



**Transitions are Dangerous:
Oil and the World Economy, 1990**

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The OIES Series of Papers on Gulf and World Oil Issues

The purpose of this series of eight papers is to analyse a number of oil issues - political, economic and industrial - which have always been important but which have acquired additional significance during the current Gulf crisis.

The analysis in each paper attempts to explain the nature of the problem at hand, the behaviour of economic agents in times of crisis and to draw policy implications for both governments and industry.

The series begins with a paper providing a political analysis of the Gulf crisis and of possible future developments. The other papers are concerned more specifically with oil and gas issues. The papers will appear weekly beginning on 3 October 1990 in a sequence in which problems with greater significance for the short term are dealt with first. The series then moves to issues with a long-term dimension (world economy, substitution of oil by gas, demand, environment).

The series extends significantly the work presented at a very early stage of the crisis (mid-August) in the Institute's study *The First Oil War*. Many new topics have been researched, and those addressed in *The First Oil War* developed in greater depth.

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1. Oil in the World Economy

For the last twenty years, oil has probably been the single most important economic commodity. Its only competitor, with the exception of money itself, has perhaps been the microchip. Oil has the greatest share of world trade, provides the mainstay of the world's largest companies, is the dominant force in the determination of energy prices - and has now played a major part in bringing about international conflict - the First Oil War. The leverage of oil over almost every aspect of economic life results from the combination of its great importance to all economies and the concentration of low-cost oil resources in a limited and unstable part of the world. Consequently, it is inevitably a "political commodity".

As Figure 1 shows, the sharp increases in oil prices in 1973 and 1979 were followed by global recessions and acceleration in the rate of inflation. In retrospect, this association between the price of oil and economic activity in industrial economies can be seen to date back to at least the Second World War.¹ The oil crisis of 1973/4 brought the Middle East and its politics to centre stage and emphasized the interdependence (in terms of both energy trade and financial flows) of oil exporters, oil importers and industrial countries. At the same time, it underlined their different interests, amongst developing countries as well as between the developing world and the industrial economies. Above all, the two oil price crises of the 1970s provided formidable tests of economic policy making, at both national and international levels.

In 1986 oil prices, after drifting downwards for some five years, fell sharply, in real terms back to the levels of the mid-1970s. This fall was not, however, followed by a significant spurt in the performance of oil-importing countries. Had oil lost some of its economic power? Over the previous fifteen years the very importance of oil to economic activity had led individuals, companies and economies to reduce their dependence upon it, thus diminishing that power.

This paper seeks to make a brief assessment of the present role of oil in the world economy, against which to set the impact of developments in the Middle East. At the time of writing, we do not know what is going to happen in the Middle East. There could be a war in the Gulf sufficiently serious in its consequences for Saudi Arabian oil output to plunge the world economy into recession. Even in such a case we would not know how great a crisis it would have to be, how far prices would have to rise, and for how long. The connection between oil and the global economy is changing, though not in every respect diminishing. It is important to be able to understand the nature of these changes in order to avoid the errors of policy which so frequently occur during periods of transition.²

¹ This is clearly shown for the United States by James Hamilton in the *Journal of Political Economy*, April 1983 pp. 228-48.

² "Transitions are dangerous" was one of Charles Kindleberger's "ten lessons for today" from the crash of 1929.

