efforts to find attractive new charging formulae. Competition is also beginning to transform the fixed telecommunications market, although change is slower and often confined in some countries to just one or two market sectors, such as long-distance or international services.

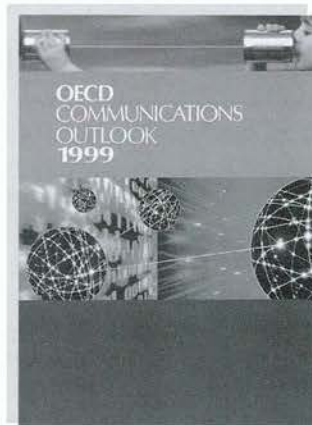
Besides mobile communications, the Internet is indisputably the main potential source of revenue to appear on the scene over the period 1992-1997. The structure of this industry has been rapidly transformed: for example, Internet access was initially offered by service providers, which have now practically all been taken over by major telecoms operators offering access as one

of a range of services. A case in point is AT&T Worldnet, launched in February 1996, which signed up its millionth Internet customer in the fourth quarter of 1997. Although lower than mobile phone and Internet revenues, earnings from broadcasting in Member countries are still substantial: \$145.3 billion in 1997, of which 84.4% is from television. Five countries – the United States, Japan, Germany, the United Kingdom and France – still account for almost 80% of the total market, with the United States alone accounting for 40.2%. Of the 50 largest companies in the world, 49 belong to OECD countries. The main players are still terrestrial broadcasting companies, although cable television companies, like Viacom and TCI, and pay television companies like Canal Plus and BSkyB are also on the list. With the entry on the market and rapid development of cable and pay television companies, revenues from subscription charges for these services have generated a substantial flow of income that is vital for the television sector. These charges now account for 32.1% of the

television market's revenues in the OECD area, or more than double what it receives in government funding and advertising revenues. The advent of digital transmission should speed up this trend. The upheaval that this new information technology has caused throughout the communications industry is far from over. It enables digital television to provide better picture and sound quality and to vastly increase the number of channels that can be transmitted on the same bandwidth. Among other services, digital television could provide improved data facility and a host of interactive services, ranging from electronic commerce to video-on-demand and high-speed access to the Internet. For telecommunications companies, the opportunities are vast. Could it be that all current forecasts are still on the conservative side? ■

OECD Communications
Outlook, 1999

ISBN: 92-64-17013-8,
US\$71, FF400, pp.256



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Edward Taylor, Antonio Yunez-Naude

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OECD Code: 41 1999 05 1 P

ISBN: 92-64-17033-2

Publication date: April 1999, 98pp.

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Also available in French (OECD Code: 41 1999
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No. Tables: 41, No. Charts: 25

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Publication date: April 1999, 172pp.

No. Tables: 122, No. Charts: 3

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The information is designed for use by development agencies and institutions involved in country and sector programming and analysis. Within each country, transactions are ordered by commitment year and sector, and within each sector, by donor.

The data are taken from the CRS database which is regularly updated and contains records from 1973 onwards. It is available on the yearly CD-Rom Creditor Reporting System: Individual Financial Transactions.

Bilingual publication

OECD Code: 43 1999 59 3 P

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Publication date: May 1999, 90pp.

No. Tables: 42, No. Charts: 3

FF 120 US\$ 21 DM 36 £ 13 ¥ 2450 Also available on CD-ROM

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Publication date: April 1999

No. Tables: 288

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No. Tables: 38, No. Charts: 19

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ISBN: 92-64-17027-8

Publication date: March 1999, 218pp.

No. Tables: 45, No. Charts: 57

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Bilingual publication

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Publication date: March 1999, 404pp.

No. Tables: 77

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Publication date: May 1999

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This volume addresses these questions, drawing on a major OECD/Japan conference which was held in Hiroshima and attended by experts from 24 countries and a 'virtual' conference conducted in parallel. It presents key trends and policy challenges regarding schools for today and tomorrow, from European traditions across to the different perspectives of the Asia-Pacific region, with a particular focus on Japan. Alongside expert chapters are the innovative schools themselves, with examples taken and synthesised from many of the countries that attended the Hiroshima conference. The volume addresses issues of curriculum, innovation and the achievement of lifelong learning in the schools of tomorrow.

OECD Code: 96 1999 02 1 P

ISBN: 92-64-17021-9

Publication date: April 1999, 136pp.

No. Tables: 1, No. Charts: 1

FF 140 US\$ 25 DM 42 £ 15 ¥ 3150

Also available in French (OECD Code: 96 1999 02 2 P ISBN: 92-64-27021-3)

Overcoming Exclusion through Adult Learning

The phenomenon of social exclusion has become one of the outstanding problems on the eve of the 21st century. Even with the long-term trend towards rising general levels of affluence across OECD countries, large sections of our societies are missing out and for some prospects are getting worse. Learning – in formal education and in a wide range of other community and enterprise settings – represents one of the most important means of overcoming exclusion. While much is known about the impact of schooling for young people, the relationships between exclusion and adult learning are less well examined.

This study seeks to address this gap, focusing on 19 innovative learning initiatives that are making the difference in six countries: Belgium (Flemish Community), Mexico, the Netherlands, Norway, Portugal, the United Kingdom (England). How well do these initiatives meet the learning needs of adults at risk of exclusion? How are they organised and what are their innovative features? These are the key questions answered, taking into account not only the point of view of the analysts, organisers and administrators, but also that of the adult learners themselves.

OECD Code: 96 1999 03 1 P

ISBN: 92-64-17026-X

Publication date: April 1999, 180pp.

No. Charts: 6

FF 160 US\$ 29 DM 48 £ 17 ¥ 3600

Also available in French (OECD Code: 96 1999 03 2 P ISBN: 92-64-27026-4)

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A New Framework for Assessment

OECD Code: 96 1999 05 1 P

ISBN: 92-64-17053-7

Publication date: May 1999, 84pp.

No. Tables: 11, No. Charts: 6

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Also available in French (OECD Code: 96 1999 05 2 P ISBN: 92-64-27053-1)

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Japan

1999 Edition

This IEA report provides a comprehensive in-depth assessment of the energy policies of Japan, including recommendations for policy development.

