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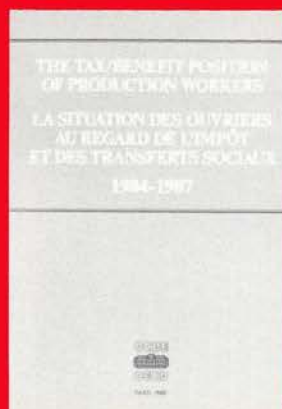
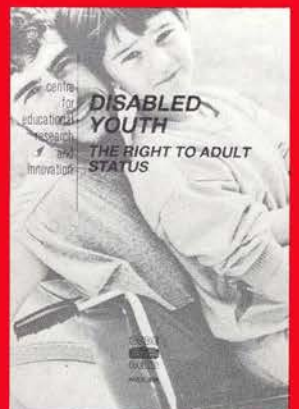
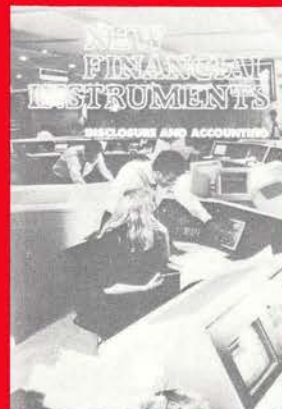
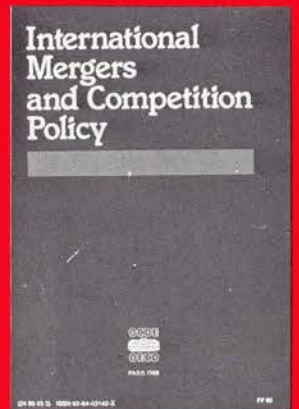
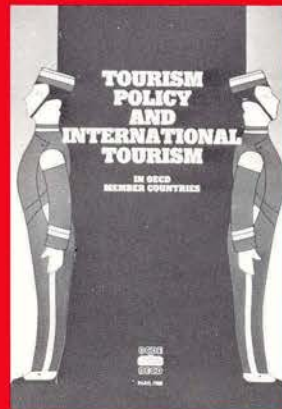
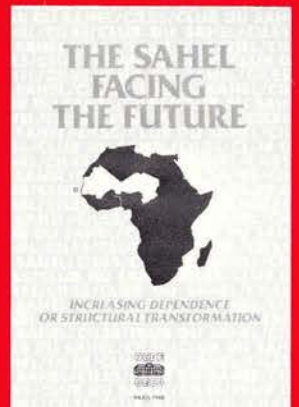
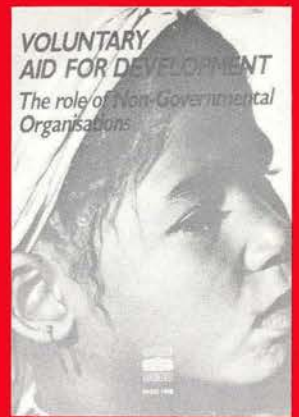
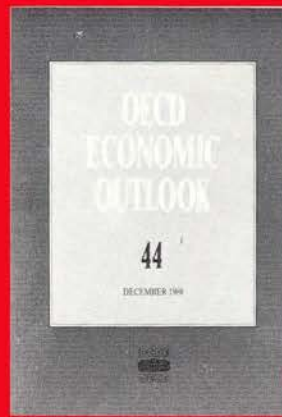
**The New Financial
Instruments**

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April/May 1989

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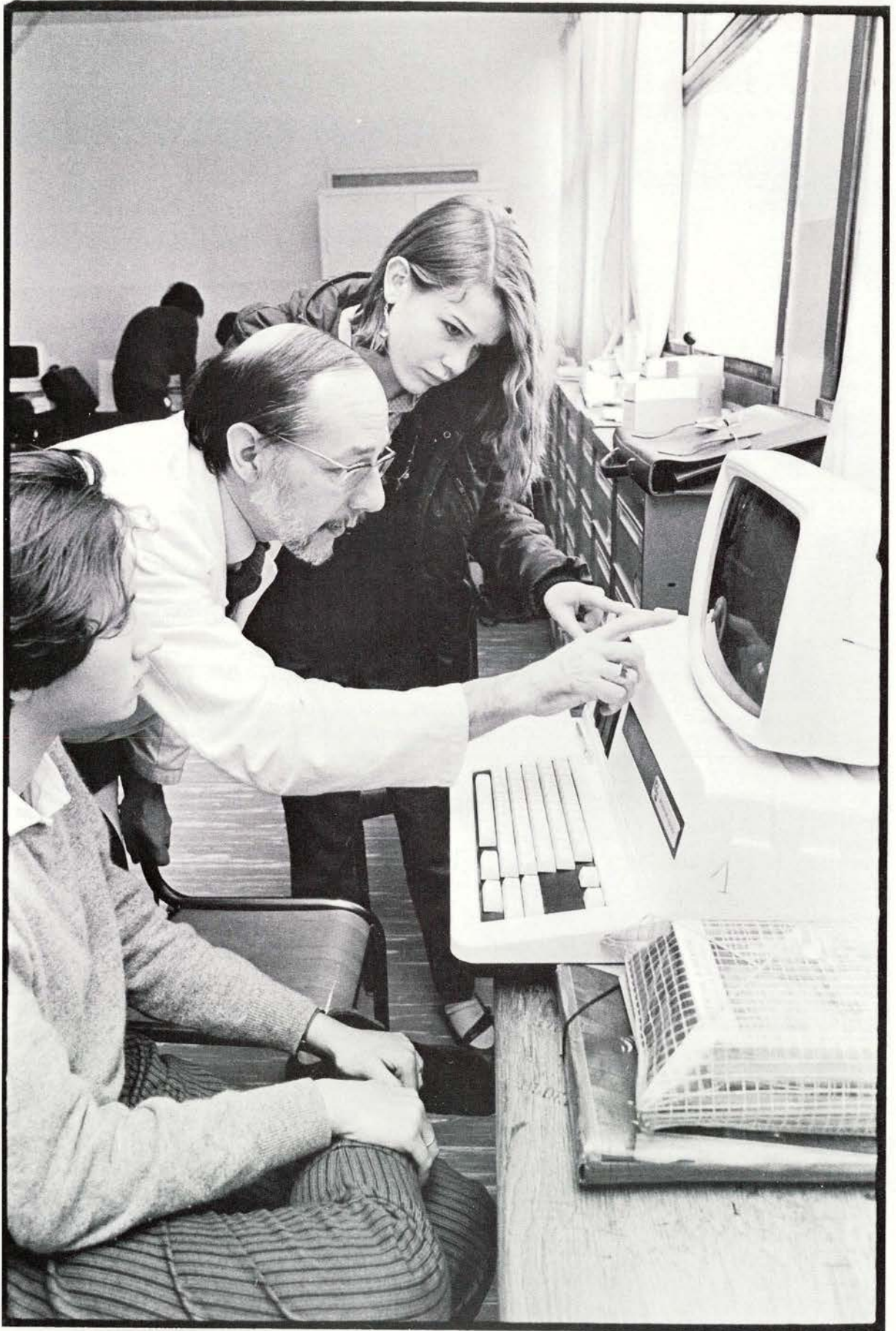
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April/May 1989



Cover: L. JOUAN/OECD

Seeing through a screen darkly? The description and assessment of computer software in education are essential if teachers are to know which products to choose.



Lespinasse/R. E. A.

Teaching: Software, Hard Choices

Pierre Duguet

The advent of the computer in the classroom will very likely revolutionise methods both of teaching and learning. Both difficulties in assessing the quality of software and in assuring that teachers are trained to use it threaten to brake the speed of this advance.

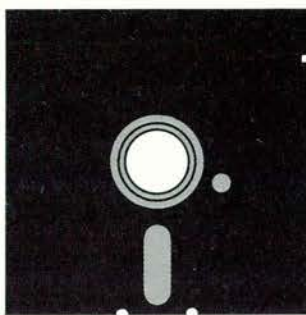
In most sectors of the economy the progress of computer technology has always been coupled with the development of powerful and matching software. But this has not been the case in education. Why not? Although there are a number of straightforward reasons, such as the cost of designing software packages and the resulting narrowness of the market at present, the real problem is far more complex.

First, the aim of educational software is to improve not only the teaching but also the learning process. Educational research has revealed how to improve the teaching process and thus how to design software of the 'drill-and-practice' variety, tests and certain types of simulation, and also how to use professional software for word processing, spreadsheets or access to data bases—but for the learning process, that stage has not yet been reached. There is no doubt that the cognitive sciences have provided a clearer understanding of the active nature of this process, but no one has yet perfected a methodology which will allow the examination and detailed explanation of how knowledge is structured. So far, little is known about how students learn or exactly what they learn when they interact with computer-based materials. Se-

cond, software must be adaptable to the wide range of educational methods and strategies used by teachers. The variables in software developed for educational purposes and the abilities it requires are therefore quite different from those which apply to software designed for a known process such as, for example, improving production in industry, commerce or administration.

The problem is compounded by the vast amount of educational software available compared with the number of textbooks, for the simple reason that a piece of software usually concerns only one aspect of the subject matter taught at a given stage. It is estimated that there are currently thousands of such programs on the market in certain OECD countries: over 10,000 in the United States produced by over 900 firms,¹ and between 1,000 and 4,000 each in Australia, Canada, France, Italy and the United Kingdom—and these figures are increasing all the time.

In addition to this, a teacher cannot 'thumb through' a computer program (i.e., a diskette) as he would a textbook, to get an idea of its content and methodology. How can a teacher who wants to use the computer as a teaching aid select the products that best suit his teaching requirements and his students' learning requirements? When they are looking for information about software, what teachers want to know is whether a program corresponds to what they require for their curriculum, what its content and methodology are, for what kind of students it is designed, how much it costs, whether any further hardware or software is needed to use it, how they go



1. *Power On: New Tools for Teaching and Learning*, Congress of the United States, Office of Technology Assessment, US Government Printing Office, Washington DC.

Pierre Duguet is a specialist in new information technologies and education at the OECD's Centre for Educational Research and Innovation (CERI).

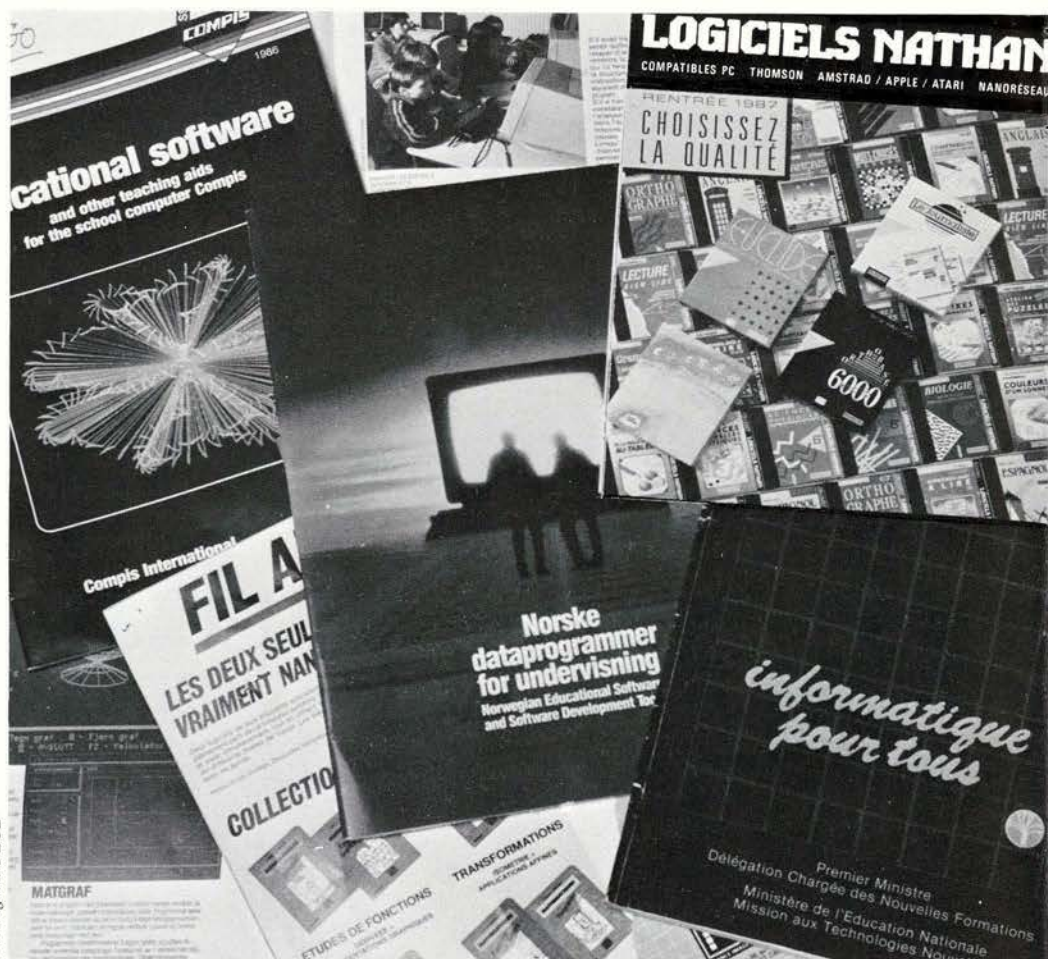
about previewing it and obtaining a copy and, especially important, whether it has been evaluated and by whom. Teachers want to know the answers to all these questions if they are to use the software effectively. If they do not, they are liable to become discouraged after trying inappropriate products brought to their attention by commercial advertising, and are apt totally to reject the computer as a teaching aid.

The OECD countries, recognising this situation, have set up—or are in the process of setting up—software information and evaluation centres. What sort of information do these centres provide and how do teachers have access to it? The OECD Centre for Educational Research and Innovation (CERI) tried to find out, prompting member countries to respond to the results of its investigations during the course of a seminar held at the OECD.² To appreciate the full significance of the five conclusions that emerged, it is essential from both a technical and an educational standpoint to differentiate between the three different types of information provided: a straightforward description of the software ('objective'), a review ('subjective') and a fully fledged evaluation of the software.

Five Conclusions for Policy

First Conclusion. *We cannot afford not to provide teachers with a description and a review of teaching and learning software.* The technical description should give such information as author, publisher, distributor, length of software programme, cost, required hardware, size of memory, screen, medium (cassette or diskette), language used, and the audio visual aids and peripherals required, such as mouse, light pen or joy stick. The

2. The General Report of this Seminar, prepared by John Winship, Curtin University of Technology, Western Australia, is scheduled for publication this spring.