The OECD Economic Cycle

1970-89

Per cent per annum

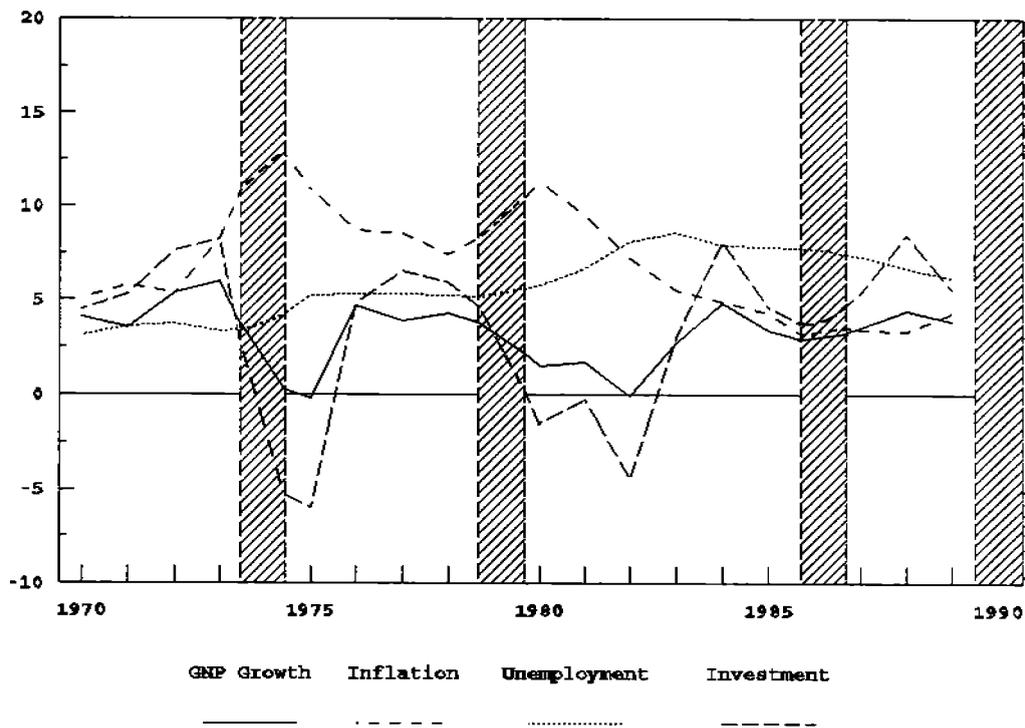


Figure 1

2. The Macro-economic Impact of Oil Price Changes

A rise in the price of oil, as well as simply raising the general price level, has two immediate effects on the "real economy":

(i) It shifts the terms of trade between oil-importing and oil-exporting economies in favour of oil exporters. This alters the distribution of income between these groups of countries. Real income of oil importers falls and that of oil exporters rises. The impact of such terms of trade changes is dependent upon the importance of net oil exports or imports to each economy.³

(ii) It raises oil and energy cost in each economy. Even if macro-economic policy could be adjusted so as to offset perfectly any terms of trade impact on output, "equilibrium output", and hence probably also employment, would be lower in oil (energy)-using economies. Such changes in cost are, moreover, not usually changes in fundamental resource costs, but represent an increase in the overall "rent" element in total costs. The strength of this effect is dependent primarily on the shares of oil and energy in output. Raising energy costs will also alter the distribution of income within national economies and thus will have further impacts on both the "supply" and "demand" sides of the economy.

Oil and energy are so deeply embedded in any modern economy that these initial impacts will have many secondary effects on, for example, exchange rates and industrial competitiveness. We will explore some of these effects in subsequent sections, but no definitive and general assessment is possible - the impact of oil price changes depends as much on the overall structure and behaviour of an economy as it does on the extent of the initial shock. Above all, it depends upon the the responses of policy makers.

In the next two sections we consider these two effects separately, though they are in reality closely interwoven. The terms of trade effect normally receives more prominence in "rule of thumb" assessments of the effects of oil price changes, though in the longer term it may well be the impact on energy costs which is the more important.

³ If energy prices as a whole rise the impact is dependent upon net energy trade.

3. The Oil Importer's Tale

The terms of trade impact of oil price changes alters the international distribution of income. But further macro-economic effects will follow if this redistribution of real income also alters consumption and savings patterns. Rich countries generally save a higher proportion of their income than poor countries; and even more importantly a country which suddenly becomes a great deal richer is unlikely to be able to spend that income immediately. Hence expenditure is reduced in those countries which suffer a decline in real income - and they have historically included most industrial countries as well as some economically dynamic developing economies - but is not correspondingly increased in oil-exporting countries which are frequently underdeveloped in terms of infrastructure and industry. As a result, overall global expenditure declines, a development which will be reinforced as countries suffering a decrease in their real income reduce imports and thereby the export potential of their trading partners. A "Keynesian" global recession is therefore a distinct possibility.

This recessionary impetus can be countered in two ways. First, the income "saved" by oil exporters will generally be placed in the international banking system and lent to countries which have most need for it. This results in a "recycling" of funds back to spenders and thus re-injects funds into the world economy. Essentially this is a private sector solution, though international institutions may play a significant role. There is a danger, however, that countries may borrow in international markets merely to maintain the volume of oil imports and domestic consumption - with little thought as to how the adjustment of real income, and the repayment of interest, will eventually be made.