OECD Code: 61 1999 01 1 P

ISBN: 92-64-17018-9

Publication date: March 1999, 160pp.

FF 420 US\$ 75 DM 125 £ 45 ¥ 8950

Regulatory Reform in Argentina's Natural Gas Sector 1974/1999

This report – the first IEA study to focus on Argentina – critically reviews the impact of gas-sector reforms. It identifies challenges that policy-makers, regulatory and competition authorities still confront, in particular the promotion of competition in gas supply.

OECD Code: 61 1999 02 1 P

ISBN: 92-64-17019-7

Publication date: March 1999, 80pp.

FF 420 US\$ 75 DM 125 £ 45 ¥ 8950

The Future Role of Coal

Markets, Supply and the Environment

OECD Code: 61 1999 04 1 P

ISBN: 92-64-17048-0

Publication date: April 1999, 156pp.

FF 455 US\$ 80 DM 136 £ 48 ¥ 9350

International Collaboration in Energy Technology

A Sampling of Success Stories

Enhanced energy technology is the key to ensuring environmental sustainability together with economic growth and energy security. In the drive to develop cleaner, more efficient energy technologies, what role does international collaboration play? This publication provides an array of success stories illustrating how the International Energy Agency's collaborative framework for energy technology development has speeded advances towards more comprehensive solutions. In coal combustion sciences, for example, one project generated equipment sales worth over \$400 million in one participating country alone.

More than 30 countries world-wide participate in the programme, which mobilises close to \$150 million annually. Costs and resources are shared among participating governments, utilities, industries and universities, thus ensuring maximum yield from research budgets and avoiding unproductive duplication of effort. The technology collaboration programme operates through agreements among governments. The 40 currently active agreements focus on the dissemination of energy technology information, cleaner use of fossil fuels, development of renewable energy sources and systems, more efficient energy use and nuclear fusion technologies.

OECD Code: 61 1999 05 1 P

ISBN: 92-64-17057-X

Publication date: 06-99, 126pp.

FF 680 US\$ 120 DM 203 £ 72 ¥ 14000

OECD Proceedings

Ion and Slow Positron Beam Utilisation

Costa da Caparica, Portugal, 15–17 September 1998

The use of ion beams in nuclear research is well established, with many facilities and networks of experts active in the field. Applications for ion beams are expanding, in particular in the development of new materials, biotechnology and the creation of new isotopes. Positron beams are likewise a very powerful tool for observing and influencing microscopic material structures, as well as for medical diagnosis.

The combined utilisation of ion and positron beams is expected to open up new horizons in the areas of material science and biotechnology. These proceedings provide an overview of the latest developments in this field, and highlight areas for future international co-operation.

OECD Code: 66 1999 04 1 P

ISBN: 92-64-17025-1

Publication date: March 1999, 236pp.

FF 400 US\$ 72 DM 119 £ 43 ¥ 8500

OECD Proceedings

Shielding Aspects of Accelerators, Targets and Irradiation Facilities – SATIF 4

Workshop Proceedings Knoxville, Tennessee, USA, 17–18 September 1998

Over the last 50 years particle accelerators have evolved from simple devices to powerful machines, and will continue to have an important impact on research, technology and lifestyle. Today, they cover a wide range of applications, from television and computer displays in households to investigating the origin and structure of matter. It has become common practice to use particle accelerators for material science and medical applications.

In recent years, requirements from new technological and research applications have emerged, giving rise to new radiation shielding aspects and problems. These workshop proceedings review recent progress in radiation shielding of accelerator facilities, evaluating advancements and discussing further developments needed with respect to international

co-operation in this field.

OECD Code: 66 1999 06 1 P

ISBN: 92-64-17044-8

Publication date: May 1999, 308pp.

No. Tables: 73, No. Charts: 225

FF 500 US\$ 88 DM 149 £ 53 ¥ 10300

OECD Proceedings

Physics and Fuel Performance of Reactor-Based Plutonium Disposition

Workshop Proceedings Paris, France, 28–30 September 1998

Following recent disarmament agreements, the Russian Federation and the USA have declared part of their stockpiles of weapons-grade plutonium as a surplus to their national defense needs. This material needs to be disposed of, and one of the suggested means of doing so is burning it in existing reactors and transforming the material into spent fuel. The experience in these two countries with mixed oxide fuel (MOX) is either dated or scarce. Several European countries and Japan, however, have acquired much experience in using MOX fuel in reactors which was shared at this important workshop.

This publication presents the workshop results which reviewed existing technical information from the civil nuclear power programmes that are beneficial to weapons-grade plutonium disposition. It also proposes concrete actions that could help expedite this process in the near future.

OECD Code: 66 1999 07 1 P

ISBN: 92-64-17050-2

Publication date: May 1999, 236pp.

No. Tables: 38, No. Charts: 106

FF 400 US\$ 70 DM 119 £ 43 ¥ 8200

Nuclear Energy Data 1999

Nuclear Energy Data is the OECD Nuclear Energy Agency's annual compilation of basic statistics on electricity generation and nuclear power in OECD countries. The reader will have quick and easy reference to the status of and projected trends in total electricity generating capacity, nuclear generating capacity, and actual electricity production, as well as to supply and demand for nuclear fuel cycles services.

Bilingual publication

OECD Code: 66 1999 08 3 P

ISBN: 92-64-05856-7

Publication date: May 1999, 48pp.

No. Tables: 11, No. Charts: 9

FF 120 US\$ 21 DM 36 £ 13 ¥ 2400

Nuclear Legislation, Analytical Study

Regulatory and Institutional Framework for Nuclear Activities – 1998 Update

OECD Code: 66 1999 63 1 P

ISBN: 92-64-17024-3

Publication date: April 1999, 220pp.

FF 150 US\$ 27 DM 45 £ 16 ¥ 3200

Also available in French (OECD Code: 66 1999 63 2 P ISBN: 92-64-27024-8)

Second International Nuclear Emergency Exercise – INEX 2

Final Report of the Swiss Regional INEX 2 Exercise

The NEA-sponsored International Nuclear Emergency Exercises (INEX) are global exercises designed to test the emergency management of nuclear accidents. The INEX 2 series includes four exercises based on simulated accidents at nuclear power plants in Switzerland, Finland, Hungary and Canada. This report describes the experience gained from the simulated accident in Switzerland, which focused on the communication, decision-making and public/media interaction aspects of an emergency situation.