G. Tingaud/OECD

pedagogical description should indicate the subject, target audience, type of program (tutorial, drill-and-practice, test, simulation, exploration-discovery, game), educational objectives, and available support material. These descriptions constitute the minimum information the teacher requires.

One does not, after all, buy a car or a seat at a theatre without having first read the motoring correspondents' comments or the reviews of the theatre critics. Likewise, the teacher will get a far better idea of a software program if, in addition, he has some critical comments to go on—comments not only on the technical qualities of the program (for example, reliability under normal conditions, visual presentation, ease of use, colour, quality of graphics and

animation), but also on its educational qualities (the effectiveness of the educational strategy adopted, for example, as well as compatibility with curriculum requirements and the degree of student-machine interaction).

All the documentation centres identified in the countries concerned provide such a description and most of them the type of critical commentary referred to, together with a rating from 'not recommended' to 'highly recommended', with some going as far as to award a 'quality label' to what they consider to be the best programs. In the United States, the Educational Products Information Exchange publishes a catalogue of 11,000 programs of which it has reviewed over 1,000, while Microcomputer Software Infor-

mation for Teachers has a database comprising 3,500 titles. In Canada, the database of the Council of Ministers of Education lists 1,600 titles and York University over 3,000. In the United Kingdom, the National Educational Resources Information Service has reviewed some 2,000 programs and Australia's Curtin University 1,200. And in France, the Ministry of Education has published its 'official' catalogue of 700 selected programs as part of its campaign 'Informatique pour tous'.



Second Conclusion. *Opinions diverge on the question of the feasibility and value of an evaluation of educational software.* Evaluation, as opposed to description or review, consists of an in-depth analysis of the educational value and content of the software and

the teaching/learning strategies used.

Some consider evaluation to be impossible, mainly because each teacher has his or her own methods and strategies, as does each student; what is more, little is known about the educational impact of the various degrees of interactivity that can be achieved with a computer. An evaluation of a program in one particular educational context is not therefore transposable, especially since, in many countries, curricula differ from school to school or from region to region.

Others consider that evaluation is both possible and desirable but that, since it is time-consuming and expensive, it should be confined to what are considered to be the best programs. As they see it, this evaluation process involves doing genuine research which could well help in the development of prototypes or the further refinement of the programs.

Lastly, there are some educationalists who think that evaluation is less

important than classroom observation of the effective use of software as part of the curriculum, and that it can provide a better idea of the impact of the computer on learning. They would even go so far as to say that there are no such things as good or bad programs, but rather uses which are either effective or inappropriate, teachers who are either imaginative or unimaginative, and environments which are either favourable or unfavourable.



Third Conclusion. *Teachers nevertheless have to be able to select the right software, which calls for prior training in the educational uses of computers.* If they were given such training—and what is on offer at the moment (only one or two days' basic instruction) is completely inadequate—teachers would be in a better position to choose the right software.

Once they have short-listed a number of possible programs either by looking through catalogues and journals that both describe and review them in some detail, by consulting their colleagues (the 'grapevine' is often a good source of information), through teacher associations in their own particular field or by consulting electronic data bases, teachers should preview software before buying it. This they can do either by paying a visit to a software library (some member countries have a number of these regionally and locally) or by telesoftware transmission direct to the school—in other words, using a microcomputer and a modem to link up with the on-line data service of the software library. Special training is required to be able to use this telesoftware system, but it is by far the quickest and most convenient method. (It is worth mentioning that ingenious security devices are used to prevent unauthorised reproduction—for example, the self-destruction of the

Table
EDUCATIONAL SOFTWARE TITLES REVIEWED AND RECOMMENDED¹
1987

Subject	Number reviewed ²	Number recommended ²	Percent recommended ³
Business	35	23	66
Comprehensive skills	69	53	77
Computers	58	40	69
Early learning/preschool	61	25	41
English/language arts	169	103	61
Fine arts	54	41	76
Foreign language	56	36	64
Logic/problem solving	58	44	76
Mathematics	457	223	49
Reading	194	100	52
Science	267	176	66
Social science	102	73	72
Other ⁴	90	56	62
All subjects	1,550	915	59

1. Based on evaluations of educational software from six US and two Canadian agencies.
2. Discrepancies may arise where some programmes are assigned to more than one subject group.
3. All percentages rounded to nearest unit.
4. Combines nine subjects (agriculture, aviation, driver education, guidance, health, home economics, industrial arts, library skills, and physical education), each with less than 35 programmes reviewed.

Source: Office of Technology Assessment, Congress of the United States, Washington DC, 1987.

material on the diskette after it has been used three times.) After this previewing operation (which can last several hours) a teacher will have a good idea of how valuable a particular program would be as an aid.



Fourth Conclusion. *International co-operation in circulating descriptions, reviews and some of the evaluations of software would be helpful.* In view of the cost of software review (frequently, a programme is reviewed by several experienced people, usually teachers), it would certainly be worthwhile for member countries which are developing data bases to pool their information. This assumes some degree of linguistic compatibility and, accordingly, there has already been some pooling of information between English-speaking, French-speaking and Scandinavian countries. Detailed commentaries and some in-depth evaluations are particularly important for countries that have to rely on others that are more advanced in software production, either because they are not big enough to justify the creation of a home-based industry or because most of their resources have gone into purchasing microcomputers for schools. In this case, before buying foreign software programs, the best would have to be picked out either for use virtually unchanged (in subjects such as mathematics) or for adaptation to suit the social and cultural characteristics of the country concerned.



Fifth Conclusion. *The current problems of software review and evaluation must be considered in the light of past*

developments and what is likely to happen in the future. In his opening address to the OECD seminar, its Chairman, Professor Jacques Hebenstreit, of the Ecole Supérieure d'Electricité in Paris, emphasised the importance of 'references to the past which explain the present and references to the future which allow us to put things into perspective'. He reminded his audience that twenty years ago, given the state of the technology then, some evaluators considered the drill-and-practice type of software available at the time as being of high quality, whereas nowadays it is regarded as very poor. The concept of software quality is constantly changing as a result of technological progress, which has led to new uses of computers in education, and the increasing number of computers in schools, although it is also a result of the advances made in the cognitive sciences which are opening up new perspectives in the understanding of the effectiveness of different teaching strategies.

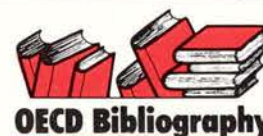
It seems reasonable to predict that in ten years' time every student will have his own pocket computer. That will mean a radical change in the way computers are used in schools, and also in the software market, which will develop into a mass market where the best programs will sell by the million. Ten years from now, hardly a textbook will be published without an accompanying set of diskettes containing a wealth of examples, graduated exercises, simulation activities, relevant data bases, 'interactive concept exploration' and hypothesis testing, all organised and planned in accordance with a teaching strategy matching the content of the textbook.

In conclusion, lessons can be learnt from past experience with pocket calculators. As with computers, they were introduced into schools as a result of a variety of outside pressures: industrial, commercial, cultural, and occasionally political. Because many of the decision-makers and teachers had

not kept abreast of the rapid technological developments taking place in this market and were unaware of the implications of the steep drop in cost and widespread use of calculators among the population as a whole, they were caught off balance.



One thing that must be borne in mind is that the children entering school today will still be in the compulsory education system in the year 2000. Education is therefore right in the middle of a period of transition and the most radical changes are still to come. As Professor Hebenstreit said in his concluding remarks, 'Probably the wisest approach to adopt, therefore, would be to try to make a reasonable prediction of what is likely to happen and to make use of the various areas which we can act upon (teacher training, research, evaluation) to prepare our education system to the best of our ability for the inevitable changes that lie ahead'.



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The Energy Impediment to China's Growth

Randolf Gränzer

This second of two articles on energy in centrally planned economies examines the energy economy of the People's Republic of China. China and the Soviet Union¹ have still much in common, not only in their economic history but also in a number of structural economic characteristics.

Both have a large domestic energy base, both are net energy exporters, and both suffer from severe domestic energy shortages.

In both the Soviet Union and China the energy sector absorbs an abnormally large share—about 40%—of total industrial investment. By comparison, in countries like Australia and Canada, which in proportionate terms have similarly large and export-oriented energy sectors, the figure is only 10 to 20%. The amounts invested in Soviet and Chinese energy projects obviously are not available for the modernisation of the non-energy industrial sector and for expanded infrastructure. Yet both countries are constrained to export energy because hard foreign currency is required to finance imports of some key products.

Energy shortages have been more dramatic in China than in the Soviet Union because over the last ten years the Chinese economy has grown at twice the rate of the USSR. China has also been quicker than the Soviet Union in adopting a policy of encouraging foreign investment in the energy

industry. And in spite of major disappointments in the coal—and particularly in the oil—sector, foreign investors continue to see a high long-term potential in the Chinese energy market.

China's energy economy consists of two parts: the traditional fuel economy for 800 million peasants, who consume about 30% of total energy available, mainly in the form of wood; and the processed fuel economy for 250 million city dwellers and for Chinese industry, using modern fuels such as oil and coal products, natural gas and electricity. Through large reforestation projects and by improving the efficiency of wood-burning stoves, the government is trying to meet rural energy demand as much as possible with traditional fuels, thus reserving more modern fuels for the growth sectors of the economy (Table).

The Backbone of Coal

Coal is the backbone of the Chinese energy economy. The country has the second largest accessible reserve of

bituminous coal in the world. With 71 billion tons, it ranks very closely behind the Soviet Union (74 billion tons). Coal provides 73% of China's total energy production, compared with 21% in the Soviet Union and 27% in the OECD countries.

For the foreign visitor the most striking illustrations of China's coal-based economy are the steam locomotives which dominate the railway traffic in most parts of the country; it was decided only recently to stop building new steam locomotives. Coal will nonetheless remain crucial to the economy because over 70% of thermal electricity continues to be generated by coal—a figure not too different from that found in a number of OECD countries.

Total annual investment in the coal industry more than doubled from the late 1970s (2.5 bn yuan) to the late '80s (5.8 bn yuan per year, or US\$1.6 bn). Yet much of this increase

Randolf Gränzer is a staff member of the International Energy Agency (IEA) at the OECD. He covers energy matters in non-member countries, particularly in the centrally planned economies.

1. See Randolf Gränzer, 'Perestroika in Energy: The Soviet Union and Eastern Europe', **The OECD Observer**, No. 155, December 1988/January 1989.

is due to inflation.² To accelerate the growth of investment volume the authorities started to turn to foreign sources of capital as early as 1980. A US energy firm has invested over 160m equity dollars in a giant strip mine project at Antaibao in the North Chinese province of Shanxi. Japanese banks have granted loans of over \$2.8 bn for nine large mining projects in Northern China. The World Bank is financing a new mine in Luan (Shanxi Province) with a \$126m loan.

The magnitude of the task has damped short-term expectations. A widening trade deficit has induced the authorities to restrict large-scale imports of equipment. Potential foreign investors have been worried by news that some of the Chinese contracts for export of coal were not honoured because of delays in domestic transport. Between January and August 1988, for example, the Chinese Coal Export Company had to pay \$5m in contractual penalties for delays in delivery.

China's coal equipment industry is making good progress. Even fully mechanised large-scale coal-mining units are now produced inside the country and replace foreign imports, a development in line with the foremost concern of the Chinese industrial pol-



The model for the nuclear power station being built at Daya Bay, near Hong Kong.

icy: the importing of know-how and management skills is more cost-effective than the large-scale importing of capital goods.

China's railroad system is more involved in energy transport (40% of total railroad capacity) than that of any other large coal-producing country, including the Soviet Union, the United

States and India. But the overburdening of the system causes coal stocks to pile up at the mines, and power stations run short of coal.

The Bottleneck in Electricity

The most difficult bottleneck in energy supply for Chinese industry as a whole is that of electricity, ascribable both to the congestion of coal transport and to a lack of generating capacity. In 1987, according to official Chinese sources, fully 25% of total manufacturing capacity lay idle for want of electricity.

From 1976 to 1980, power-generation and distribution projects absorbed 45% of all investment in energy. That figure rose to 60% in 1986 (16 bn yuan, of which 3 bn was in foreign exchange). By 1988 growing inflation (at an annual rate of 20%) forced the freezing of most investment projects

2. Investment costs per ton of capacity rose from 111 yuan in 1982 to 128 yuan in 1985 and have most likely risen further with accelerating inflation.

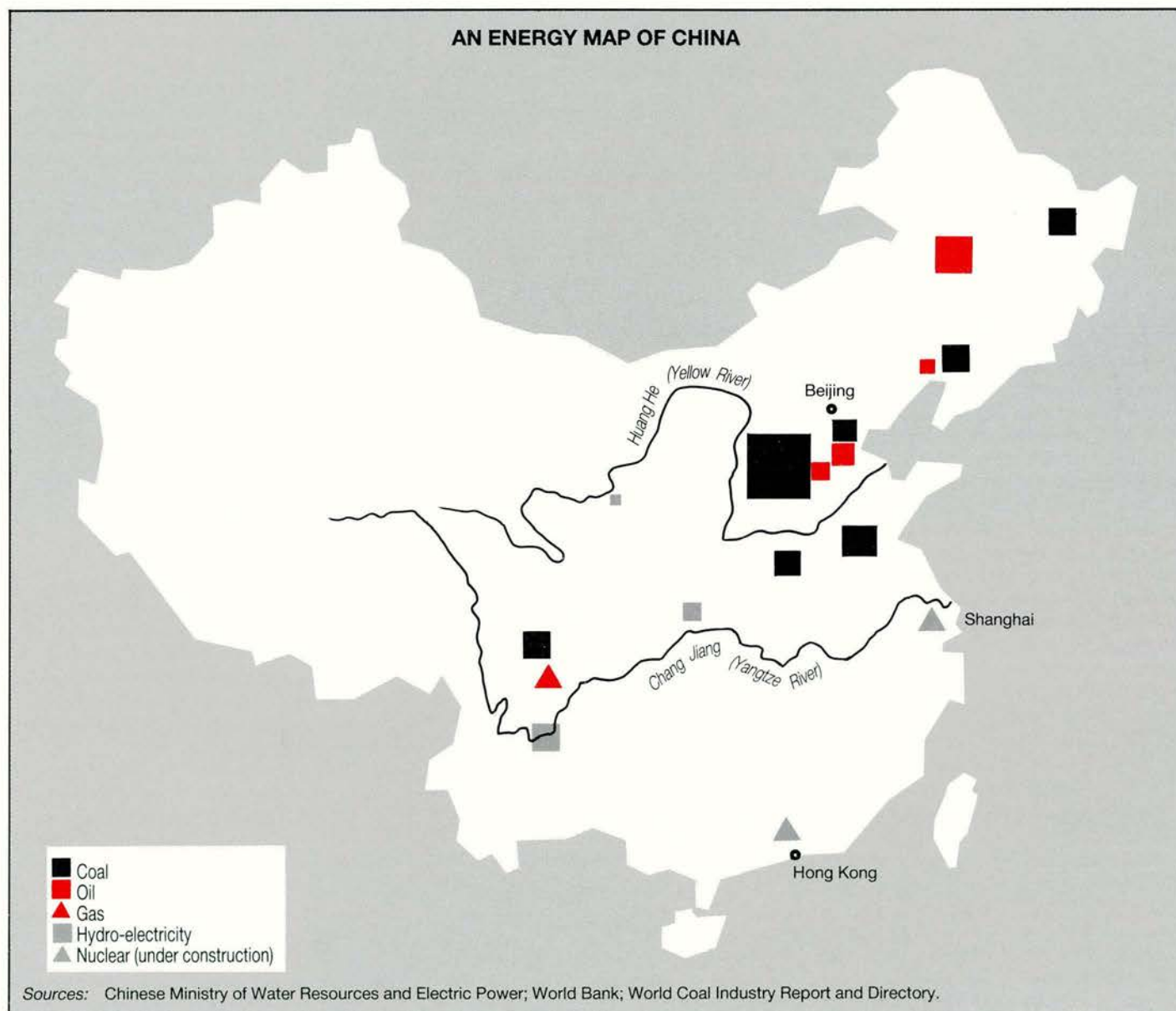
Table
ENERGY PRODUCTION AND CONSUMPTION IN CHINA