Governments in oil-importing countries may also attempt to offset recession by loosening monetary or fiscal policy. This will always be a difficult course because the immediate impact of an oil price rise is to raise the price level. Indeed, this is how the reduction in real income comes about. All industrial country governments will fear that this rise in the price level, which should be once-and-for-all, will produce inflationary responses in labour and product markets. Oil importers may also experience depreciating currencies which will further exacerbate inflation. Their first instinct may well be, therefore, to tighten policy rather than to slacken it.

The global economy went into recession following the oil shock of 1973/4 essentially for these reasons. The shock was not expected, and once it had happened was barely understood. Many, notably Professor Adelman, felt it would be immediately reversed by the collapse of the OPEC "cartel". In many countries, inflation was already high. The differences in "propensities to spend" between the industrial countries and rapidly-growing developing countries and the "low absorbers" amongst the oil producers was very great. The institutional arrangements for recycling were not immediately in place, though financial innovation was very rapid. A sharp global recession followed, and was later reversed once policy reactions changed and recycling got underway.

In the event, the world economy "accommodated" rather than "adjusted to" the first oil shock. As Figure 1 shows, the shock created both a general price spike and a permanent increase in the rate of inflation. It also largely created the developing country debt crisis of subsequent years. One result of inflation in industrial countries was

Figure 2

Energy Intensities 1973-88

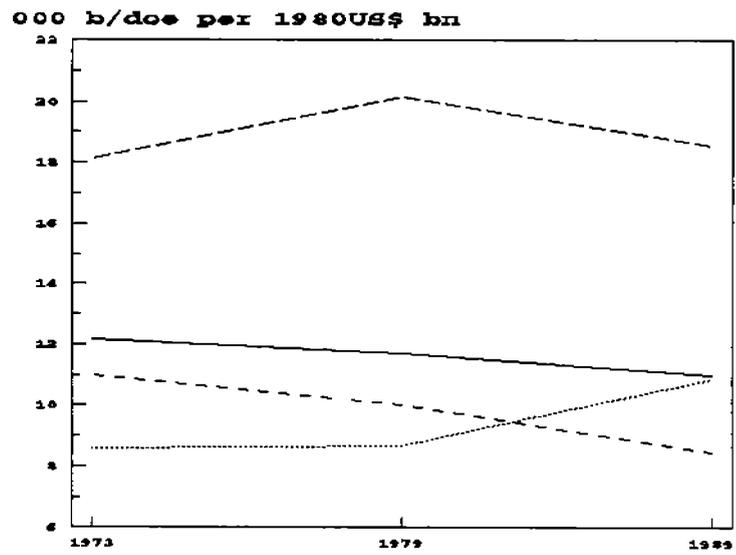
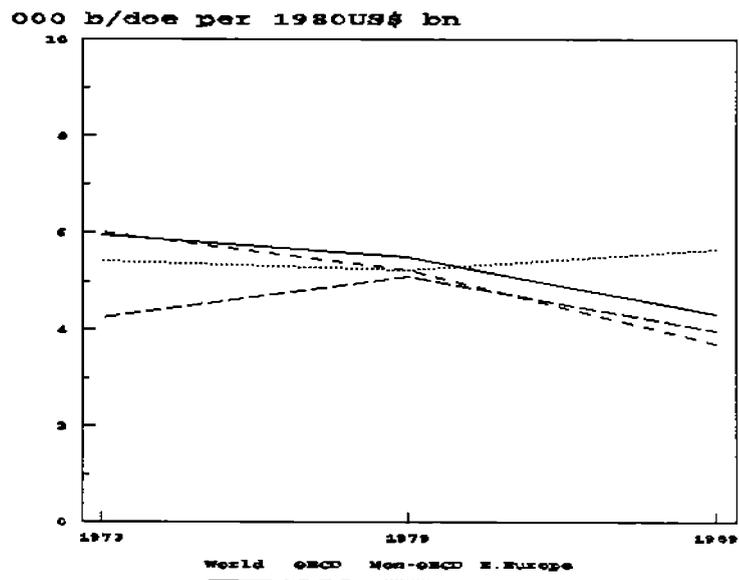


Figure 3

Oil Intensities 1973-88



Figures 2 and 3

that the initial shift in the distribution of income was partially offset by increases in the price of exports of manufactures from developed countries and weakness of the dollar.

By the time of the second oil shock of 1979/80, global economic circumstances had changed considerably. Oil importers amongst the industrial economies had reduced their dependence on oil imports (Figures 2 and 3 and Table 1), the "low absorbers" had ambitious expenditure plans underway - indeed some oil producers were already borrowing against future oil revenues - and the international financial system was capable of shifting money about the globe at a moment's notice. The immediate terms of trade impact of the second oil shock was therefore less than that of the first, though they were, in real terms, of similar magnitudes (Figure 4).