Bilingual publication

OECD Code: 66 1999 02 3 C3

ISBN: 92-64-06760-4

Publication date: March 1999

FF 500 US\$ 88 DM 149 £ 53 ¥ 11600

Environment

Environmental Performance Reviews

Denmark

This report is part of the OECD Environmental Performance Review Programme which conducts peer reviews of environmental conditions and progress in each Member country. It scrutinises efforts to meet both domestic objectives and international commitments. Evaluating progress in reducing the pollution burden, improving natural resource management, integrating environmental and economic policies, and strengthening international co-operation are also central to these reviews. The analyses presented are supported by a broad range of economic and environmental data.

Environmental performance reviews of Australia, Austria, Belarus, Belgium, Bulgaria, Canada, Czech Republic, Finland, France, Germany, Iceland, Italy, Japan, Korea, Mexico, the Netherlands, New Zealand, Norway, Poland, Portugal, Spain, Sweden,

Switzerland, the United Kingdom and the United States have already been published.

OECD Code: 97 1999 01 1 P

ISBN: 92-64-17008-1

Publication date: April 1999, 224pp.

No. Tables: 25, No. Charts: 15

FF 180 US\$ 35 DM 55 £ 23 ¥ 4140

Also available in French (OECD Code: 97 1999 01 2 P ISBN: 92-64-27008-6)

Environmental Performance Reviews

Czech Republic

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OECD Code: 97 1999 02 1 P

ISBN: 92-64-17009-X

Publication date: April 1999, 204pp.

No. Tables: 30, No. Charts: 41

FF 180 US\$ 35 DM 55 £ 23 ¥ 4140

Also available in French (OECD Code: 97 1999 02 2 P ISBN: 92-64-27009-4)

OECD Documents

Environmental Requirements for Industrial Permitting

Vol 1 – Approaches and Instruments
Vol 2 – OECD Workshop on the Use of Best Available Technologies and Environmental Quality Objectives, Paris, 9–11 May 1996
Vol 3 – Regulatory Approaches in OECD Countries

OECD Code: 97 1999 03 1 P

ISBN: 92-64-16193-7

Publication date: March 1999, 484pp.

No. Tables: 12, No. Charts: 48

FF 580 US\$ 97 DM 173 £ 60 ¥ 13550

OECD Guidelines for the Testing of Chemicals October 1998

Bilingual publication

OECD Code: 97 1998 56 3 C3

ISBN: 92-64-06720-5

Publication date: March 1999

No. Tables: 11, No. Charts: 4

FF 2100 US\$ 355 DM 625 £ 216 ¥ 50100

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OECD FINANCIAL STATISTICS

Financial Accounts of OECD Countries provide flow-of-funds and balance-sheet accounts for most of the Member countries, detailed by sectors and by financial instruments. These accounts are integrated in an overall framework that is compatible with the concepts employed in the United Nations System of National Accounts. Annual data are published in booklets by country as soon as they are available.

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Bilingual publication

OECD Code: 20 1998 27 3 P

ISBN: 92-64-05844-3

Publication date: April 1999, 48pp.

No. Tables: 20

FF 80 US\$ 14 DM 24 £ 8 ¥ 2080

Also available on Disk (OECD Code: 20 1998 27 3 D3 ISBN: 92-64-07276-4)

Germany 1982/1997

Bilingual publication

OECD Code: 20 1998 25 3 D3

ISBN: 92-64-07277-2

Publication date: April 1999

No. Tables: 16

Belgium 1981/1996

Bilingual publication

OECD Code: 20 1998 26 3 D3

ISBN: 92-64-07275-6

Publication date: April 1999

Sweden 1981/1996

Bilingual publication

OECD Code: 20 1998 28 3 P

ISBN: 92-64-05853-2

Publication date: April 1999, 72pp.

No. Tables: 20

FF 80 US\$ 14 DM 24 £ 8 ¥ 2080

Liberalisation of International Insurance Operations

Cross-border Trade and Establishment of Foreign Branches

Bilingual publication

OECD Code: 21 1999 02 3 P

ISBN: 92-64-05846-X

Publication date: June 1999, 240pp.

No. Tables: 175

FF 400 US\$ 69 DM 119 £ 42 ¥ 8050

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1999 Edition

Also available on diskettes

For users who wish to extract data and build graphs and tables, a diskette version is available in Beyond 20/20™ for Windows™, user-friendly software.

Bilingual publication

OECD Code: 21 1999 05 3 P

ISBN: 92-64-05858-3

Publication date: June 1999, 312pp.

No. Tables: 235

FF 480 US\$ 83 DM 143 £ 50 ¥ 9650

The Tax/Benefit Position of Employees 1997

1998 Edition

This annual publication provides unique information on direct taxes levied from employees and their employers in all OECD Member countries. In addition, the book specifies family benefits paid as cash transfers. Amounts of taxes and benefits are detailed programme by programme, for eight household types, which differ by income level and household composition. Results include the tax burden for one- and two- earner families.

The data on tax burdens and family benefits reported here are widely used in academic research and the preparation and evaluation of social and economic policy-making.

Bilingual publication

OECD Code: 23 1999 01 3 P

ISBN: 92-64-05833-8

Publication date: March 1999, 384pp.

No. Tables: 42, No. Charts: 7

FF 430 US\$ 77 DM 128 £ 46 ¥ 9650

Also available on Disk (OECD Code: 23 1999 01 3 D3 ISBN: 92-64-06761-2)

Consumption Tax Trends

1999 Edition

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OECD Code: 23 1999 02 1 P

ISBN: 92-64-17035-9

Publication date: May 1999, 100pp.

No. Tables: 24, No. Charts: 5

FF 190 US\$ 33 DM 57 £ 20 ¥ 3900

Taxation of Cross-border Portfolio Investment

Mutual Funds and Possible Tax Distortions

OECD Code: 23 1999 03 1 P

ISBN: 92-64-17045-6

Publication date: April 1999, 176pp.