	Solid Fuels ¹	Oil	Gas	Hydro-Electricity	Total
Production					
Production mtoe ²					
1980	347.5	106.0	12.1	16.8	482.4
1987	515.7	134.0	12.1	27.1	688.9
Annual Change %	5.8	3.4	0.0	7.1	5.2
Consumption					
Consumption mtoe ²					
1980	350.2	88.5	12.1	16.8	467.6
1987	510.2	102.9	12.1	27.1	652.3
Annual Change %	5.5	2.2	0.0	7.1	4.9

1. Includes 15% of all non-commercial fuels produced and consumed; the remainder is not covered by regular reporting systems.

2. Million tons of oil equivalent.

Source: IEA World Energy Data base.



outside the central state budget. The only major exceptions granted were for power and transport projects.

Thermal, Nuclear or Hydro?

Investments in power generation face the difficult choice between thermal, nuclear and hydro power plants.

Assumptions on future long-term interest rates, fuel prices and environmental impact are critical, and these judgements are complicated in China by the absence of market prices for power equipment and fuels. According to Chinese calculations, thermal power is more expensive than hydro or nuclear power, even if one ignores environmental and transportation

costs. But thermal stations can be built in about three years, as opposed to seven to ten years for hydro and nuclear plants, and they require smaller initial outlays of capital.

China has the largest natural hydro power potential in the world. Of this potential, 380 Gigawatt (GW), the rough equivalent of the total hydro generation capacity installed in the

OECD region, could be used economically, i.e., in power plants big enough and close enough to consumers. At present, less than 10% of this economic potential is used.

China's nuclear activities are still confined to military installations, although two civilian nuclear power stations are now being built. Chinese energy policy regards nuclear electricity as the power of the future, the hope being that by the time domestic technological capabilities allow stations to be built on a large scale, new technologies will reduce costs and increase safety. One of the two plants presently under construction is the 300 GW Qinshan plant near Shanghai on which work began in 1986. It was intended to be the first purely Chinese-made installation of its type, but to shorten construction delays and start operations soon after 1990, foreign equipment has been used as well. The second nuclear plant under construction is much bigger (1800 GW) and is located near the Hong Kong border at Daya Bay; it was started in 1987 with French and British loans, resulting in imports of equipment and services from those two countries worth \$1.8 bn.

Small-scale Energy Production

Energy industries are, as a rule, usually very capital-intensive, so that important economies of scale can be achieved with very large units of production. But the situation can be different in a developing country where big energy projects imply extensive infrastructure costs in transportation and where labour is cheap. These conditions are met for some of the coal-mining and hydro-electricity projects in China, and in both activities small-scale production has successfully been developed.

In 1982 the central government first permitted small, local coal mines to be run by private owners or co-operatives and their output to be sold at free

LIBERALISATION: HOW MUCH, HOW FAST?

Until recently China had separate ministries for oil, coal, electricity and nuclear electricity—a system adopted from the Soviets in the early 1950s. Each ministry had to implement the targets of the State Planning Commission, not only by formulating guidelines and policies but also through everyday management of all regional and local production units. To do so, they received funds from the budgetary authorities, to whom all operating surpluses had to be returned. In April 1988 the specialised fuel ministries were replaced by a single energy ministry. Energy production and distribution is now in the hands of separate government-owned companies. Plan targets still exist. But the necessary investment requirements are met as much as possible directly from operating surpluses and outside loans. 4,500 employees, or 90% of the staff of the former specialised ministries, have been transferred to the new companies.

The optimal speed of liberalisation is obviously hard to determine. Seven of the independent companies that were created immediately started to compete with one another in the coal export business, benefiting from artificially low domestic prices. And so, to ensure a minimum supply for the domestic economy, coal exports then had again to be brought under the control of a reconstituted coal export monopoly.

prices on local markets. Since then the number of such mines has tripled, to the present 65,000, currently employing an estimated 10 million people; their share in total coal production rose from 22% in 1982 to 32% in 1985. But productivity is low, and so is work safety (65 deaths per 10 million metric tons (Mmt) of coal produced, which compares ill with 24 deaths per 10 Mmt in the big state-owned mines, and 0.8 to 0.4 deaths per 10 Mmt in OECD countries, with the exception of Turkey).

The development of small hydro power stations has been successful because they can be built with relatively simple technology, and because labour forms a large part of the construction costs. They can be built close to small-scale industrial consumers, thus avoiding expensive distribution systems. The 63,000 stations of 25 Megawatts or less presently in place generate 29 Terawatt hours (Twh) per year, or 29% of total hydro-electricity.

Prospects for Oil and Gas?

Natural gas is rather scarce in China: with 13 billion cubic metres per year, it forms only 2.1% of total Chinese energy output. China holds no more than 1% of total known world reserves, and prospects for new finds are uncertain.

Known oil reserves are larger, and the western part of the country in particular is thought to have potentially large reserves. At 2.7 million barrels per day of output (135 million tons per year), China is one of the world's more important oil producers, ranking roughly with the United Kingdom, Iraq, Iran or Mexico.

The share of oil in total Chinese exports fell from 26% in 1985 to 10% in 1987. Thanks to a large increase in exports of manufactured goods, non-energy exports were able to make up for some lost energy income. This allowed China to divert oil from the export market to the domestic market, where it was urgently required. Thus the share of the volume of exported oil in total oil availability has dropped from a record 29% in 1985 to 22% in 1988. And even if domestic production meets its growth target of 4 million barrels a day (mbd) by the year 2000, the Chinese economy, assuming continued high growth, will probably absorb all of it. Oil exports would thus continue to decline, and they could eventually stop altogether.

China's most convenient and profitable oilfields are in the north-east of

the country, near the industrial centres. Offshore production opportunities along the entire coastline began to look attractive after the two major oil price increases of the 1970s. In this atmosphere, and in view of the higher offshore risk factors and the more advanced technology that exploration requires, foreign oil companies were invited to participate on a large scale. Since 1982 they have invested over \$2 bn in these offshore areas—but with relatively little success. They are now

pinning their hopes on obtaining access to one of the last oil frontier areas of the globe, the large desert land in western and north-western China. But so far no foreign oil company has been permitted to begin drilling there.

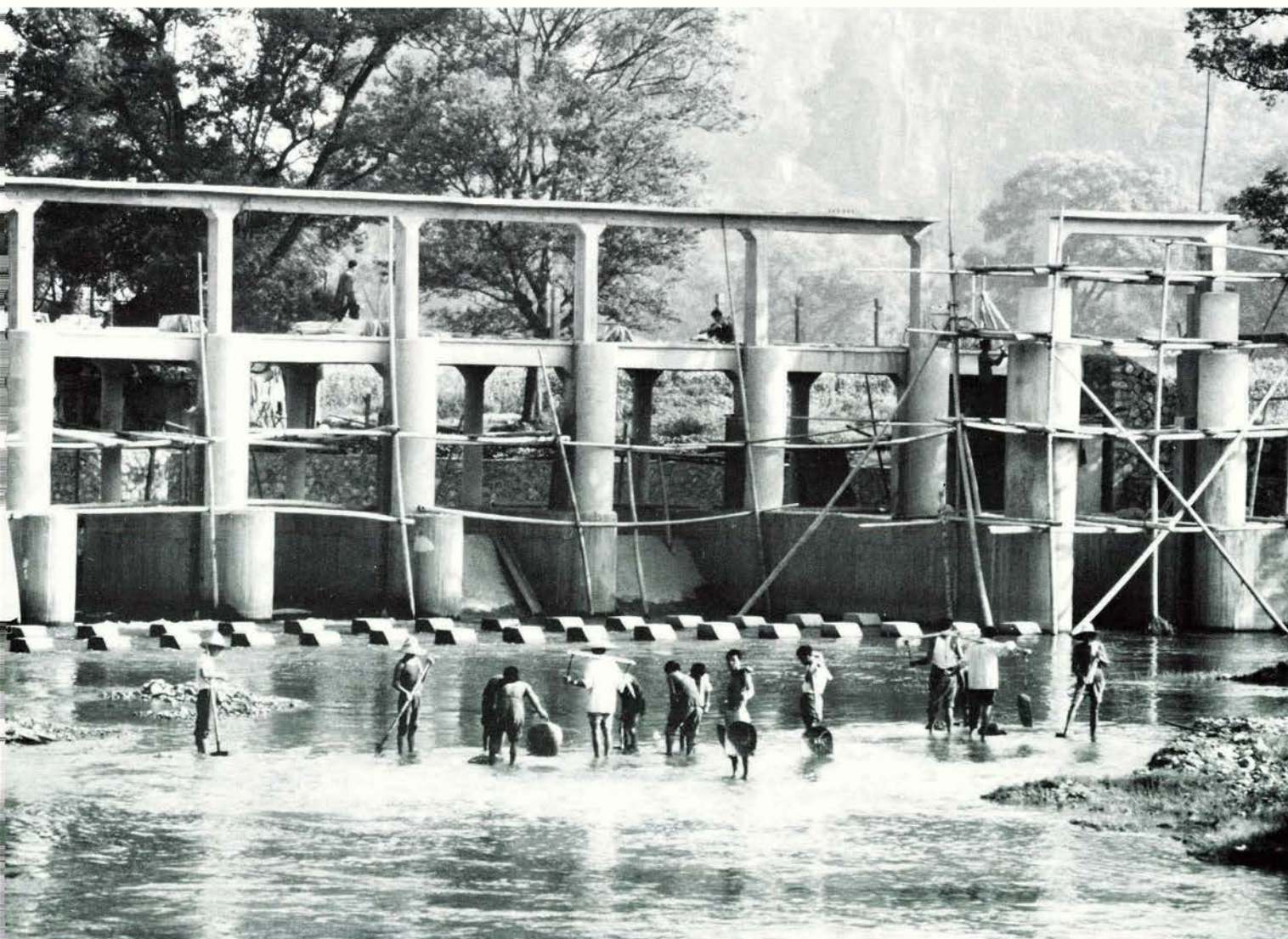
Energy Saving and Energy Prices

From 1980 to 1988 China achieved an impressive degree of energy saving. Energy intensity of the economy

dropped from 1.50 tons of oil equivalent per \$1,000 of GDP to 1.10 tons.³ Yet these savings were not enough to avoid shortages; further savings will help stimulate more economic growth.

China faces a major task in attempting to meet its planned annual target of 7% economic growth up to 2000, based upon an annual energy consumption increase of only 3–4%

3. For a definition of energy intensity, see Randolph Gränzer, *loc. cit.*



Ph. Roy/Explorer

The hydro-electric solution: energy on a small scale, using relatively simple technology which demands labour rather than capital.



Thomas Sygma

Since the liberalisation of small-scale mining in 1982, the number of small, local mines has tripled, to the current total of 65,000.

Success would bring energy intensity down to 0.74 tons of oil equivalent per \$1,000 of GDP, still high compared to OECD standards (0.43 tons in 1987). But for a developing economy like China it would constitute a major achievement. Measures to conserve energy so far adopted have been mostly administrative in nature, including stiff penalties for consumption above established quotas. It remains to be seen whether steps such as these will be sufficient to achieve the energy savings target set for the year 2000.

Government-controlled energy prices are heavily subsidised. Abolition of these subsidies and the resulting higher energy prices would be a powerful stimulus for energy saving. But concern about inflation has made the government very cautious about any

kind of price rise. An exception is found in the electricity sector, where the lack of investment funds is particularly dramatic. On 1 January 1988 the average retail price of electricity was raised from 0.066 yuan/kwh to 0.09 yuan/kwh (\$0.018/kwh to \$0.024/kwh).

The Burden on the Environment

A survey carried out in 1988 shows that the air in Beijing (Peking) is 16 times more polluted than that of New York. In 1986 960 million yuan, or 0.1% of GDP, was spent on various

4. See Ferenc Juhasz and David Jukes, 'Cultivating the Environment', *The OECD Observer*, No. 155, December 1988/January 1989.

waste gas treatments. The polluter-pays principle⁴ is enforced to some extent: in 1986 more than 1 bn yuan were collected in fees and penalties for treatment of gaseous, liquid and solid waste.

In 1986 China produced some 12 million tons of sulphur oxide (SO_x), which is 20 kg of sulphur oxide for each ton of oil equivalent burnt. This figure compares unfavourably with 2.2 million tons in Germany (or 9 kg per ton of oil equivalent burnt) and 21.5 million tons in the United States in 1985 (or 13 kg per ton of oil equivalent burnt). OECD countries may increase their energy consumption by some 1–2% per year up to the year 2000. So with the 3–4% minimum increase expected for China her share of world-wide SO_x pollution probably will increase substantially.

□ □

The more China is industrialised, the more energy will be at the centre of problems with economic growth. Two major avenues offer solutions:

- the rapid development of domestic expertise in energy technology and energy management, and particularly energy saving
- yet more reliance on foreign investors.