Yet the recession which followed the second oil shock was deeper and more widespread than that brought about by the first (Figure 5). Although the "pure shock" element was considerably less, and much better understood, the policy context was quite different. Inflation was now very serious and worsened by the oil price rise (Figure 1). Both the United States and the United Kingdom had elected right wing governments determined to reduce inflation rather than accommodate a further increase. Indeed this was made easier by the ability to blame anti-inflationary policies on an "external" and "global" cause. They set the tone for an ideological shift which lasted throughout the 1980s. The borrowing capacity of developing oil importers was lower, especially given the high interest rates which the tough anti-inflationary stance, implemented primarily through monetary policies, implied.

The "pure oil shock" was less powerful, the policy response more powerful. The result was the acceleration of moves to reduce not just on oil imports but on profligate energy use in general (Figure 2). By the mid-1980s, oil and energy intensities had been significantly reduced in industrial countries, though the most rapidly growing countries found this much more difficult. The result was a reduction in the overall importance of oil to the world economy in the sense of a simple "macro-economic lever" but a concentration of dependence in the large oil importers of the developing world such as India and Brazil. These countries made strenuous efforts to exploit domestic energy resources. The second oil shock, though soon considered to have been largely the result of intense and self-feeding short-term pressures in oil markets, did have a very profound effect on attitudes to oil and energy consumption. Most forecasters believed that prices would stay high, or even increase further. Price falls of the kind which actually took place throughout the coming decade were not anticipated. Pressure to economize on oil and energy was therefore sustained by longer-term expectations as well as the current level of prices.

Both reduced oil and energy dependence, the macro-economic situation and the policy context can be adduced to explain why the oil price falls of the mid-1980s did not produce a "boom". The impact was attenuated and the policy stance remained anti-inflationary. The benefit of oil price reductions was taken, in industrial countries at least, in reductions in the rate of inflation - to zero in Japan, Germany and the Netherlands. This probably did allow the steady economic growth which was such a curious feature of the second half of the decade to continue longer than would otherwise have been the case, but it is difficult not to conclude that the power over global