No. Tables: 41, No. Charts: 12

FF 320 US\$ 56 DM 95 £ 34 ¥ 6600

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OECD Code: 14 1999 02 1 P

ISBN: 92-64-17083-9

Publication date: June 1999, 128pp.

FF 175 US\$ 30 DM 52 £ 18 ¥ 3500

Industry, Science and Technology

The OECD STAN Database for Industrial Analysis 1978/1997

1998 Edition

ALSO AVAILABLE ON DISKETTE

Bilingual publication

OECD Code: 92 1999 01 3 P

ISBN: 92-64-05832-X

Publication date: March 1999, 378pp.

No. Tables: 82, No. Charts: 3

FF 440 US\$ 79 DM 131 £ 47 ¥ 9350

Also available on Disk (OECD Code: 92 1999 01 3 D3 ISBN: 92-64-06709-4)

OECD Communications Outlook 1999 Edition

OECD Code: 93 1999 02 1 P

ISBN: 92-64-17013-8

Publication date: March 1999, 256pp.

No. Tables: 136, No. Charts: 85

FF 400 US\$ 71 DM 119 £ 43 ¥ 8950

Also available in French (OECD Code: 93 1999 02 2 P ISBN: 92-64-27013-2)

Also available on Disk (OECD Code: 93 1999 02 3 D3 ISBN: 92-64-06768-X)

OECD Proceedings

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International Policy Issues

OECD Code: 93 1999 03 1 P

ISBN: 92-64-17030-8

Publication date: March 1999, 116pp.

No. Tables: 4, No. Charts: 3

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ISBN: 92-64-05845-1

Publication date: April 1999, 156pp.

No. Tables: 116

FF 340 US\$ 60 DM 101 £ 36 ¥ 7000

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OECD Proceedings

The Social Sciences at a Turning Point?

OECD Code: 93 1999 05 1 P

ISBN: 92-64-16956-3

Publication date: April 1999, 128pp.

No. Tables: 13, No. Charts: 11

FF 200 US\$ 35 DM 60 £ 21 ¥ 4100

The Public Employment Service

United States

OECD Code: 81 1999 02 1 P

ISBN: 92-64-17011-1

Publication date: April 1999, 232pp.

No. Tables: 46, No. Charts: 19

FF 200 US\$ 36 DM 60 £ 21 ¥ 4500

Also available in French (OECD Code: 81 1999 02 2 P ISBN: 92-64-27011-6)

OECD Proceedings

Towards Lifelong Learning in Hungary

OECD Code: 91 1999 01 1 P

ISBN: 92-64-17023-5

Publication date: May 1999, 92pp.

No. Tables: 40, No. Charts: 1

FF 130 US\$ 23 DM 39 £ 14 ¥ 2750

Territorial Development

OECD Proceedings

Decentralising Employment Policy: New Trends and Challenges

The Venice Conference

OECD Code: 04 1999 04 1 P

ISBN: 92-64-17055-3

Publication date: April 1999, 252pp.

FF 260 US\$ 46 DM 78 £ 28 ¥ 5350

Cultivating Rural Amenities

An Economic Development Perspective

OECD Code: 04 1999 05 1 P

ISBN: 92-64-17060-X

Publication date: May 1999, 116pp.

No. Tables: 4, No. Charts: 3

FF 150 US\$ 26 DM 45 £ 16 ¥ 3000

Also available in French (OECD Code: 04 1999 05 2 P ISBN: 92-64-27060-4)

Transport

14th International Symposium on Theory and Practice in Transport Economics

Which Changes for Transport in the Next Century?

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ISBN: 92-82-11241-1

Publication date: March 1999, 460pp.

No. Tables: 67, No. Charts: 60

FF 590 US\$ 105 DM 176 £ 63 ¥ 13200

Also available in French (OECD Code: 75 1999 01 2 P ISBN: 92-82-12241-7)

Investment in Transport Infrastructure – 1985–1995

OECD Code: 75 1999 02 1 P

ISBN: 92-82-11242-X

Publication date: May 1999, 460pp.

No. Tables: 357, No. Charts: 32

FF 550 US\$ 97 DM 164 £ 59 ¥ 11300

Also available in French (OECD Code: 75 1999 02 2 P ISBN: 92-82-12242-5)

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1999 Edition

OECD Code: 75 1999 03 1 P

ISBN: 92-82-11243-8

Publication date: March 1999, 70pp.

No. Tables: 16, No. Charts: 13

FF 60 US\$ 11 DM 18 £ 6 ¥ 1300

Also available in French (OECD Code: 75 1999 03 2 P ISBN: 92-82-12243-3)

Improving Transport for People with Mobility Handicaps

A Guide to Good Practice

OECD Code: 75 1999 04 1 P

ISBN: 92-82-11244-6

Publication date: May 1999, 80pp.

No. Charts: 2

FF 120 US\$ 21 DM 36 £ 13 ¥ 2450

Also available in French (OECD Code: 75 1999 04 2 P ISBN: 92-82-12244-1)

Social Aspects of Road Transport

OECD Code: 75 1999 05 1 P

ISBN: 92-82-11245-4

Publication date: May 1999, 172pp.

No. Tables: 29, No. Charts: 14

FF 240 US\$ 42 DM 72 £ 26 ¥ 4950

Also available in French (OECD Code: 75 1999 05 2 P ISBN: 92-82-12245-X)

Round Tables – ECMT

What Markets are there for Transport by Inland Waterways?

No. 108

OECD Code: 75 1999 06 1 P

ISBN: 92-82-11246-2

Publication date: June 1999, 236pp.

No. Tables: 48, No. Charts: 10

FF 300 US\$ 53 DM 89 £ 32 ¥ 6150

Also available in French (OECD Code: 75 1999 06 2 P ISBN: 92-82-12246-8)

Communication in Road Safety International Seminar – Warsaw, 2–3 October 1997

OECD Code: 75 1999 07 1 P

ISBN: 92-82-11237-3

Publication date: May 1999, 162pp.