The first route is safer and cheaper than the second but, unfortunately, much slower. How much progress can be made on it will be the real test for Chinese energy policy. ■



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What Financial Policies for Development?

Jacques J. Polak

The improvement of financial policies can contribute to development in two ways: by enhancing the supply of savings and by encouraging more efficient use of capital and other factors of production. Raising interest rates can, for instance, boost the savings rate or reverse capital flight, and hence enlarge the supply of capital available for investment and lead to higher output. Capital-market policies can be instrumental in channelling the available supply of capital towards more efficient uses and thus coax maximum output out of all factors of production.

In many developing countries, the system of financial intermediation that transfers the savings of households and enterprises to potential investors is inefficient. Capital markets are geographically fragmented and money-lenders operate side by side with commercial banks, each with their own restricted clientele. The natural weak-

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How well is capital for investment projects allocated in developing countries? Have international financial policies since the Second World War aided or impeded economic development? And what have been the roles of the World Bank and International Monetary Fund in extending additional credit? A recent OECD study¹ examines these questions and proposes a practicable solution to the debt problem.

nesses of these markets are often compounded by government regulations imposing low, frequently negative, real interest rates on bank deposits and by inflationary policies that further discourage savers from entrusting capital to the banking system. These make for highly inefficient linkages between the supply of savings and the demand for investment and, consequently, for low growth rates.

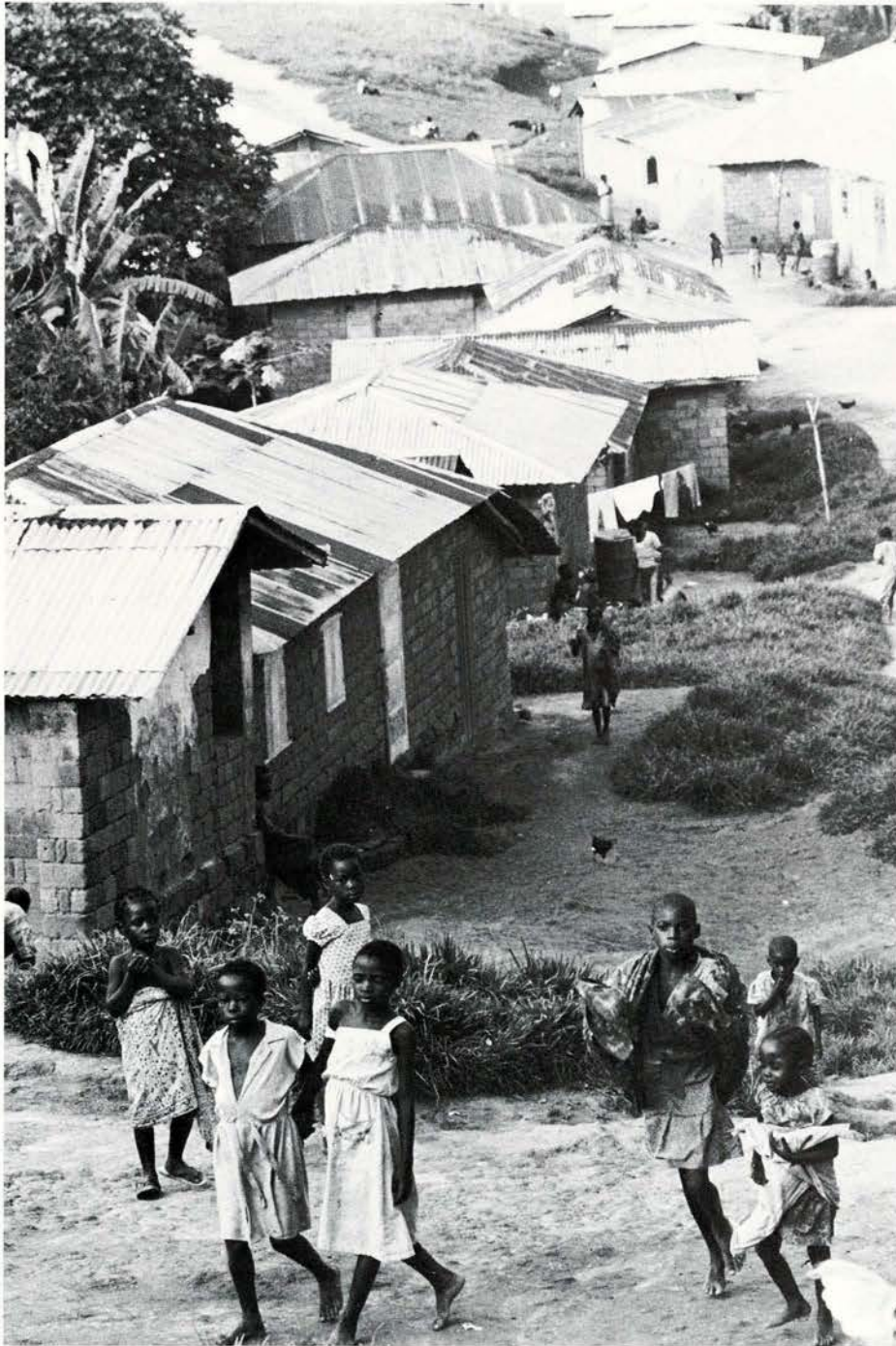
Theoretical analysis—confirmed by cross-country correlation calculations—suggest the high cost of poor financial policies: interest rates set 5 percentage points below equilibrium levels may cost as much in terms of growth as a savings increase of 5% of GDP would contribute to it.

In light of this evidence one would hope that international organisations such as the World Bank and the International Monetary Fund (IMF) would put considerable emphasis on the adoption of realistic interest rates, in particular in countries borrowing from them. But until recently, at least, neither organisation appears to have been sufficiently insistent on this point.

Investment from Domestic Savings

In almost all developing countries outside sub-Saharan Africa, domestic savings are the dominant determinant of investment. Thus India and China

1. *Financial Policies and Development*, Development Centre, OECD Publications, Paris, 1989.



C. Thege

Heavy debt means low growth, since domestic capital is not available for local investment.

save and invest much higher proportions of GDP than, for example, Pakistan. Differences among countries in savings rates defy conventional wisdom that these rates are a function of per capita incomes: savings rates have for decades been high in poor countries in Asia, including India and China, and low in such relatively advanced Latin American countries as Chile and Uruguay.

Not all national savings make their way into investment. Two main drains on savings are government current deficits and capital exports. Excessive

government deficits in many developing countries, facilitated by the easy supply of foreign loans in the 1970s, were among the important causes of the debt crisis in the 1980s. The debt crisis in turn made it far more difficult for countries to restore their budgetary positions as interest rates soared and inflation raised havoc with tax collection. Yet control over government deficits is indispensable for these countries to regain control over their balances of payments.

Lack of capital in developing countries presents a clear economic justifi-

cation for inward movements of private and official capital (including aid). Yet owners of capital in these countries often have strong incentives to place it abroad because of the underdevelopment of local capital markets and tax considerations. These general influences can be strongly reinforced when governments enforce low domestic interest rates and maintain the national currency at too high a value, causing expectations of exchange-rate losses on capital kept in the country. In these circumstances, it becomes impossible to prevent capital flight, which robs national investment of potential resources produced by both national savings and foreign loans. Capital flight from developing countries is by no means a new phenomenon, but it became particularly acute in some countries in the last ten years as both a cause and an effect of the severity of the debt crisis.

As long as the major banks in the industrial countries were inundated with deposits from the petroleum exporting countries, developing countries could maintain investment and growth in spite of lax government finance or capital flight, as financing for these spillages of national wealth could be found abroad. The debt crisis put an end to these easy options. In the 1980s the surpluses of the oil exporters turned into deficits, and the largest industrial country, the United States, began to draw savings from the rest of the world through current-account deficits in amounts that exceeded the peak-rate absorption of about \$100 billion in 1981 by all capital-importing developing countries combined.

Gaps in the Supply of Capital

Most developing countries, their creditworthiness impaired by heavy debt, high interest rates and slumping exports, found it increasingly difficult to attract new loans or to roll over past ones. The resulting gaps in the supply

of capital were only very partially offset by capital from other sources. Thus, while foreign aid flows to the low-income countries were maintained, official export credits declined as creditors limited their exposure. Direct investment provided no solution either: many potential foreign investors displayed the same distaste as national owners of capital for keeping their money in countries that were not creditworthy. This did not prevent foreign firms from acquiring interests in many developing countries through a wide variety of 'new forms of direct investment' that had been developed in the preceding decades.

The radical changes in world financial markets in the last 15 years had a profound influence on the functioning of the International Monetary Fund and the World Bank, both of which had been created at the end of World War II to safeguard the international monetary system and promote economic development. Of the two organisations, the IMF had from its inception been the most active in promoting sound macro-economic policies among its developed as well as developing members. To support member countries that followed such policies, it extended balance-of-payment credits. While individual credits were typically repayable within five years, the amounts outstanding to developing countries showed a sharply rising trend until 1984-85; net repayments since then have reduced the outstanding debt by 20%.

Different Types of Loans

In its first two decades of operations, the World Bank lent overwhelmingly for the financing of infrastructure, and its policy conditions related to the particulars of a project or at best the sector in which the project fitted. But the increasing realisation in the Bank and elsewhere of the importance of correct macro-policies for development and declining interest by member



P. Rimmerfors

Massive infrastructure projects may not provide the solutions the developing countries require.

countries in large infrastructure projects has shifted an important part of Bank lending in the 1980s towards 'policy loans'. These are typically for large amounts, intended to be disbursed quickly and to support broad economic policies for the economy as a whole (Structural Adjustment Loans) or major economic sectors (Sectoral Adjustment Loans). These loans brought the Bank's concerns with the policies of borrowing members closer to those of the Fund.

At the same time, the Fund's activities moved closer to those of the Bank. The Fund increasingly concerned itself with supply-side policies; it lengthened the terms of some of its credits to ten years and, more recently, found ways to charge only a nominal interest rate (1/2%, the same rate as the International Development Association of the World Bank) on its credits to low-income countries. Loans to these countries by the two institutions are now co-ordinated by means of joint policy frameworks.

To meet the debt crisis, the Fund since 1982 and the Bank since 1985 expanded their lending enormously to countries whose other sources of credit had to a large extent dried up. As a counterpart to this expansion, the two institutions encouraged borrowers to adopt more growth-orientated policies and the commercial banks and others to respond by renewed lending. Recent concerns for the quality of their own loan portfolios has made the Bank and Fund focus on possible limits to the credit they can extend, in particular to countries in which the commercial banks prove increasingly reluctant to extend their exposure.

The Vicious Circle of Debt and Low Growth

In latter years there has been an increased awareness of the interrelations between debt and the resumption of growth. The linkages run in both directions. A period of satisfactory growth will make a given amount of indebtedness far more bearable in terms of GNP or exports. But unless a solution is found to the debt problem, growth rates may remain low as little capital is available for investment and its cost remains prohibitive for many potential users.

This vicious circle can be broken by a combination of actions in debtor and creditor countries. For debtors, the emphasis falls on budgetary policies that raise the proportion of total output available for investment and a wide range of financial and other policies that increase productivity of labour, capital and entrepreneurship. The creditor countries can make a major contribution by fostering a world economic climate that encourages demand for the products of the developing countries. Export growth is a particularly dynamic contributor to GNP growth, both because it radiates income through the economy and because it provides foreign exchange that permits more liberal imports. Growth in the developing world thus requires from



L. Masser/World Bank

Policies to promote productivity growth could do much to help developing countries tackle the debt burden.

industrial countries both vigorous growth and the avoidance of protectionism. The same end is promoted by a lower real interest rate in world financial markets and the dismantling of agricultural policies that drive down the prices of primary products of major importance in the exports of developing countries.

Given proper internal policies and favourable conditions abroad, many of the middle-income developing countries should be able to overcome the effects of the debt crisis by a combination of growth, adjustment and relatively modest capital inflows. But this model does not fit all of these countries, nor does it fit many of the low-income countries with large debts, in particular those in Africa. Debt relief or debt reduction (not mere rescheduling) therefore has to be considered.

Over the last five years, many proposals have been made for generalised debt schemes under which some international agency would buy foreign

claims from the banks and reduce the service by debtors. These schemes are questionable on their merits but, in any event, they are well beyond the realm of what would be politically or financially feasible. The major economic powers have made it clear that they are not prepared to fund schemes that would transfer risks undertaken by the banks either to international institutions or to creditor governments.

From Debt to Discounted Investment

As it became clear that there was no quick answer to the debt crisis, banks began to offer claims on developing countries at highly discounted prices. These claims were bought by foreign investors to make direct investments, buy equity portfolios or acquire other assets in the debtor countries at what was in effect a preferential exchange rate. While of interest to the banks who thus regained at least some of the

credit they were owed, these debt-equity swaps were of less obvious benefit to the debtor countries. For them these swaps amounted merely to the exchange of one liability for another, or for valuable domestic assets. The best use that the debtor country can make of the willingness of banks to sell claims at a large discount would be to buy back some of the debt cheaply, within the limits set by its payments position and its ability to borrow. Even if a country's purchases of its own debt at a discount do not make a large dent in the amount of its outstanding indebtedness, they demonstrate clearly that the debtor considers the debt underpriced and is expecting the discount to decline as its position improves. Thus the purchases provide the best possible evidence that the debtor intends to stick to policies that will lead to the restoration of its creditworthiness.

To raise the probability of a satisfactory solution to debt problems and encourage debtors to pursue adjustment, the banks should do more than sell off part of their claims at a discount. They should take the initiative and commit themselves, for a specified number of years ahead, to make annual new loans to any highly indebted country provided it continues to pursue a satisfactory programme of adjustment. Alternatively, a bank could commit itself to capitalise each year part of the interest due. Such commitments by creditor banks, which might be for an amount equal to half the annual interest payments, would provide debtor countries with a much-needed incentive to stick to the required adjustment policies and would go far towards resolving the debt crisis for these countries.

But even if the banks were willing to entertain such a policy, it cannot be assumed that all debtors would in the end recover creditworthiness and that the banks' provisions against losses would prove to have been unnecessary. Some of the highly-indebted middle-income countries may not be

Photo News/Gamma



Moving the mountain? Growth in developing countries requires from the industrialised world the rejection of protectionist policies—not least in agricultural markets—which drive down the prices of exports of primary products.

willing or able to persevere in the adjustment policies that are required, and the banks may in the end lose a large part of their claims on these countries.

A different approach is necessary to resolve the debt crisis of the low-income countries with high debts, most of which are in sub-Saharan Africa. For these countries a bold generalised approach will be required, with a sharply curtailed debt service replacing the current annual Paris Club rescheduling rounds.