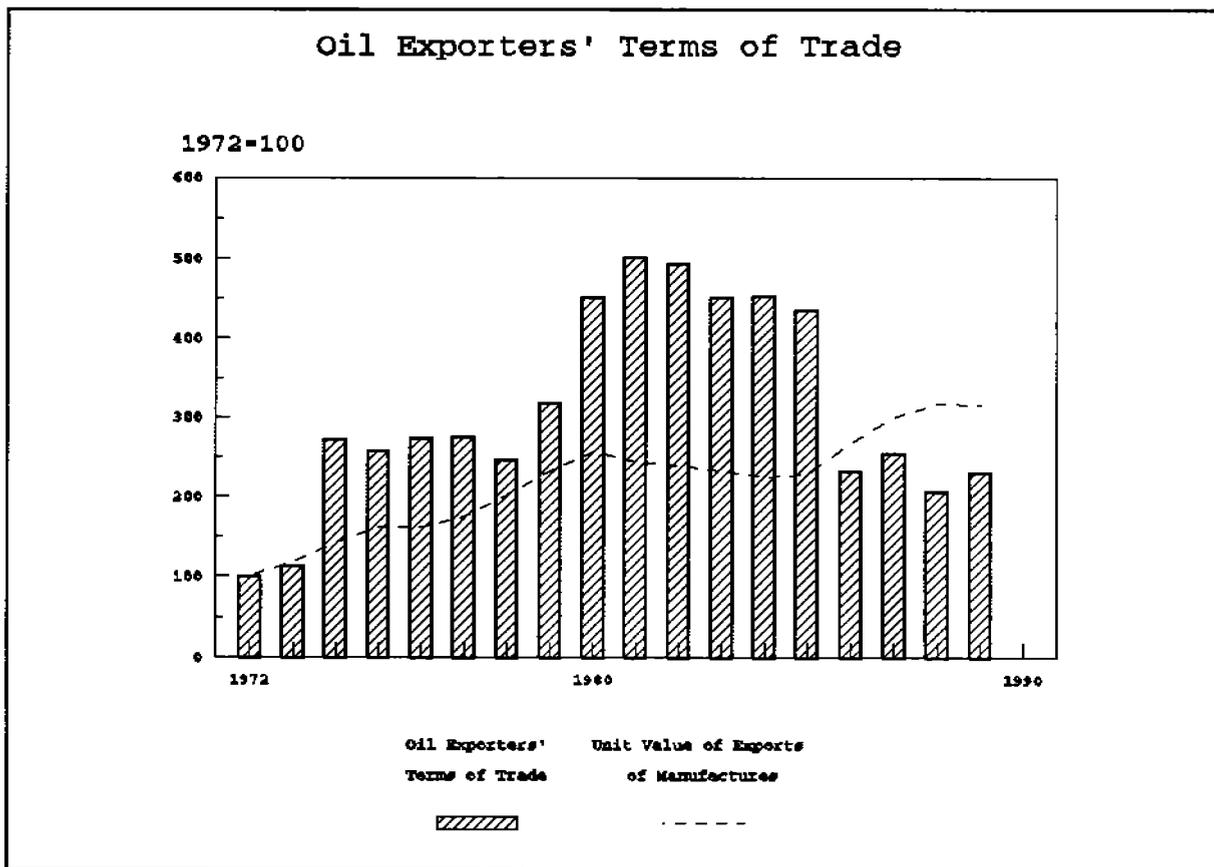


Figure 4

economic performance which oil producers grasped in the 1970s had been seriously eroded, not least by adjustment to the high prices themselves.

Tables 1 and 2 compare the energy contexts of the three crises. Not all countries experienced the same changes in circumstances - some reduced oil imports; some oil consumption; some energy consumption; some were able to do all, some none. There has, moreover, been some degree of convergence amongst industrial countries.

Figure 6 shows the changed balance of payments circumstances of the major economic groupings as an illustration of the reduction in distinction between "high spenders" and "low spenders". Oil exporters were by now high spenders, running current account deficits. On the other hand, the debt crisis has meant that international borrowing is no longer an option for many potential "continuing spenders" who would be forced to accept recession when oil prices rise. This problem is now, however, less acute than for most of the 1980s when falling oil prices allowed some reduction in debt burdens despite high interest rates. Figure 7 indicates signs that the economic cycles of the major industrial countries are emerging from the episode of stable growth in the second half of the 1980s less synchronized than they have been for a considerable number of years.

Finally, Figure 8 suggests that nominal changes in oil prices can be a misleading indicator of the real purchasing power of the dollar value of a barrel of oil. A \$20 rise

TABLE 1

COMPONENTS OF IMPORT SAVING

1973-88

Selected Industrial Countries

		OM/OC	OC/EC	EC/GNP	OM/GNP
USA	1973	0.37	0.47	14.99	2.56
	1979	0.45	0.47	13.68	2.92
	1989	0.42	0.42	11.15	1.96
JAPAN	1973	1.00	0.78	8.52	6.68
	1979	1.04	0.73	7.45	5.63
	1989	0.98	0.59	5.59	3.22
ITALY	1973	0.98	0.77	7.33	5.52
	1979	0.97	0.67	6.83	4.47
	1989	0.92	0.60	5.89	3.28
USSR	1973	-0.34	0.37	19.79	-2.46
	1979	-0.34	0.38	20.83	-2.72
	1989	-0.38	0.31	22.36	-2.61

Oil imports (OM), oil consumption (OC) and energy consumption (EC) in 000 b/d; GNP in 1980 US\$ billion.

TABLE 2
COMPONENTS OF OIL IMPORT SAVING
 1973-88

Selected Developing Countries

		OM/OC	OC/EC	EC/GNP	OM/GNP
BRAZIL	1973	0.93	0.61	7.89	4.44
	1979	0.87	0.54	8.48	3.98
	1989	0.49	0.39	9.69	1.85
GHANA	1973	1.00	0.44	2.25	1.00
	1979	0.84	0.45	2.80	1.07
	1989	1.00	0.45	2.47	1.12
INDIA	1973	0.69	0.31	12.83	2.73
	1979	0.61	0.32	13.68	2.61
	1989	0.40	0.28	14.55	1.61
THAILAND	1973	1.00	0.89	9.24	8.19
	1979	1.00	0.86	8.39	7.16
	1989	0.81	0.58	9.42	4.40
PHILIPPINES	1973	0.95	0.84	10.13	8.13
	1979	0.94	0.84	8.35	6.56
	1989	0.94	0.68	7.95	5.08
SOUTH KOREA	1973	1.06	0.59	12.81	8.05
	1979	0.98	0.66	12.90	8.37
	1989	1.00	0.50	12.27	6.14

Oil imports (OM), oil consumption (OC) and energy consumption (EC) in 000 b/d; GNP in 1980 US\$ billion.