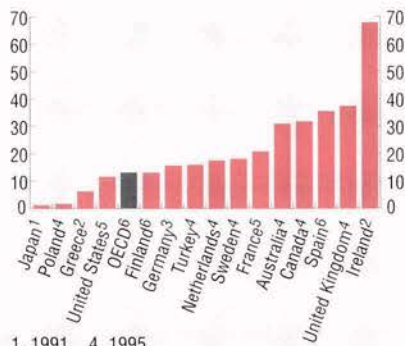
No. Tables: 3, No. Charts: 27

FF 250 US\$ 42 DM 74 £ 26 ¥ 5950

Also available in French (OECD Code: 75 1999 07 2 P ISBN: 92-82-12237-9)

Internationalisation of industrial R & D

Share of foreign affiliates
in total R&D



1. 1991. 4. 1995.
2. 1993. 5. 1996.
3. 1994. 6. 1997.

Source: OECD

R&D is less internationalised than production. The share of R&D performed by foreign affiliates ranges from 1% to 68% of total R&D, the average for the OECD area being 14%. The amount of R&D performed in a country by foreign affiliates reflects both that country's attractiveness – quality of scientific personnel and of research centres, relative costs, degree of openness, size of the market

served – and the relative strength or weakness of national firms' R&D. The foreign share is small in Japan (1%), Poland (2%) and Greece (6.5%), but large in Ireland (68%) and Spain (36%), where the R&D effort of national firms is comparatively modest. The foreign contribution is also large in the United Kingdom (37.5%) and Sweden (18.5%), where it supplements an important domestic effort. ■

Foreign ideas

Japan is the OECD country where research is the least internationalised. The share of inventions owned by non-residents there, that is, inventions made in laboratories belonging to foreign firms, is very low, at less than 4%. On average, non-residents owned 8% of the inventions made in OECD countries in the mid-1990s, against 6% in the mid-1980s. In nearly all countries the share of inventions owned by non-residents has increased, which is a clear sign of the globalisation of R&D. Foreign ownership of inventions is high in countries like Austria, Belgium and Ireland, owing to the attractiveness of local research capacity. The countries that are "catching up" and still have little local research capacity, as in the case of Hungary, Mexico and Turkey, rely heavily on international technology flows. ■

Foreign ownership
of domestic inventions
1993–95

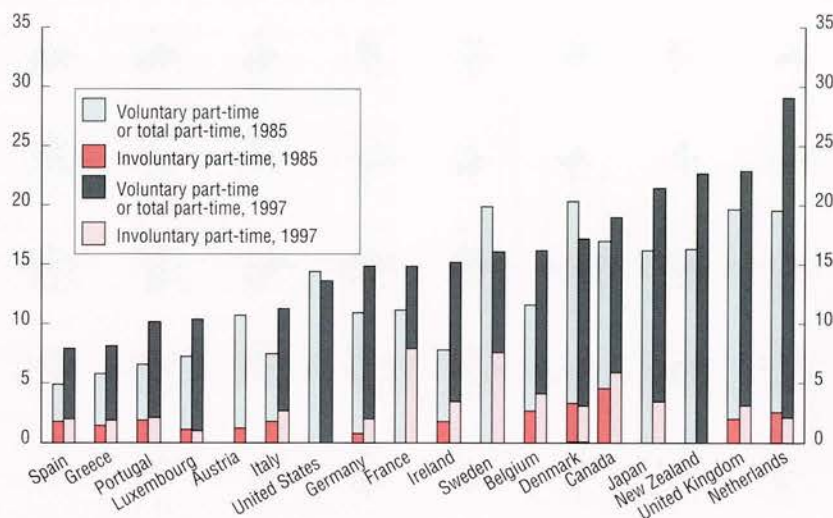


Share of patent applications to the EPO owned by foreign residents in total patents invented domestically.

Source: OECD, based on data from the European Patent Office

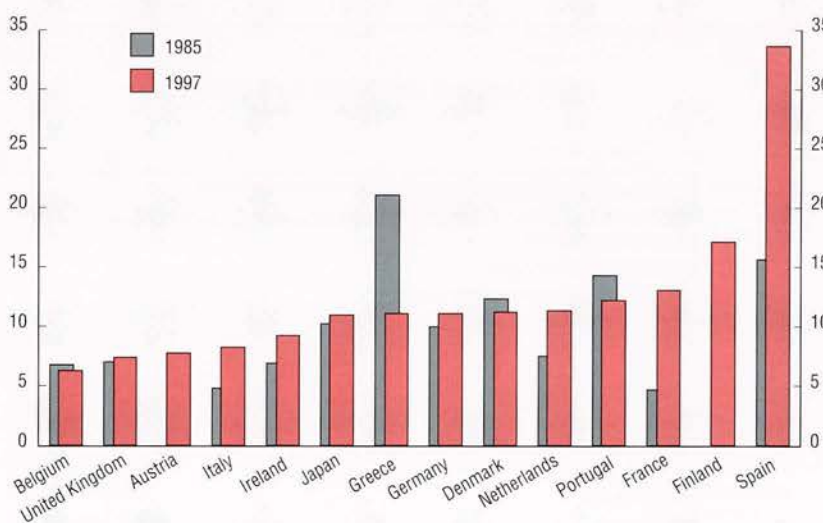
Temporary and part-time employment

Part-time employment



Source: OECD Employment Outlook, 1998.

Temporary employment



Source: OECD Employment Outlook, 1998.

With the exception of Denmark, Sweden and the United States, the long-term upward trend in part-time working has continued in nearly all OECD countries since the mid-1980s. The variations across the OECD area are wide, however: the share of part-time work in total employment ranges from over 25% in the Netherlands, Australia and the United Kingdom to under 10% in Greece and Spain. The proportion of involuntary part-time working is generally low, except in countries like France and Sweden where unemployment is high.