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Six years of debt crisis have made it clear that no country will, for long, perform debt service beyond the limits of what it considers compatible with its best chances for growth in the long run. But the choices countries face are often far from clear—and the same applies to the choices creditors have to make. Debtor countries, creditor banks and creditor governments require time and experience to arrive at correct appraisals as to where their best interests lie. That is why the process of decision-making and negotiation has already taken an inordinate number of years. The process has entailed large costs to the indebted countries—unnecessary costs that are superimposed on the unavoidable costs of adjustment. Public policy requires that every effort be made to bring this process to an early and satisfactory conclusion. ■



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World Debt Counts

A \$1,300,000,000,000

Statistical Assignment

Bevan B. Stein

In 1980, the year that may be taken as a starting point, the only figures on external debt available on a regular and systematic basis were those reported to the World Bank by some 80 developing countries. They concerned claims on public or publicly guaranteed borrowers. And although today 110 countries,¹ accounting for about 95% of the total debt of the developing world, report to the World Bank, few of them provide information on the amount of non-guaranteed private claims and short-term debt (with an initial maturity of less than one year). Furthermore, some debtor countries still do not have a modern statistical service; as a result the data they report may either have gaps or be compiled a long time after the period to which they refer.

For both these reasons a data base parallel to that of the World Bank was called for. In 1980 there were several potential sources of information for it:

- first, the Bank for International Settlements (BIS). Since 1974 it has published quarterly data on bank claims, broken down by debtor country, of its reporting countries, which together account for the bulk of world banking activity. Its data on banks'

How does one ascertain the external debt of a country and the burden it represents? And how are the figures compiled on which knowledge of a country's debt is based? Work at the OECD on a tangled web of data on international loans and credits has shown the way to a reliable set of statistics.

claims distinguish between their claims on banks and on non-bank borrowers in other countries, as well as between total claims in national and foreign currencies

- second, the OECD. Since the early 1970s it has operated the Creditor Reporting System (CRS), in which each country reports the claims of its official sector on each developing country, and the extension of guaranteed export credits to every country in the world. As with the BIS, the reporting countries account for the major part of world activity in the areas covered by the CRS

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- third, the OECD Development Assistance Committee (DAC), in which development co-operation policies are examined. The DAC receives from each member country (18 in all²) and the EEC an annual statement of its total flow of funds to developing countries. Included in the total flows are grants, which do not create any debt, and investment, which does not create a contractually repayable claim. The remaining component, information on loans and credits, can be usefully collated with the BIS and CRS data and helps to fill in gaps. For example, the amount of new lending, less repayments received, gives the increase in debt, just as the increase reflects, other things being equal, the difference between new lending and repayments received on earlier loans.

Refining the Raw Data

The data available at the time on the sources of credit could not be used in their raw state, for the following reasons. First, they could not be disclosed outside the organisation responsible for collecting them without the prior authorisation of its governing body,



P. Rimmerfors

export credit guarantee agencies, which supply the data on export credits, had introduced procedures for identifying bank lending within the total volume of guaranteed credits. With this advance, the problem of double counting was resolved.

Once this final link in the reporting chain had been forged, bank data could at last be combined with data on export credit guarantees. The first issue of the semi-annual report prepared jointly by the BIS and the OECD showing bank claims and the claims of non-bank exporters—with no double counting—was published in June 1983. The report covered 145 countries and other territories. It is still the most reliable, and most rapidly available,³ source of statistics on the categories of debt that it covers—which alone account for over 50% of the total debt of developing countries.

The OECD/BIS report does not include the following claims:

- official development assistance lending
- loans by multilateral organisations (e.g., the World Bank)
- claims held by countries that are not members of the OECD.

Information on the first two categories is reported to the DAC either in aggregate form or via the CRS. Moreover, many non-DAC members report to the DAC on their aid to developing countries, so that, once all these figures are added to the OECD/BIS nucleus, information from creditor sources covers an extremely high share—in some cases as much as 99%—of each debtor country's total debt.

Some gaps still remained. Most of them have now been filled as a result of close co-operation between the World Bank, the BIS, the IMF and the OECD,

which meant in practice that neither the BIS nor the OECD could have access to the data of the other organisation without the approval of each reporting country. Second, there was a major technical difficulty: the export credits granted by banks were included indistinguishably in both the bank data reported to the BIS and the guaranteed export credits reported to the OECD.

The raw data from one organisation could thus not be used in conjunction with data from the other; for this, one of the organisations had to modify its reporting system so that the duplication could be identified and removed, thus making it possible to combine the two sets of data. The OECD undertook to make the necessary breakdown of export credits. Two years later the

1. *World Debt Tables*, published annually by the World Bank.

2. Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Ireland, Italy, Japan, the Netherlands, New Zealand, Norway, Sweden, Switzerland, United Kingdom, United States.

3. Six or seven months after the period to which they refer.

each of which supplies the other organisations, subject to requirements of confidentiality, with valuable additional information. The data collected by each organisation is limited to specific categories of a country's debt, and never covers all of it. This co-operation was institutionalised in 1984 with the establishment of the International Working Group on External Debt Statistics, comprising the four organisations and the Berne Union (whose membership comprises the export credit guarantee agencies). The Group, which aims to improve the evaluation of external debt and its components, meets regularly at the headquarters of one of the member organisations. Its first report, entitled *External Debt: Definition, Statistical Coverage and Methodology*, was published in 1988.

Agreement on Definition

That the word 'definition' in the title has no 's' at the end is an achievement in itself: it reflects the existence of an internationally agreed definition as to what constitutes a country's external indebtedness. The report also examines the link between debt statistics and balance-of-payments and national accounts statistics, and describes the statistics compiled by each organisation.

The OECD has already amended some of its own definitions to bring them into line with the international definition. In doing so, it has improved the comparability of its figures with those of the other organisations which also publish comprehensive debt statistics.

Even so, the coverage of the data published by individual organisations differs in many respects and will continue to do so. First, geographical coverage: the World Bank publishes data on 110 debtor countries, the OECD on 145. More importantly, the evaluation of a particular country's external debt will inevitably differ

depending on whether it is made by the country itself or on the basis of data supplied by creditor countries. Neither approach is necessarily better or worse—it is just different. A debtor country may know how much debt it has in certain categories which are not reported by any creditor countries (in this case, the World Bank data usefully supplement those of the OECD). Similarly, there are many categories of debt for which information is provided by creditor countries, whereas the debtor country concerned may not even be aware that a debt exists (so that the OECD data usefully supplement those of the World Bank).

Two examples will illustrate the nature of this complementarity. Debtor countries include in their reports to the World Bank amounts they owe to creditor countries that report neither to the OECD nor to the BIS—for example, outstanding loans from the USSR, China or even another developing country. In the opposite direction, the export credit data reported to the OECD yield figures for a large component of each debtor country's unguaranteed private sector debt which may be unknown to the authorities.

In short, most gaps in the coverage of the data collected by an organisation can be filled by recourse to data from one of the others. But within the same overall debt coverage, the categories of debt that debtors recognise differ from those used in the statistics compiled from creditor sources. Because of these differences in categorisation, the analyst will sometimes do best to use the statistics supplied by the debtor country, and sometimes those supplied by creditors; which he chooses depends on the use to which the figures are to be put.

But he should not expect to see the same total for any one country, for a number of reasons. The creditor may record some claims at their current value, or even remove some claims from his records after writing them off, whereas the debtor will continue to record them at their face value.

Or, following a debt rescheduling, the debtor country may immediately consider that the structure of its debt has been modified, whereas creditors will report the change only after they have signed a bilateral agreement giving the arrangements legal effect. Lastly, because of fluctuations in exchange rates, the estimate based on national currency data by the debtor country of the dollar value of its debt will differ from the dollar estimate obtained by converting the various currencies in which are denominated the claims reported by the creditor countries.

□ □

In sum, the task of the compiler of statistics on external indebtedness is beset with difficulties, some—but far from all—of which have been identified here. What is quite clear is that, when interpreting the statistics presented in a debt publication, it is essential to take due account of the methods used to compile them in the first place. ■



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Investing in Development

A. Keler/Sygma



Multinational, international. A Volkswagen built in Brazil awaits export to Iraq.

Charles Oman

Over the past two decades traditional forms of foreign direct investment by OECD countries in the Third World have tended to give way to more complex business arrangements, in which the costs and benefits of the venture are shared between the foreign enterprise and the host country. A study from the OECD Development Centre concludes that, whatever the problems created in some sectors and some countries, continued investment along recent lines may be a key to sustained world economic growth.¹

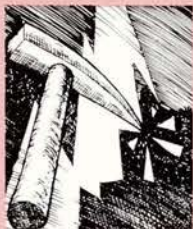
For companies wanting to do business in foreign markets, there have traditionally been two ways of going about it. They could either sell their products or services to the country concerned in the form of exports, or they could acquire or create a firm in the host country itself (foreign direct investment—FDI).

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1. Charles Oman, with Francois Chesnais, Joseph Pelzman and Ruth Rama, **New Forms of Investment in Developing-Country Industries: Mining, Petrochemicals, Automobiles, Textiles and Food**, Development Centre, OECD Publications, Paris, 1989.

Corporations with multinational ambitions have made considerable use of this traditional form of FDI. Indeed, the rapid international expansion of many large western companies since the war gave rise to heated debate in the late 1960s and '70s about the growing industrial hegemony of OECD countries. ▶

OIL AND MINING



The oil industry was one of the first big industries where NFIs superseded traditional FDI. Host countries sought to wrest control of their hydrocarbon resources from the foreign companies that had exploited those resources for decades under concession agreements which gave countries little control over, and a small share of the return from, their indigenous natural wealth. In some cases, the assets of foreign operators were nationalised and state enterprises set up to take control of the industry. In others, there was a smoother transition as the old concession agreements were replaced by production-sharing and service contracts, while equity joint ventures were established to undertake new projects.

Similar developments, although on a smaller scale, have taken place since the late 1960s in metals mining, where an irreversible post-colonial adjustment has taken place. Western multinationals were elbowed out and replaced by state mining companies owned by the producer countries; and some of these companies, indeed, developed degrees of managerial and technical expertise comparable to those of their predecessors. Loan finance obtained within the framework of NFI arrangements replaced foreign equity-capital as the main source of funds for new ventures, enabling a number of projects to get off the ground during the 1970s that would never have been feasible through traditional FDI.

Total investment in new mineral extraction projects has dropped off considerably in the 1980s, since producer countries had their fingers burned by the slump in commodity prices. NFIs, rather than protecting them from external shocks, increased their exposure to risk by making them more vulnerable to fluctuations in commodity prices, interest rates and exchange rates. Now that producer countries are once again looking for new sources of traditional FDI, multinational mining companies are often reluctant or unable to meet their demands for major investments of equity.

Traditional FDI in manufacturing flourished during the 1950s and '60s, when the developing countries tended to substitute domestically produced goods for imports. This was particularly true in Latin America, where protectionism encouraged multinationals to set up production facilities inside whatever trade barriers had been erected. But their policies discouraged exports and resulted in trade and payments deficits as imports of capital and intermediate goods increased with the growth of local manufacturing. Although a few Asian countries, notably Taiwan and South Korea, switched to growth strategies driven by exports, many developing nations failed to adapt their policies because of domestic political rivalries.

At the same time, foreign multinationals were increasingly accused of 'denationalising' control of natural resources and key manufacturing industries to the detriment of local interests. They were also criticised for exacerbating balance-of-payments problems in the host countries through such practices as transfer-pricing (whereby the imports by a local affiliate of equipment, technology, components or raw materials are invoiced by the parent company at above-cost prices and/or its exports are under-priced) and the remittance of profits to the parent company.

The Renationalisation of Control

These tensions led many developing countries to impose growing restrictions on FDI in the late 1960s and '70s, and in some cases, especially in industries based on natural resources (notably mining), to expropriate the assets of foreign firms, not least in Africa and Latin America. New measures were introduced, limiting foreign investors to minority ownership or imposing requirements of a minimum

of local content and, later, export sales. The trend away from traditional FDI to new forms of international investment (NFIs) in both primary and manufacturing industries accelerated, since NFIs were seen as enhancing the host country's control over the venture.

PETROCHEMICALS



The petrochemicals industry is highly capital-intensive, requiring plants that are costly and have to be operated at virtually full capacity to be profitable. For many products, notably plastics and synthetic rubber, foreign demand can be met through exports, so there is no pressure to invest in expensive factories in developing countries and little traditional FDI has taken place. From the start, capacity building occurred through NFIs. Until the 1970s plant was built in the context of import-substituting strategies for investment. Since then, and especially in the wake of the oil price hikes of 1973-74 and 1979-80, the OECD-based multinationals have used NFIs to help resource-rich nations in the Middle East and elsewhere take advantage of cheap hydrocarbons (particularly in the forms of methane and light natural gases) for the production of basic petrochemicals at competitive prices. While the first plants were designed principally to meet domestic demand, more recent developments have been export-oriented. In many cases, the foreign partner has had to put up little or no capital, receiving his equity stake in return for technology and/or assistance in product marketing. Some Asian and Latin American NICs have now started to buy out their foreign associates, a process that will accelerate as the usefulness of foreign investors as purveyors of technology declines.

The bargaining power of the developing countries was further strengthened in the 1970s as a result of the slowdown in economic activity in the developed world and the general buoyancy of commodity prices. The sharp fall in real interest rates encouraged developing countries to finance their development themselves by borrowing in the international financial markets.

While the method of funding was different, the new strategy still involved a transfer of 'real' as well as financial assets from developed countries, especially such intangible resources as technology, management expertise and, in some industries, access to export markets in OECD countries. Though not entirely new, joint ventures with majority local ownership, international sub-contracting and licensing arrangements involving wholly or majority locally owned firms, franchising, management contracts, turnkey operations (where

equipment is supplied virtually ready to run), and production-sharing and risk-service agreements proliferated during the 1970s.

These inter-firm business operations are the NFIs: all involve a foreign company supplying goods or services to an investment project or enterprise in a host country with local interests retaining majority ownership, so that the equity share of the foreign company, if it has one, does not give it control of the project through ownership. But this does not mean that the foreign company cannot exercise partial or total control of the venture through other means. The possibility of separating ownership of equity from effective control has, in practice, given a major impetus to the growth of NFIs in developing countries.

Investment or Sales ?