Growth and Oil Shocks

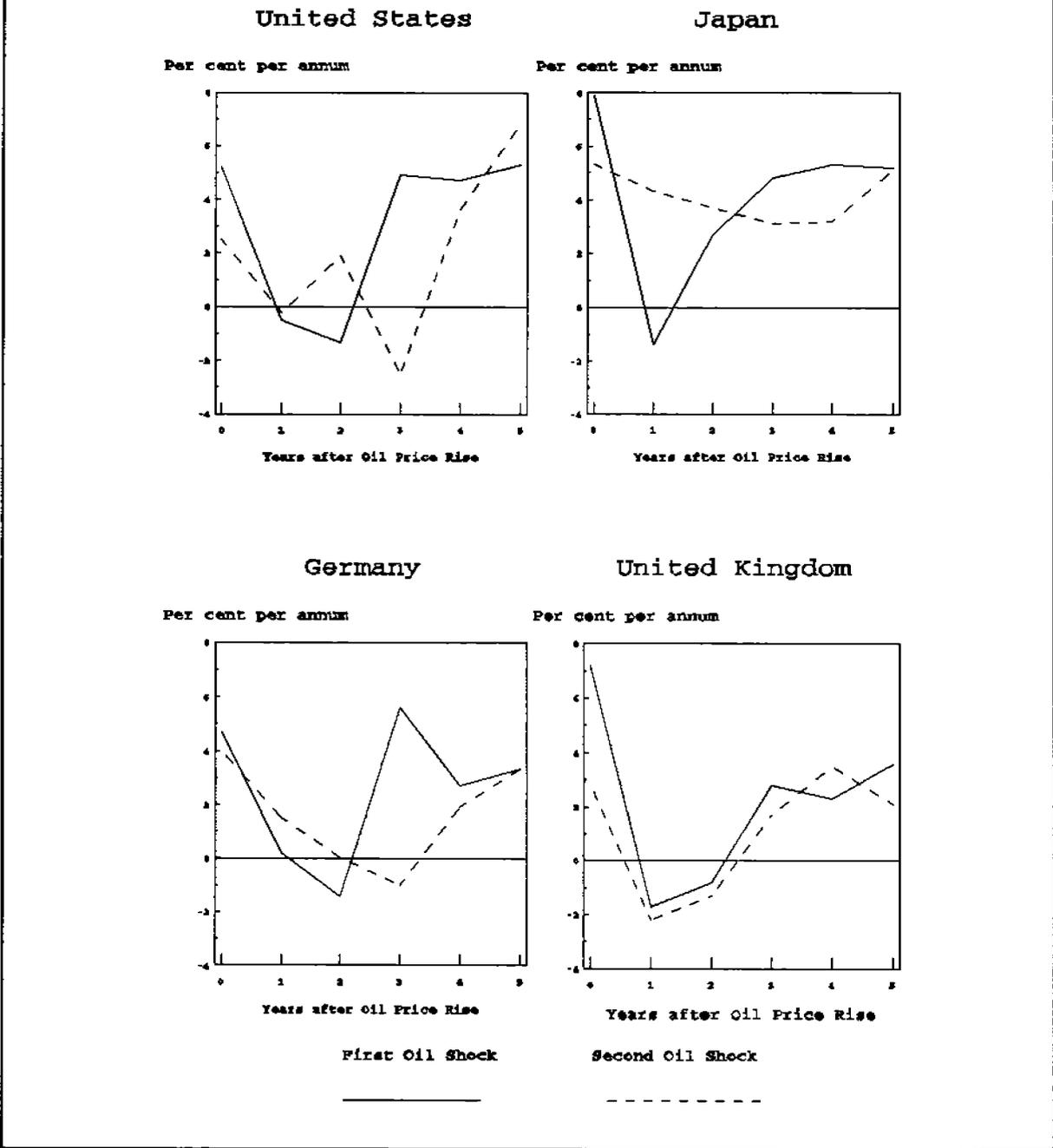


Figure 5

in the price of a barrel of oil in 1990 is approximately equivalent to the \$7.5 per barrel rise in 1973/4 and about two thirds of the \$22 rise in 1979/80. This is partly because the impact of oil price rises has been absorbed in inflation which the power of oil producers has been insufficient to offset (or they have chosen not to try) and partly because of the decline in the US dollar. The impact of changes in exchange rates is one of the most significant secondary results of oil price changes. It has generally worked against the dollar, although this is not a simple matter. To simplify greatly, the US\$ dollar tends to