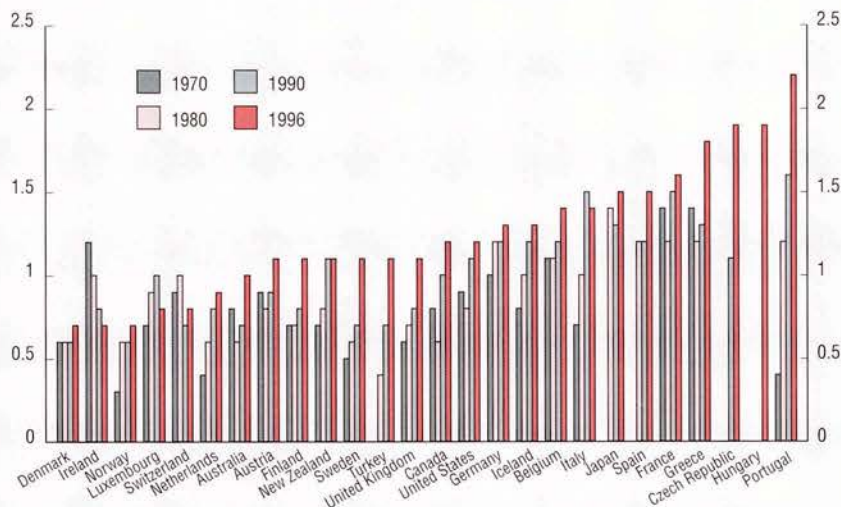
In the case of temporary work, there are fewer indications of a general upward trend over the long term. Other than in Australia, Finland and Spain, less than 15% of employees are engaged in temporary work in OECD countries. The steepest increases in temporary employment have occurred in Spain, France, the Netherlands and Australia. As in the case of involuntary part-time working, it would seem that temporary work is increasing more in high-unemployment countries. ■

Note:

- For notes and further details on these charts, please contact: els.contact@oecd.org.
- The 1999 edition of the Employment Outlook is now out: ISBN: 92-64-17063-4 and is available on the OECD Internet site at: www.oecd.org/els/

Pharmaceuticals

Total expenditure on pharmaceutical goods
as % of GDP



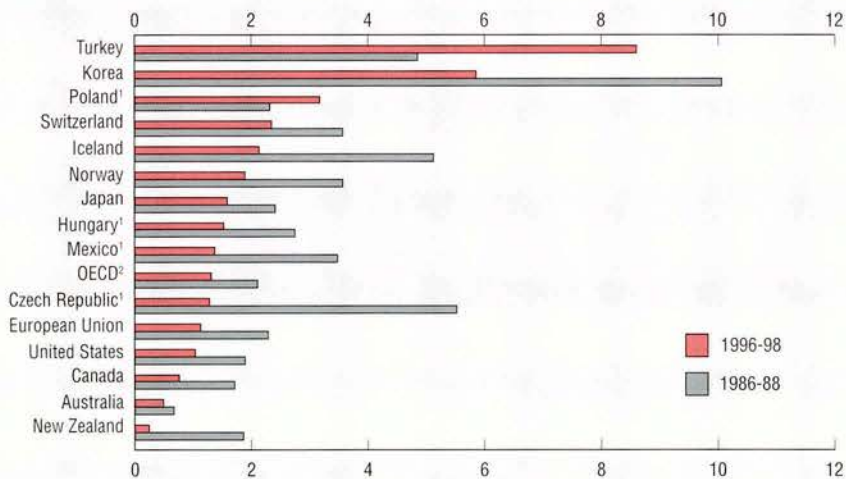
Source: OECD Health Data, 1998.

Total expenditure on pharmaceutical goods in OECD countries represents between 0.7% and 2.2% of GDP. These figures are important to policy-makers since, in most countries, more than half of this expenditure is reimbursed from public funds, and also because R&D plays a key role in the pharmaceuticals industry. Expenditure on pharmaceutical products has risen significantly since 1970 in most of the developed countries with relatively high labour costs and high unit costs as a result. This may explain why pharmaceutical expenditure represents a large share of GDP in OECD countries. That share is much larger in countries where per capita GDP is relatively low, like Portugal, Hungary and the Czech Republic, than it is in countries like Switzerland, Luxembourg, Norway and Denmark. Pharmaceutical consumption levels are also heavily influenced by the particular institutional and regulatory features of health care systems. ■

Agricultural support

Farm policy support to producers fell from 2.1% of GDP in 1986-88 to 1.3% in 1996-98. It decreased in all countries except Turkey and Poland. The down-trend was particularly marked in the Czech Republic, Korea and New Zealand. By and large, it has coincided with the introduction of policies to liberalise agricultural markets. The share of GDP allocated to agricultural support is still high in Turkey, Korea, Switzerland, Poland and Iceland. It seems lower in the United States and the European Union, but on a value basis US and European support to agriculture is above the average for the OECD area. ■

Total support estimate by country
% of GDP



Notes: Countries are ranked according to 1996-98 levels.

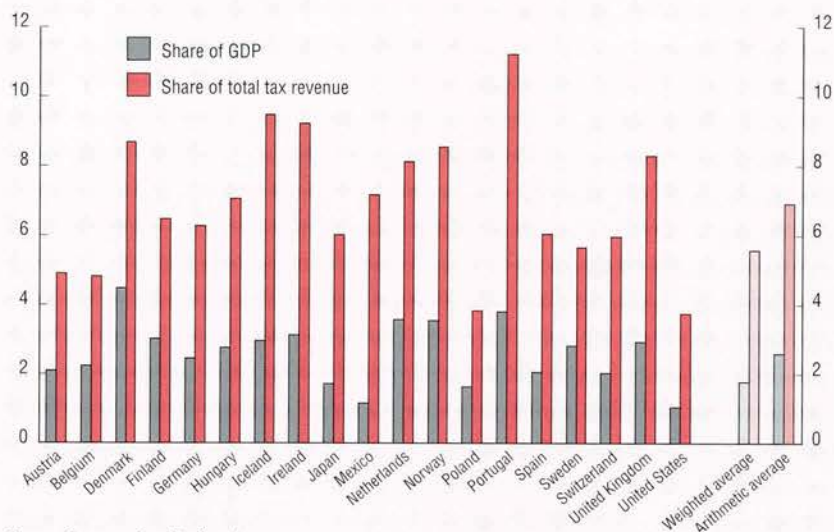
1. For the Czech Republic, Hungary, Mexico and Poland, 1986-88 is replaced by 1991-93.

2. For 1986-88, the Czech Republic, Hungary and Poland are excluded.

Source: OECD, PSE/CSE database.