While the host country will almost invariably consider NFIs as investments, a foreign company supplying real assets may regard an NFI project as an investment or it may not. It does—whether or not it has an equity stake—if it intends to share in the economic surplus to be generated by the NFI project once operational. In this case, the company and the host country have a common interest in ensuring the longer-term viability of the project. If, on the other hand, the company is mainly interested in selling resources to the project, its main concern is to maximise the difference between the price it is paid for the goods and services and the cost to it of supplying them; its concern for the long-term economic viability of the project is secondary at best. Here its interests are more fundamentally opposed to those of the host country, whose main concern is the capacity of the NFI to generate a surplus over time, and who seeks, other things equal, to

FOOD



In the manufacturing sector as a whole, the shift from FDI to NFI has been less clear-cut than in energy and mining. In the food industry, for instance, NFIs have been most important 'up-stream', in the growing of crops and livestock, where contracts with local growers have been used by foreign companies to shift part of the risk onto the growers while they retain both ownership and control of the high value-added activities of processing and marketing. In food processing, where foreign investment is mainly in high-value rather than mass-production products, NFIs are spreading but traditional FDI still predominates.

TEXTILES



The textile industry is a major activity in developing countries, but for most of them it is not a high-growth business and foreign investment has not played as prominent a role in its development since World War II as it has in, say, petrochemicals or automobiles. Barriers to entry in production are generally low in the highly fragmented textile and clothing industry of the OECD. One exception is synthetic fibres, and that is where traditional FDI by US and European fibre and petrochemical companies has been concentrated. Japanese newcomers, on the other hand, used equity-based NFIs initially and are now shifting increasingly to turnkey and licensing arrangements in synthetic fibres. But in textiles as a whole, NFIs have been particularly important in clothing production for export to OECD markets. Japanese companies led the way in international sub-contracting, followed by US and European manufacturers and buying groups.

The Japanese were essentially responding to resistance by host countries to majority foreign ownership in such a mature industry as textiles, while their domestic experience of sub-contracting had taught them the advantages of sharing and shifting risk. The international quota system has contributed both to North-South investment (mostly NFI) in the three Asian NIEs that are the largest exporters (Hong Kong, Korea and Taiwan) as well as the People's Republic of China, and to the spread of production capacities from the NIEs to a number of second-tier exporters (also mostly in Asia: Thailand, Malaysia, Indonesia, the Philippines, Sri Lanka, but also Panama, the Dominican Republic, Mauritius, Morocco and Tunisia).

minimise the difference between the cost and the price of the acquired assets. Growing awareness of this discrepancy is one of the reasons that have led many host countries in recent years to seek foreign companies that are willing to be investors rather than merely sellers, and to prefer equity joint ventures to non-equity NFIs.

The world economic situation changed radically in the early 1980s, and many developing countries that had opted for NFIs in preference to traditional FDI found they had jumped from the frying pan into the fire. The sharp rise in real interest rates and the fall in commodity prices, especially metals and then oil prices, left many developing countries saddled with a mountain of debt they could not service. Far from allowing themselves the 'luxury' of seeking increased local control over investment, what they required now was foreign investment on any terms, regardless of ownership.

Yet the revival of the interest of the developing countries in traditional FDI will not rule out further growth in NFIs, which will continue to gain in importance, superseding traditional FDI in some cases and complementing it in others, since a growing number of foreign investors are not adverse to NFI and many prefer it. One reason is increased financial leverage on key firm-specific (especially intangible) assets in technical, managerial and marketing know-how: by supplying such assets through NFIs, investors can sometimes generate substantial returns, while local partners—private or public—or international lenders (whether commercial or official) absorb start-up costs, provide working capital, and so on. A second reason is that NFIs can mean reduced exposure not only to local political risk but also to the financial and commercial risks, international as well as local, that normally accompany traditional FDI.

Companies are thus finding that NFIs can strengthen their competitive position both in developing countries and worldwide (which explains in part why the 1980s have witnessed a proliferation of NFIs within the OECD region as well). Such forms of investment have become a part of the global strategy of

international companies, comprising a new form of competition in oligopolistic markets. 'Latecomer' or 'outsider' multinationals and others trying to build market share are increasingly using NFIs to compete with the established multinationals and market leaders.

NFIs: A Tool of Competition

These newcomers may use NFI aggressively, as a means to overcome barriers to entry or to expand market shares either in particular host countries or worldwide. Such companies often offer host countries shared ownership or use of technology in return for preferential access to local markets or local supplies of key inputs. The newcomers include smaller OECD-based multinationals, internationally active engineering firms and multinationals based in developing countries, as well as such powerful corporations as Japanese automobile, petrochemical and synthetic-fibre producers and US oil companies that have expanded into petrochemicals and, for a few years, into mining.

In other cases, companies may use NFIs in developing countries as a defence against world-wide oligopolistic competition where their managerial or financial resources are stretched thin by pressures to be present in too many markets. By sharing technology, control and potential profits with local partners, they can benefit from the hosts' access to local markets, distribution networks and financing. Although less widespread than the aggressive use of NFIs, their defensive use is evident in the metals, automobile and food industries.

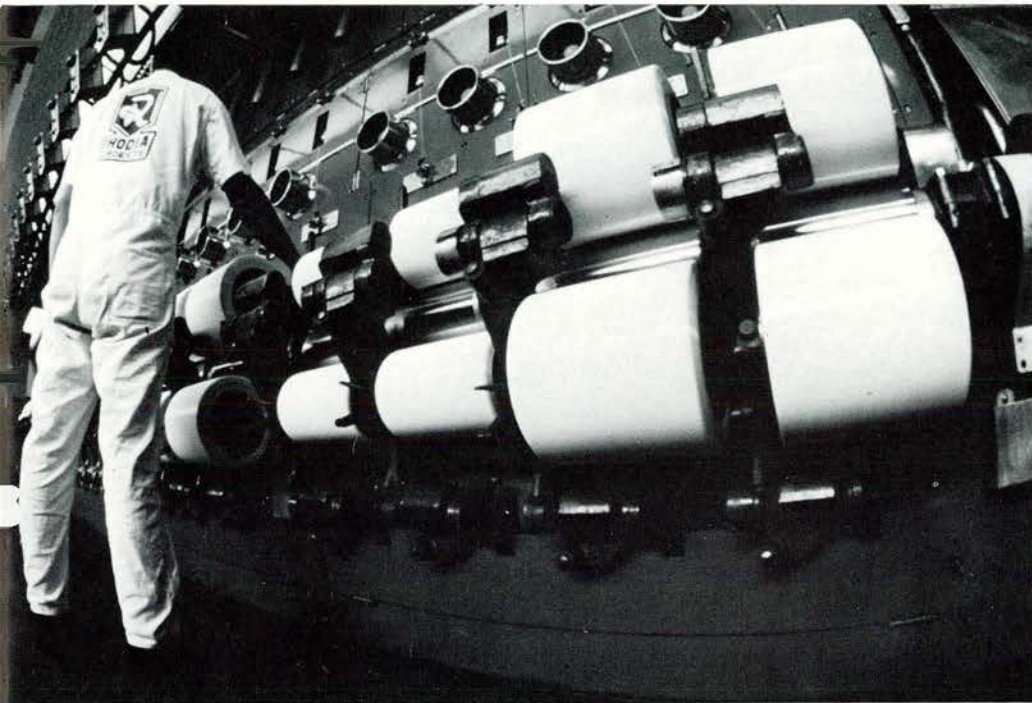
Competitors' use of NFIs can sometimes put considerable pressure on established firms. Faced with threats to their competitive strengths as their control over technology wanes, bar-

AUTOMOBILES



The internationalisation of the motor industry started early on in its history, when Ford set up a plant in Argentina in 1916. Before World War II, though, the industry's international financial flows were limited and expansion was mainly financed out of retained local earnings. Investment accelerated in the 1950s and '60s, with host countries soliciting foreign companies to set up production facilities to meet local and regional demand. NFIs played a minor role in the investment process at the time, and the few plants that were developed under such arrangements mostly succumbed to competition from foreign-owned factories.

Recently, foreign investment has been concentrated in Asian countries, where Japanese motor manufacturers have set up plants under NFI arrangements such as joint ventures and licensing agreements. An outstanding (but isolated) example of a country that has retained control over its domestic industry from its beginnings as a small-components business to its emergence as a large-scale export-oriented vehicle producer is South Korea. More typically, Brazil and Mexico have developed substantial export industries through traditional FDI by European and US concerns. This trend towards global integration under the centralised control of OECD-based multinationals is expected to continue, with South Korea's Hyundai the exception to the rule.



Rhône-Poulenc

have still to be taken on whether to invest or not and, if so, what capacity to install. Under NFI those decisions are more often taken by host countries that may, wittingly or not, take on risks and costs that more experienced or better informed multinational companies would not have incurred. In sectors as disparate as mining, steel, petrochemicals and motor manufacturing, large NFI ventures have been undertaken whose viability depends on exports but whose output cannot be sold profitably on world markets. There are also examples of NFIs in projects that are highly cost-inefficient and oriented towards the local market; their survival has required high output prices, large public subsidies and protection by tough import barriers.

□ □

NFIs can thus have both beneficial and adverse effects on worldwide economic development: they can contribute to excess capacity in certain sectors and hence to increased trade tensions both between North and South and within the OECD—but they may also be important in sustaining the growth of the world economy in the coming years. ■

Traditional direct investment has been prominent in synthetic fibres.

riers to entry fall and margins are squeezed, they may use NFIs to pull out of markets for 'mature' products, supplying the technology to NFI ventures in host countries and using the returns to develop new products and technologies.

Many corporate investors have come to appreciate the virtues of NFI and its potential advantages over traditional FDI both as a means to shed risk and increase financial leverage on non-financial assets and as a competitive tool. They find that, just as equity ownership does not necessarily imply effective control of a foreign venture, so minority or even zero ownership does not have to mean insufficient control. The overall importance of NFIs relative to traditional FDI in the future will thus probably depend less on unilateral decisions by the host government in favour of one or the other than on the dynamics of international competition in particular industries—and on the interaction between that and overall conditions in a given host country.

Both the volume and the form of future investment flows (particularly in manufacturing) to, say, Brazil or Thailand will depend less on the policies of the host government on foreign investment per se than on two other sets of

factors. The first is the perceptions of potential investors of the size and growth-potential of the country's local or regional market and of its political stability, its macro-economic and industrial policies, and the availability of local managerial talent and skilled labour. And the second consideration is international: it involves the dynamics of competition—the changing nature of barriers to entry and exit—in the particular industry of the potential investor, which is affected, for example, by new technologies, protectionism and structural adjustment in OECD countries, and multilateral trade negotiations.

NFI can be a 'positive-sum game', to the extent that it opens up new avenues for investment and growth both in developing countries and internationally. By separating the functions of equity ownership, finance and effective control and by joining the interests and assets of local and foreign firms and suppliers of finance on an international scale, NFI could conceivably be the vehicle for invigorated international capital accumulation and industrialisation that the advent a century ago of the joint-stock corporation provided for many OECD countries nationally.

But NFIs do not provide miracle solutions: the same basic decisions



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New Financial Instruments

Managing the Menagerie

Hélène Chadzynska

In spite of their names, suggesting a real 'financial market menagerie'—TIGRs, LYONs, and FOXs—and their evocative ring—Sawtooth and Rollercoaster swaps, Scouts, CARDS and CARS—most of the 'new' financial instruments—options, futures and swaps—are in truth not entirely 'new'. The five hundred or so instruments currently in use are often no more than variants on, or combinations of, existing instruments.

Their 'novelty' lies mainly in the way they are created and used. Deregulation, financial disintermediation (since buyers and sellers are often now more directly linked) and trading via computer have increased competition, resulting in the creation of specialised markets in instruments such as options, the elimination of certain stages in the trading process, increased price transparency and the use of more effective buying and selling techniques. Financial instruments are thus often a more attractive way of raising funds than traditional bank lending. Because they are traded on computer screens, a much wider range of products and 'customised' over-the-counter products can be offered, thereby making more effective risk cover possible.

Formerly reserved to banking institutions and to large multinationals, financial instruments are now accessible to a very wide range of new users. The volume of trading has thus risen steeply since the beginning of the 1980s (Tables 1 and 2).

Although new financial instruments

What legal and accounting changes are required to cope with the rapid developments taking place in new financial instruments? What regulations should be adopted to ensure that firms and banks assess risks correctly, that they respond appropriately to the accounting challenges posed by the new instruments and that they disclose useful information to the public—without impeding the benefits of their rapid expansion?

are a beneficial innovation, they are not without their drawbacks, and their use does give rise to some problems.

What are the Major Risks?

The new possibilities opened up by computers and telecommunications are a source of potential danger. The electronic revolution has spawned a new generation of specialists with a

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perfect grasp of both computers and financial engineering who can devise made-to-measure derivative products or combinations of financial instruments at very low marginal cost. Computers in trading rooms and corporate financial divisions are linked together in a worldwide network, making possible round-the-clock trading in financial markets and over-the-counter dealing between brokers.

The new technologies enable active traders in the market for a particular instrument to react almost simultaneously to price movements. Because the trading is done on computer screens, there is often no paper record of the transactions that have taken place—or not immediately, at least. For some instruments such as over-the-counter options or certain swaps, transactions are not even carried out in any physical market-place, but are conducted directly between two traders, one of whom agrees, in the hope of making a profit, to incur a risk that the other wishes to hedge against.

The danger has increased that abrupt changes in the financial markets of one country might spread rapidly, and with major repercussions, to others. It is becoming more difficult to keep track of markets, making the task of banking supervision all the more difficult.

The last, but certainly not the least, danger is that the numerous risks inherent in the new financial instruments (in management, credit, interest and exchange rates, financing and liquidity) do not usually show up in the

balance sheet; instead, they sometimes appear in an off-balance-sheet memorandum account or in the accompanying notes, and are most often recorded at their nominal value. This means that the actual amounts involved and the expected margin or degree of exposure are not apparent to someone reading the balance sheets. The possible existence of hidden liabilities thus puts creditors, employees and shareholders alike at risk, and makes the work of the accountants and auditors much more complex.

A Challenge to Accounting

Basic accounting principles are not always flexible enough to cope with instruments that rapidly go 'out of fashion' and many of which do not

even appear on balance sheets. The OECD recommendations on disclosure and accounting, for example, were not designed to deal with the new instruments.¹

While an overall review of the problems that these new instruments raise for accounting and disclosure is clearly necessary, it is equally clear that many of the fundamental accounting principles of the OECD member countries also should be reconsidered. The OECD therefore organised a symposium on the accounting and disclosure problems posed by new financial instruments.² A consensus has emerged among countries as between traders, users, bodies responsible for setting accounting standards and bank supervisors, on the importance of drawing up, on a multidisciplinary basis, national and international rules for accounting and disclosure.