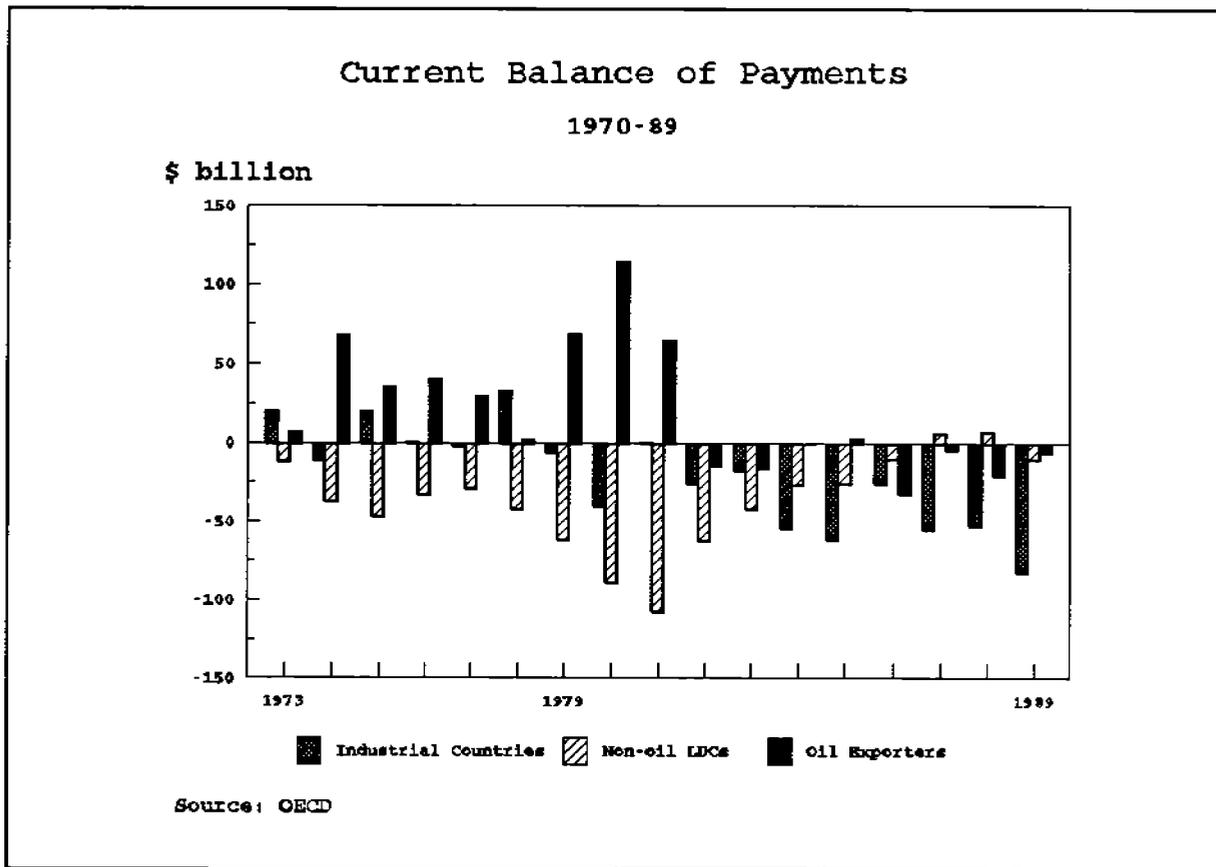


Figure 6

suffer when oil prices rise because the United States is an important oil importer and a relatively profligate user of oil in particular and energy in general. On the other hand, the dollar benefits from the role of the United States as a preferred home for the money and investment capital of the oil producers. The balance of these effects may change. But, whether or not there was a causal connection, markets for oil were too weak in the second half of the 1980s to compensate for the decline in the dollar - in terms of its international purchasing power the oil price was declining considerably faster than the dollar value of a barrel of oil ostensibly suggested.