Environmental taxes

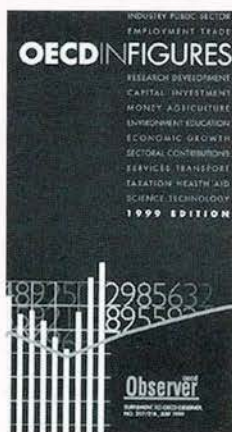
Revenues from environmentally-related taxes % of GDP and total tax revenue, 1995



Source: Consumption Tax Trends.

In 1995 revenue raised by environmentally-related taxes in 19 OECD countries constituted, as an arithmetic average, about 2.5% of GDP and just under 7% of total tax revenue. As a GDP-weighted average, it amounted to 1.75% of GDP and around 5.5% of total revenue. The ratio of environmentally related tax revenue to total tax revenue varies widely between countries: it is very high in Portugal, Iceland and Ireland, but low in Mexico, the United States, Poland and Japan. It must also be remembered that these taxes may encourage changes in behaviour regarding environmentally harmful products and activities, with a resulting decline in revenue from this source. ■

OECD IN FIGURES 1999 EDITION



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			% change from:				current period	same period last year	
			previous period	previous year					
	Australia	Gross domestic product	Q1 99	1.1	4.8	Current balance	Q1 99	-5.62	-4.40
		Leading indicator	May 99	0.2	7.2	Unemployment rate	May 99	7.5	8.1
		Consumer price index	Q1 99	-0.1	1.2	Interest rate	May 99	4.86	4.96
	Austria	Gross domestic product	Q1 99	0.4	1.1	Current balance	Apr. 99	-0.35	-0.29
		Leading indicator	Apr. 99	0.4	0.6	Unemployment rate	May 99	4.3	4.7
		Consumer price index	May 99	0.2	0.5	Interest rate	Dec. 98	3.40	3.84
	Belgium	Gross domestic product	Q4 98	-0.3	1.4	Current balance	Q1 99	3.00	2.41
		Leading indicator	May 99	0.2	-0.1	Unemployment rate	May 99	9.0	9.6
		Consumer price index	Jun. 99	-0.2	0.7	Interest rate	Dec. 98	3.30	3.64
	Canada	Gross domestic product	Q1 99	1.0	3.2	Current balance	Q1 99	-3.18	-5.38
		Leading indicator	Apr. 99	-3.1	-1.7	Unemployment rate	May 99	8.1	8.4
		Consumer price index	May 99	0.3	1.6	Interest rate	May 99	4.58	5.00
	Czech Rep.	Gross domestic product	Q1 99	-1.7	-4.5	Current balance	Q1 99	-0.32	-0.35
		Leading indicator		..	..	Unemployment rate	May 99	8.8	5.8
		Consumer price index	May 99	-0.1	2.3	Interest rate	Jun. 99	6.95	15.81
	Denmark	Gross domestic product	Q1 99	-0.3	1.0	Current balance	Mar. 99	-0.04	-0.40
		Leading indicator	Mar. 99	1.1	1.5	Unemployment rate	Apr. 99	4.7	5.3
		Consumer price index	May 99	0.2	2.1	Interest rate	Jun. 99	3.00	4.02
	Finland	Gross domestic product	Q1 99	0.6	3.9	Current balance	Dec. 98	0.86	0.84
		Leading indicator	Jan. 99	2.7	-1.0	Unemployment rate	May 99	10.5	11.8
		Consumer price index	May 99	0.2	1.4	Interest rate	Dec. 98	3.37	3.60
	France	Gross domestic product	Q4 98	0.7	2.8	Current balance	Mar. 99	3.12	2.60
		Leading indicator	May 99	0.3	0.8	Unemployment rate	May 99	11.2	11.7
		Consumer price index	May 99	0.0	0.4	Interest rate	Dec. 98	3.32	3.69
	Germany	Gross domestic product	Q1 99	0.4	0.8	Current balance	Apr. 99	3.04	0.88
		Leading indicator	May 99	0.1	-3.8	Unemployment rate	May 99	9.1	9.5
		Consumer price index	May 99	0.0	0.4	Interest rate	Dec. 98	3.38	3.74
	Greece	Gross domestic product	1997		3.2	Current balance	Mar. 98	-0.82	-0.75
		Leading indicator	Dec. 98	-0.2	0.6	Unemployment rate		..	..
		Consumer price index	May 99	-0.1	2.4	Interest rate	Jun. 99	8.70	11.70
	Hungary	Gross domestic product		..	..	Current balance	Apr. 99	-0.18	-0.06
		Leading indicator		..	..	Unemployment rate	May 99	9.8	9.7
		Consumer price index	May 99	0.7	8.9	Interest rate	May 99	14.90	18.40
	Iceland	Gross domestic product	1997		4.4	Current balance	Q4 98	-0.05	-0.07
		Leading indicator		..	..	Unemployment rate	May 99	1.9	3.0
		Consumer price index	Jun. 99	0.8	2.6	Interest rate	May 99	8.07	7.30
	Ireland	Gross domestic product	1997		10.6	Current balance	Q1 99	0.50	-0.20
		Leading indicator	May 99	-1.2	3.5	Unemployment rate	May 99	6.8	7.9
		Consumer price index	May 99	0.5	1.5	Interest rate	Dec. 98	3.22	6.07
	Italy	Gross domestic product	Q1 99	0.2	0.9	Current balance		..	..
		Leading indicator	Apr. 99	-0.4	-1.8	Unemployment rate	Apr. 99	12.0	12.3
		Consumer price index	May 99	0.2	1.5	Interest rate	Dec. 98	3.38	6.08
	Japan	Gross domestic product	Q1 99	1.9	0.1	Current balance	Apr. 99	7.39	8.04
		Leading indicator	May 99	-0.6	4.5	Unemployment rate	May 99	4.6	4.1
		Consumer price index	May 99	0.0	-0.4	Interest rate	Jun. 99	0.07	0.58