The difficulty lies in finding appropriate rules rapidly. They must be sufficiently harmonised to ensure a maximum degree of security in transactions that are now on a worldwide scale, but at the same time flexible enough not to stifle the creativity of financial engineers.

Financial instruments are used to hedge against present or future risks, to exploit technical spreads between comparable markets, or to speculate on price fluctuations. The diversity of their uses poses tricky problems for accountants: matching profits and losses to their respective financial years; whether valuation should be at

1. *The OECD Guidelines for Multinational Enterprises*, OECD Publications, Paris, 1986; see Chapter II, section 3.

2. Published as *New Financial Instruments: Disclosure and Accounting*, OECD Publications, Paris, 1988.

Studio PONS/Banque Worms



Exit the chaos of the dealing room. The Banque Worms in Paris is one organisation that has responded to the increasing sophistication of financial markets by installing computers ready to intervene anywhere in the world, 24 hours a day.

Table 1
THE SWAP MARKET

INTEREST RATE SWAPS (total transactions: \$182 billion)			
Analysis by Currency		Geographical Analysis	
	%		%
US Dollar	76.4	United States	32
Australian Dollar	2.1	Canada	3
Deutschmark	5.5	Europe	33
Pound Sterling	5.1	Asia	25
Yen	7.6	Australia/New Zealand	4
Others	3.3	Others	3
Total	100	Total	100

CURRENCY SWAPS (total transactions: \$44 billion)			
Geographical Analysis		Analysis by Interest Basis	
	%		%
United States	12	Fixed/Floating	68
Canada	3	Fixed/Fixed	21
Europe	53	Floating/Floating	11
Asia	21		
Australia/New Zealand	9		
Others	2		
Total	100		100

Survey Period: 1 January-30 June 1987.
Source: Annexe to Malcolm Walley, 'Interest Rates and Currency Swaps', in *New Financial Instruments*, OECD Publications, Paris, 1988.

market value or historical cost or whichever is lower; whether unrealised losses should be netted against unrealised profits; and so on.³

In particular, the distinction between hedging and speculation is a fundamental one, since the accounting treatment, including profit recognition, is different for each type of operation.

From Hedging to Speculation

A firm takes out a hedge in order to neutralise certain risks that arise in the normal course of industrial and commercial activities, such as unforeseen changes in interest or exchange rates.

3. See Jean-Paul Milot, Secretary-General of the Conseil National de la Comptabilité (France), 'The Work of the Conseil National de la Comptabilité on the Accounting Treatment of New Financial Instruments' and 'Evaluation of Assets and Liabilities and Income Recognition: Comments', *ibid.*, on which the technical parts of this article are based.

The basic principle is simple in outline: after having identified the item to be hedged, an offsetting position is taken. According to the 'matching principle', profits and losses must generally be charged to a specific item. Hedges are therefore usually booked in the same way as the item that is being hedged. This means that if there is a time lag between the realisation of the hedged transaction and the hedge, price spreads should be entered in a suspense account so as to neutralise their unwanted effect (since the aim is not speculative) on the result. If the final result is not neutral, the balance is booked only when the hedge unwinds.

A transaction can be described as a hedge only if other balance-sheet items besides the item to which a risk is attached have been duly taken into account. That is, the risk attaching to the hedged item may already be offset or lessened by another item on the

balance sheet. If so, the hedge is merely a speculative transaction in disguise.

There is a fairly widespread trend whereby market or 'speculative' transactions are booked at the price prevailing on the day they are liquidated ('marked to market'). The whole problem lies in finding a way of recognising exactly in the accounts the uncertainty and risk that such transactions involve.

The profit or loss is evaluated on the basis of the difference between market prices on the opening date of the accounts and those on the closing date. On a narrow interpretation of the 'prudential principle', as long as a position has not been unwound, only *negative* price movements can be booked as provisions in the balance sheet. This is because balance sheet assets and liabilities correspond to realised transactions; unrealised transactions do not appear in the balance sheet.

Yet the accounting treatment of transactions should reflect *real results* and take into account the trader's intentions. In some markets there is so much liquidity that traders can enter and leave the market at will. The

TYPES OF OFF-BALANCE SHEET COMMITMENTS

Contingent Liabilities

Guarantees and other direct credit substitutes, acceptances and endorsements, documentary letters of credit and warranties.

Proper Commitments

All irrevocable facilities and arrangements and, particularly, Note Issuance Facilities (NIFs) and forward sales and purchases of assets.

Foreign Exchange, Interest Rate and other Market Rate-related Transactions

Forward foreign exchange transactions and currency swaps, interest rate swaps, financial futures, Forward Rate Agreements (FRAs), options, caps, floors and collars.

Table 2
GROWTH IN OFF-BALANCE-SHEET ACTIVITY IN CANADA

Instrument	1987 millions of Canadian dollars	1986	Increase %
Guarantees and letters of credit	26,486	26,499	0.0
Acceptances ¹	26,549	24,903	6.6
Commitments to extend credit	228,219	222,076	2.8
Issuance facilities	7,366	6,230	18.2
Foreign exchange forward contracts	468,268	353,396	32.5
Foreign currency and interest rate swaps	97,972	57,856	69.3
Foreign currency and interest rate futures	24,796	14,165	75.1
Future rate agreements	41,857	20,012	109.2
Foreign currency and interest rate options	5,603	4,240	32.0

1. Acceptances are on-balance-sheet transactions in Canada.
Source: David Robertson, 'National/International Approaches to Accounting and Reporting for New Financial Instruments' in *New Financial Instruments*, OECD, 1988.

trader's decision to maintain or liquidate a position is therefore dictated solely by his expectations as to the profits to be made on future price changes.

Whether the transaction is 'realised' or not should not therefore affect the result. Care should be taken that ill-advised or inappropriate legal measures do not encourage traders to unwind positions prematurely in order to influence the result. For example, a method that did not recognise *gains* would oblige traders who wished to show them to sell and then buy back immediately, putting artificial pressure on prices and enabling traders more or less to choose the result they wanted to show, since it would also be possible not to show gains.

Therefore, if the safety and the liquidity of the market are such that the decision whether or not to unwind a position is dictated solely by the trader's speculative expectations, price movements at the date of closure of the accounts, *whether they are gains or losses*, should be reflected directly in the result.

These remarks give some idea, if only a rough one, of the difficulty of the task facing accountants: they have to assess both the nature of the markets

(safety and liquidity) and traders' intentions (which, for speculative purposes, will obviously be to seek to exploit price differences).

Disclosure: What, For Whom, Why?

All accounting and finance hinges on there being a good system of internal control and information. In these activities, two fundamental requirements have to be met: completeness and simplicity.

The question of completeness is particularly important where hedges are concerned. It has been seen that some hedges are in truth pseudo-hedges that may conceal a mere speculative position, and that the strength of a hedge can be assessed only after all the factors bearing on the risk to be covered have been taken into account. The information disclosed should therefore reveal not only the accounting principles used, the aims pursued by the enterprise and the extent of its off-balance sheet commitments, but also the degree of risk exposure.

4. See Peter Cooke, former Chairman of the Basel Committee on Banking Regulations and Supervisory Practices. (Bank for International Settlements) 'Co-operation between Regulatory Authorities', *ibid.*

Yet the information disclosed must be comprehensible to a very varied public. Composite indicators of the degree of exposure would tell the public what it wanted to know without going into the technical details—but they still have to be devised.

Major progress on disclosure has been made by financial institutions, thanks mainly to the work by the Bank for International Settlements (BIS).⁴ The Financial Accounting Standards Board in the United States has also drawn up an 'Exposure Draft' addressed both to banking and non-banking institutions. A certain consensus seems to be emerging from these efforts on the importance of reducing risks by improving the disclosure of off-balance sheet transactions.

□ □

The disclosure of financial information has never in itself been the solution to all the problems that have appeared. But better-quality and internationally harmonised disclosure of information about new financial instruments and their impact should make it possible to strengthen both the public's confidence in them and the stability of financial markets. ■



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The OECD and the Major

Tsuneo Oyake

Two fundamental trends are increasingly affecting economic relations between developing and OECD countries: the growing heterogeneity among developing countries and the increasing importance of a number of major developing economies (MDEs). Indeed, far-reaching structural change and rapid expansion, as well as growing involvement in international trade and finance, have imparted a significant role to the MDEs. As a result, changes in these economies increasingly affect the volume and the structure of world economic activity. Clearly, a higher degree of mutual understanding is called for between OECD countries and MDEs, as is an awareness of their respective roles and responsibilities in working for growth in the world economy. OECD member countries regard the emergence of a range of MDEs as a wholly positive phenomenon and value the contributions that these economies increasingly make to a co-operative world economic system.

The emergence of a global economy—reflecting the continued rise in trade as a proportion of total world output, the globalisation of production, finance and markets as a result of lower costs of international transport and communication, the rapid diffusion of new technologies, relatively open policies on the international movement of goods, services and capital, and the pursuit of outward-oriented policies in an increasing number of developing countries—is indisputable. It offers the potential for spreading advances in human welfare around the world. But new policy issues have also emerged, and most MDEs are very much part of this process of globalisation and are increasingly involved in a range of new policy issues.

The open system of international trade, investment and finance has been instrumental in enabling the MDEs to share in the gains of international trade and to adjust themselves smoothly to rapidly changing circumstances in the world economy. These economies have progressively increased their domestic savings and accumulated human and physical capital as well as technological and organisational expertise and, as a result, the MDEs, especially the 'Newly Industrialised Economies' (NIEs) in Asia, compete today with the OECD countries in a wide range of manufactured products and services. But the competitive pressures and necessity of adjustment that result are bound up with broader transformations, such as shifts in competitive positions inside the OECD

area, macro-economic developments, technological progress and changes in patterns of consumption.

Against this background it is of the utmost importance to persevere with and improve the open system of multi-lateral trading, investment and payments and to pursue market-oriented structural adjustment. OECD countries and MDEs have a joint responsibility here. The notion of comparative advantage should be seen as a 'dynamic' phenomenon, which is rapidly shifting between countries, and economic integration in a broader range of activities requires a wider set of rules, to encompass areas such as intellectual property rights, investment, services, environment and social considerations.

Global Interaction and Policy Issues

The Uruguay Round, with its range of new issues together with extended coverage of traditional issues, is the main instrument designed to adapt and extend the 'rules of the game' to meet these major challenges—in which all the MDEs, and not simply the Asian NIEs, are involved in one way or other. Although they are not all contracting parties to the GATT, a key to the success of the Uruguay Round negotiations will be the readiness of the MDEs to move beyond claiming 'special and differential treatment', towards sharing obligations and responsibil-

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r Developing Economies

ities in a manner which suits their capacity to comply.

In spite of remarkable efforts in R&D and education, the MDEs remain very much dependent on the inflow of technology from OECD countries through foreign investment, corporate networks and alliances between OECD and MDE firms, the importing of capital goods, licensing of patents and supply of consultancy services, official technical assistance, and the access of MDE nationals to OECD educational and research facilities. The MDEs increasingly acknowledge that market forces are the best way to promote



J. P. Laffont/Sygnia

The change in the direction of policy in Korea and Taiwan will require a highly skilled labour force and increasing use of advanced technology.

technological and industrial change. And it is increasingly recognised that appropriate multilateral rules on the protection of intellectual property rights are necessary to ensure the international transmission of proprietary technology.¹

While the liberalisation of direct investment regimes in some MDEs has contributed significantly to the globalisation of production, finance and markets, many restrictions remain, notably in the more inward-looking economies.

1. See Ebba Dohman, 'International Piracy and Intellectual Property', *The OECD Observer*, No. 154, October/November 1988.

WHICH ARE THE MAJOR DEVELOPING ECONOMIES?

The 'Major Developing Economies' (MDEs) do not constitute a 'country group' with common characteristics. The list is based on the recognition that in an increasingly global economy, a number of developing economies are assuming important roles in various ways, in several of the areas that make up the OECD's policy agenda in the years ahead:

- the four rapidly growing and relatively high-income Asian 'Newly Industrialising Economies' (NIEs)—Hong Kong, Singapore, South Korea and Taiwan
- the Latin American MDEs—Argentina, Brazil, and Mexico
- three of the other ASEAN member states—Indonesia, Malaysia and Thailand
- the 'Big Asian Two'—China and India.

These economies accounted for 12%

of the aggregate GNP of the world market economy (that is, the world economy minus European CMEA economies,¹ North Korea, Mongolia and Albania) in 1985. This proportion was more than twice that of Germany and slightly larger than that of Japan. In other words, the GNP of the eight largest MDEs was about equal to that of the seventeen OECD economies which are not members of the Group of Seven. While comparisons of GNP provide an indication of economic weight, the economic linkages between OECD countries and MDEs are even more important. The total merchandise exports of the MDEs in 1985 exceeded those of the United States, equalling those of Japan and the United Kingdom combined. Last year's current account surpluses of Korea and Taiwan together represent approximately one-third of that of Japan.

The MDEs are a disparate group, not a homogeneous ensemble. They range from city states with no more than three million inhabitants to countries with populations of over a billion. Although Singapore and Hong Kong have per capita national incomes in the same range as OECD countries, India, Indonesia and China are low-income countries. The biggest net debtors and the biggest net creditors in the developing world are to be found amongst the MDEs. Most MDEs are significant exporters of manufactured goods. The group also includes major oil exporters and two important financial centres. There are, of course, other countries which, it could be argued, should be included in such an analysis.

1. The European members of the Council for Mutual Economic Assistance are the USSR, Bulgaria, Hungary, the German Democratic Republic, Poland, Romania and Czechoslovakia.

Nevertheless, the number of bilateral agreements on investment protection between OECD countries and MDEs has rapidly increased in recent years, and direct investment has been an important contributor to the transfer to MDEs of technology and management expertise as well as capital.

Further liberalisation of direct investment regimes in these economies would strengthen this process of globalisation. Most of the Asian MDEs are particularly in favour of inward and outward flows of investment to further the continued renewal and upgrading of the structure of their economy

through steady increases in their competitiveness. In contrast, the debt-related plunge in investments, notably direct investments, has seriously impaired the ability of the Latin American MDEs to take advantage of the new possibilities for international specialisation. Some MDEs have also emerged as significant investors in other countries: Brazil, Hong Kong and Taiwan, for example, are among the top fifteen sources of direct investment.

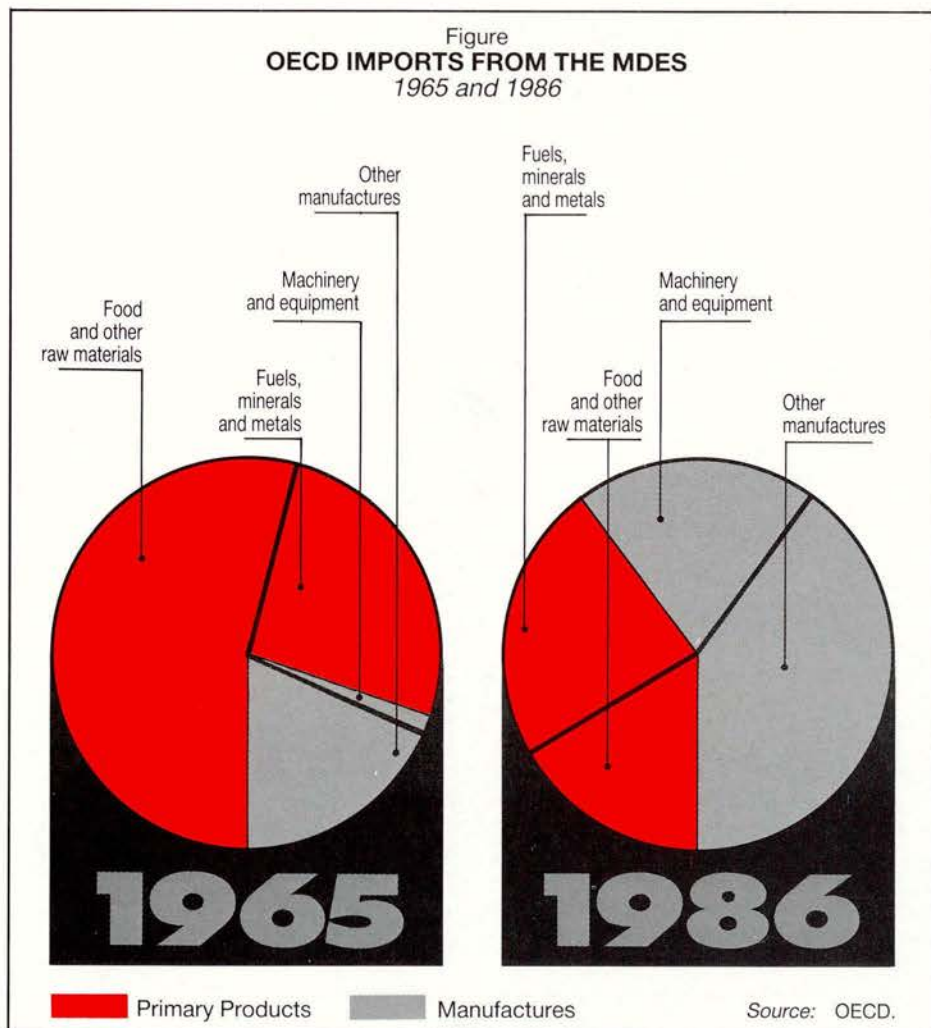
Financial markets have a key role in effecting the process of economic development, although the MDEs have different approaches to them and the

degree of development and liberalisation of their financial systems varies considerably. Singapore and Hong Kong already are important international financial centres; Taiwan and Korea still retain a significant number of restrictions stemming from previous policies, but are moving towards liberalisation; and in Argentina, Brazil and Mexico the challenge is to make debt-servicing compatible with the financial stability required for the efficient functioning of the domestic financial sector and renewed access to international financial markets.

The maintenance and development of efficient and sound financial sectors, based on market principles, is a major requirement for further economic progress in MDEs. Their integration in a well-functioning international financial system through the enhancement of competition, both domestically and internationally, along with adequate prudential and supervisory arrangements designed to maintain the safety and the soundness of the system and to ensure a high standard of investor protection, is a common concern of the OECD countries and the MDEs.

The current complex problem of external imbalances, centred on some of the major OECD countries, involves two sets of MDEs: the Asian NIEs, notably the large current-account surpluses of Korea and Taiwan, and the Latin American debtors, which have large trade surpluses required for debt-servicing and contribute a degree of fragility to the international financial system through their debt problems. Both of these special situations reflect the interlinkages in growth, trade and payments patterns between OECD economies and these MDEs. They are also the results of domestic economic policies and socio-political factors which are deeply entrenched in the MDEs in question. The MDEs can make an important contribution to maintaining the growth in world trade and output. This is true not only of the Asian NIEs but also of the other Asian MDEs—and the Latin American MDEs if

Figure
OECD IMPORTS FROM THE MDES
1965 and 1986





IFC/World Bank/J. Pickereil

Argentina, Brazil and Mexico have the natural and human resources and industrial capacity to take on an important role in the global economy.

they can find the path to price stability and growth. It is therefore in the interest of the OECD countries to ensure that their policies and demands vis-à-vis the MDEs are consistent with the dynamism of these economies.

Prospects for Progress in Individual MDEs

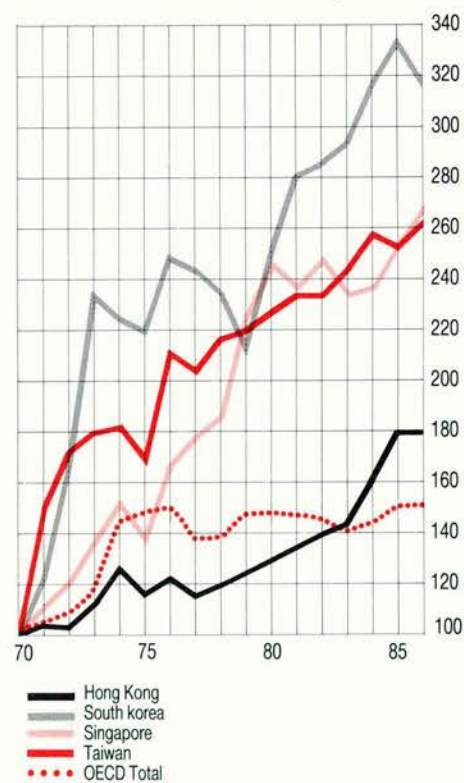
All of the MDEs are exerting growing influence on the world economy. The different economic situations in which

the MDEs now find themselves reflect objective factors (such as resource endowment, size and location), external phenomena (commodity prices, interest rates, exchange rates, OECD import demand) and domestic policies. But the individuality of each of these economies is really striking. What are the major policy trends and issues in the different MDEs?

The Asian NIEs are linked to the world economy—through trade (in its composition and geographical direc-

tion, for example) and finance (share of investment financed by domestic savings, composition of financial flows and, with Hong Kong and Singapore, the free movement of capital)—in a fashion which is no longer really significantly different from the links connecting OECD economies. Nevertheless, there is extraordinary diversity in the natural and other resources, political institutions, geographical location as well as the structures of production and trade of the Asian NIEs.

Figure
RATIO OF EXPORTS TO OUTPUT,¹
1970-86
Manufactures Only



1. Exports are on a gross-value basis, whereas output corresponds to value added. These ratios therefore overstate the proportion of manufacturing which is exported. In addition, the figures for Hong Kong and Singapore include substantial re-exports.

Sources: OECD; World Bank; statistics published by Taiwan.



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Malaysia, Thailand and Indonesia have managed to achieve not only fast export growth but have also developed their agricultural sectors.

In Korea and Taiwan, new priorities are pointing to a resetting of economic strategies through further liberalisation of formal and informal trade barriers and the deregulation of domestic financial markets, of direct investment regimes and of exchange controls. They lead in the direction of further structural adjustment towards activities that demand a more skilled labour force and advanced technology and hence a further evolution in the role of these economies in the pattern of international specialisation. In parallel, the process of democratisation of political life might increase the prominence of social development objectives, such as housing, health insurance and pension schemes.

The origins of the Taiwanese and Korean current account surpluses are different. With Taiwan, the surplus began to emerge earlier with a significant decline, from the early 1980s, in the share of investments in GDP. With Korea, the surplus emerged more recently, as a counterpart to a steady increase in savings, partly associated

with rapid growth in personal incomes. The degree and speed of external adjustment of these economies has to be seen in relation to the adjustment process among major industrial economies. Nevertheless, because of their high domestic savings rates, these economies may emerge as persistent capital exporters to some degree, even after significant adjustment.

Singapore's export-led growth has been accompanied by an extremely high savings rate and the extensive presence of multinational corporations. In trade and investment, Singapore and Hong Kong are more open than many industrial countries. High average labour costs in Singapore are leading towards an 'upgrading' of the manufacturing sector and increased emphasis on Singapore's status as a regional business centre by virtue of its location, its large port, advanced communication facilities and international financial centre. Faced with similar

pressures from labour costs, Hong Kong also has to upgrade the structure of its manufactured exports to sustain rapid economic growth. The redeployment of Hong Kong's more traditional labour-intensive activities to China's coastal areas is already actively under way and is likely to accelerate. The joint declaration of the United Kingdom and Chinese Governments has set the direction for future developments after return to Chinese sovereignty in 1997.

China is in a period of economic reform as it emerges from a long period of withdrawal from the international economy. It is increasingly playing a significant role in the rapidly advancing Asian economy. The vast majority of the Chinese population is still employed on the land, but rising productivity is beginning to shift labour away from agriculture. The progressive dismantling of administrative processes and their replacement by decentralised and market-based decisions have improved incentives in production. In parallel to the industrialisation led by rural demand, efforts are being made to develop coastal regions, through the establishment of export-oriented industries. China's exports and imports are growing rapidly, with Hong Kong entrepreneurs taking an active role. Faced with inflationary pressures, economic policy reforms have lost momentum recently but China seems to be committed to market-oriented structural change.² The modernisation and opening up of China's economy will be of a major international importance.

India is also on the path to reform, although progress has been uneven. It has demonstrated considerable prowess in information technology and has become an important exporter of computer software. But the domestic economy remains encumbered by administrative constraints, while its policy of encouraging the creation of small businesses for employment and income-distribution purposes has created labour-intensive industries

2. See pp. 9-14.



that are internationally competitive neither in quality nor in costs. Major policy and structural changes are required before India can assume a more important global economic role than it has had in the past. Some economic liberalisation has taken place, with the priority given to internal deregulation of the industrial sector and an improved climate for foreign companies in technological collaboration and equity participation, rather than on trade liberalisation.

Three of the ASEAN countries—Malaysia, Thailand and Indonesia—have not only achieved the fastest increases in manufactured exports in recent years, but have also developed their agricultural sectors simultaneously. These countries do not yet have the same managerial and technological capacities as the Asian NIEs. Such differences provide a solid basis for growing economic integration in the region, in which Japan is playing a key role through trade and investment flows.

Malaysia and Thailand have established sizable manufacturing capabilities often through direct investments and their policy orientations are, by and large, propitious for further economic progress. Indonesia is less far advanced, but in recent years, it has been rapidly diversifying its sources of public and export revenues away from oil and gas through a programme of reform geared to increasing freedom and transparency in both domestic and export-oriented economic activities.

The Latin American MDEs have established a broad industrial base protected from foreign competition. The human and natural resources and industrial capacities necessary to take on an important role in the global economy exist in the Latin American MDEs, especially in Brazil and Mexico. But major policy reforms will be required. Economic stabilisation will be essential, entailing fiscal and budgetary measures which are subject to complex socio-political problems. Significant reductions would also be

The progressive dismantling of China's administrative procedures and their replacement by decentralised, market-based decisions have reinforced incentives in production.

L. Joutani/OECD



In conformity with the Communiqué of the Council meeting at ministerial level in May 1988, and as a first step, an Informal Seminar on 'Sustaining the Development of the Global Economy: National Policies and International Co-operation' was held on 24 and 25 January 1989, co-sponsored by the OECD and the Institut Français des Relations Internationales and with participation, on a personal basis, of business people, academics and officials from the OECD area and the four Asian NIEs (Hong Kong, Korea, Singapore and Taiwan).

The Informal Seminar has confirmed

that the globalisation of the economy has resulted in dynamic changes. The discussions have underlined that the impressive economic performance of the NIEs in recent years is one of the major positive features of these changes. The discussions have revealed a strong convergence of views among participants on general principles of economic policy. Another important conclusion which derives from the proceedings is that there is a general recognition that the OECD countries and the NIEs share joint responsibilities in the management and smooth functioning of the world market economy.

required in existing distortions in product and factor markets. These links between macro-economic imbalances, structural adjustment requirements and socio-political constraints in Latin American MDEs present major challenges. Mexico has been in a sustained phase of adjustment for the past few years, and has made real progress towards liberalising direct investment and deregulating the domestic market. Brazil suffers from major macro-economic imbalances, especially high and

accelerating inflation, but has managed to maintain a healthy surplus on its trade account through appropriate exchange-rate management and import restrictions. Argentina has longstanding difficulties in realising its economic potential, mainly because of inward-oriented and unstable economic policies that have resulted in balance-of-payments problems and have isolated the economy from the dynamic trends in the world economy.

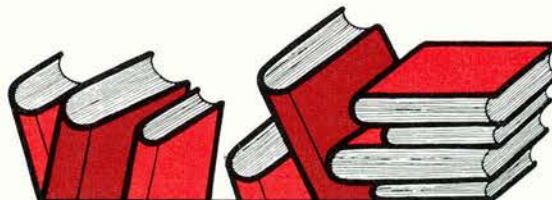
To degrees which vary with their economic weight and the nature of their integration in the world economy, all of the major developing economies are exerting growing influence on the economies of OECD countries. The challenges—and opportunities—which have emerged in the global economy suggest the growing importance that the OECD should better understand the circumstances, policies and aspirations of a range of MDEs and explore avenues for consultations between these and OECD countries to improve further the functioning of the world economy.

The most pressing requirement is to apply this approach to the Asian NIEs since they are already very much part of the structural and macro-economic changes taking place in the global market economy. The recent Informal Seminar between OECD countries and the Asian NIEs (box, left) clearly confirmed that there is a basis, indeed, a requirement, for a flexible, informal policy dialogue among OECD countries and the major developing economies. ■



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This study was prepared by David W. Pearce and Anil Markandya, respectively Professor of Economics and Senior Lecturer in Economics at University College London.

See David Pearce and Anil Markandya, 'Pricing the Environment', *The OECD Observer*, No. 151, April/May 1988.

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In 'Taxing Consumption' by Kenneth Messere and John Nørregaard, *The OECD Observer*, No. 156, February/March 1989, the Table on VAT rates in OECD countries on p. 27 should have shown the UK lower rate as 0%, the Portuguese higher rate as 30%, and the yield in New Zealand from the standard rate as 100%.

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