			% change from:					
			previous period	previous year				
	Gross domestic product	Q1 99	7.2	4.9	Current balance	Apr. 99	2.02	3.59
	Leading indicator		..	..	Unemployment rate	May 99	6.4	6.9
	Consumer price index	Jun. 99	-0.6	0.6	Interest rate	May 99	6.20	18.30
	Gross domestic product	1997		3.7	Current balance		..	..
	Leading indicator	May 99	0.3	-2.1	Unemployment rate	May 99	2.8	2.9
	Consumer price index	May 99	0.3	1.2	Interest rate		..	..
	Gross domestic product	Q1 99	0.9	2.3	Current balance	Q1 99	-2.92	-3.06
	Leading indicator	Mar. 99	2.3	5.6	Unemployment rate	May 99	2.5	3.2
	Consumer price index	May 99	0.6	18.0	Interest rate	May 99	21.02	18.85
	Gross domestic product	Q1 99	0.7	2.9	Current balance	Q3 98	4.82	6.40
	Leading indicator	Apr. 99	0.8	1.6	Unemployment rate	Apr. 99	3.3	4.2
	Consumer price index	May 99	0.0	2.3	Interest rate	Dec. 98	3.33	3.69
	Gross domestic product	Q1 99	1.1	1.7	Current balance	Q1 99	-0.48	-0.28
	Leading indicator		..	..	Unemployment rate	Q1 99	7.2	7.2
	Consumer price index	Q1 99	-0.3	-0.1	Interest rate	May 99	4.67	8.88
	Gross domestic product	Q1 99	0.6	1.4	Current balance	Q1 99	0.17	1.02
	Leading indicator	Apr. 99	1.0	0.9	Unemployment rate	Q1 99	2.9	3.3
	Consumer price index	May 99	-0.1	2.5	Interest rate	May 99	6.66	4.47
	Gross domestic product		..	..	Current balance	Sep. 98	-1.29	-0.45
	Leading indicator		..	..	Unemployment rate	May 99	11.8	9.9
	Consumer price index	May 99	0.7	6.5	Interest rate	May 99	12.24	21.50
	Gross domestic product	Q4 98	2.4	2.8	Current balance	Q2 98	-1.49	-0.49
	Leading indicator	Feb. 99	-3.5	-7.5	Unemployment rate	May 99	4.7	4.9
	Consumer price index	May 99	0.1	2.3	Interest rate	Jan. 99	3.10	4.84
	Gross domestic product	Q4 98	0.7	3.6	Current balance	Apr. 99	-1.03	0.30
	Leading indicator	Apr. 99	1.2	2.5	Unemployment rate	May 99	16.2	19.0
	Consumer price index	May 99	0.0	2.2	Interest rate	Dec. 98	3.36	4.83
	Gross domestic product	Q1 99	0.4	4.1	Current balance	Apr. 99	0.46	0.14
	Leading indicator	Apr. 99	1.4	1.1	Unemployment rate	May 99	6.8	8.9
	Consumer price index	May 99	0.2	0.1	Interest rate	Jun. 99	2.97	4.20
	Gross domestic product	Q1 99	0.3	1.1	Current balance	Q1 99	6.30	5.28
	Leading indicator	May 99	0.1	2.1	Unemployment rate	May 99	2.8	4.0
	Consumer price index	Jun. 99	0.1	0.6	Interest rate	May 99	0.91	1.51
	Gross domestic product	Q1 99	-3.3	-8.6	Current balance	Q4 98	1.73	-1.31
	Leading indicator		..	..	Unemployment rate	Q4 98	6.2	6.9
	Consumer price index	Jun. 99	3.3	64.3	Interest rate	Jun. 99	76.91	65.75
	Gross domestic product	Q1 99	0.0	0.7	Current balance	Q1 99	-2.99	-1.11
	Leading indicator	May 99	1.3	4.4	Unemployment rate	Mar. 99	6.3	6.4
	Consumer price index	May 99	0.2	1.3	Interest rate	Jun. 99	5.12	7.62
	Gross domestic product	Q1 99	1.1	4.0	Current balance	Q1 99	-68.58	-43.02
	Leading indicator	May 99	-0.3	1.2	Unemployment rate	May 99	4.2	4.4
	Consumer price index	May 99	0.0	2.1	Interest rate	Jun. 99	5.13	5.60

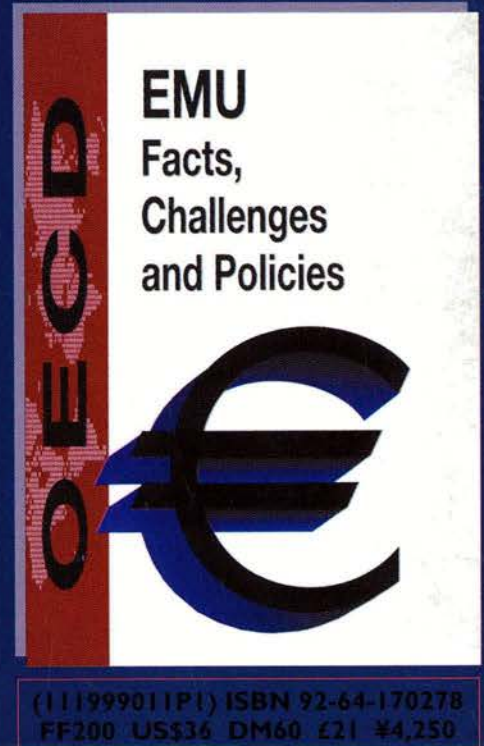
Definitions and notes

Gross Domestic product: Volume series, seasonally adjusted except for Portugal; **Leading indicator:** A composite indicator, based on other indicators of economic activity (employment, sales, income, etc.), which signals cyclical movements in industrial production from six to nine months in advance; **Consumer price index:** Measures changes in average retail prices of a fixed basket of goods and services; **Current balance:** \$ billion; not seasonally adjusted except for Australia, the United Kingdom and the United States; **Unemployment**

rate: % of civilian labour force – standardised unemployment rate; national definitions for Czech Republic, Iceland, Korea, Mexico, Poland, Switzerland and Turkey; seasonally adjusted apart from Turkey; **Interest rate:** Three months, except for Greece (twelve months) and Turkey (overnight interbank rate); .. not available

Sources: *Main Economic Indicators*, OECD Publications, Paris, December 1998.

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