There is one caveat, however. It may be quite wrong to conclude that oil has suffered a permanent decline in its global economic leverage. At least some element in this loss of power is self-induced. In other words, high prices are to blame. An upward price spike now may have relatively little effect. But the impact of several years of low prices - and of any depression of oil prices which may follow the resolution of the Gulf crisis - could conceivably restore, at least partially, the role of oil in the world economy, particularly in fast growing developing countries. The extent to which a decline in oil and energy intensities is a reversible result of high prices and the degree to which it is irreversible or represents some kind of technological imperative is a hotly debated issue. We can at any rate expect that a really significant return to reliance on oil like that in the early 1970s would be a very long-term prospect. And in addition the role of energy use in global warming and other environmental issues militate against it.

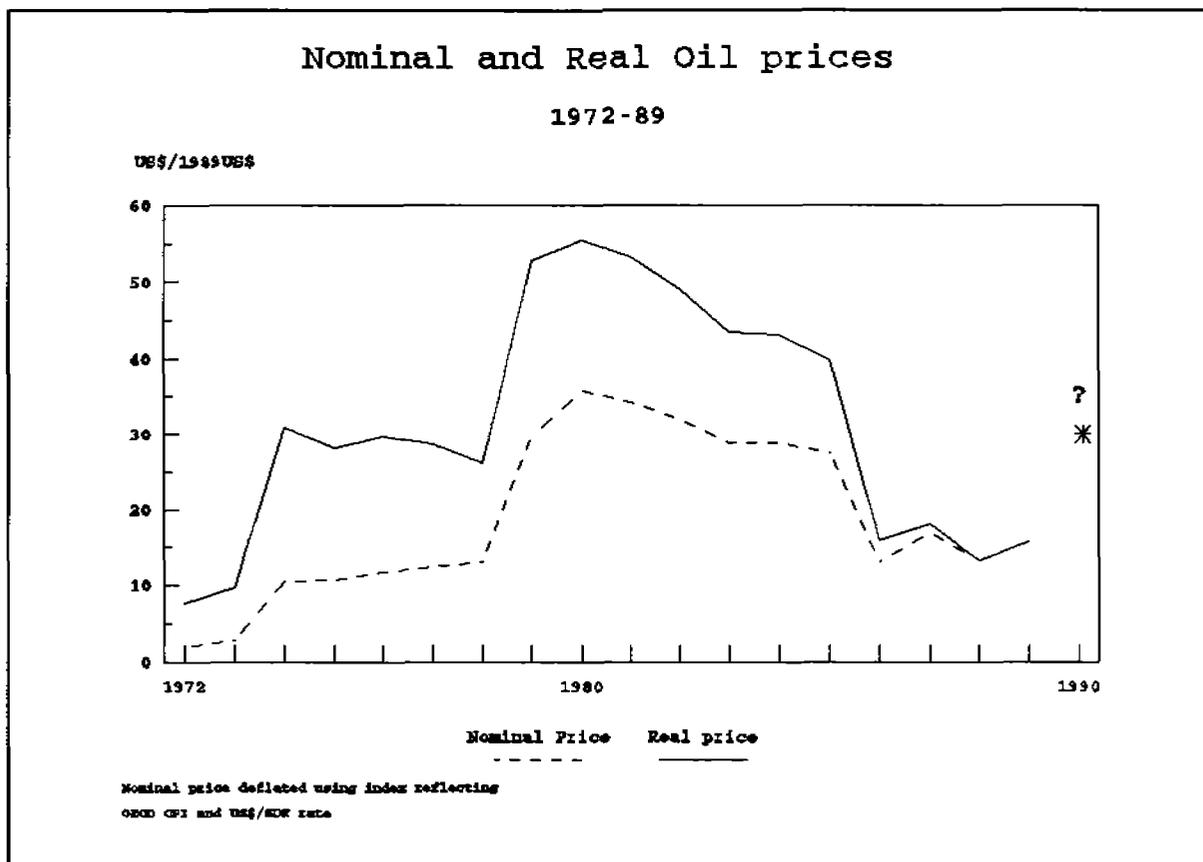


Figure 7

The first oil crisis was an unexpected shock of a rather simple Keynesian kind. The second was better understood but represented the last straw in a "great inflation" which had to be tackled. The price decline of 1986 was a mild stimulus to growth; this may have indicated that oil had lost its power or that downwards shocks are necessarily less powerful than price rises or that "pushing on a string"⁴ is always less effective than pulling.

Given the importance of the policy context in determining the macro-economic impact of energy price changes, what can we say about the present situation?

The USA and the UK are close to recession if not actually in recession; a sustained rise of \$10 per barrel or more could therefore easily tip the balance, with the impact of a US recession being a danger for the world economy as a whole. On the other hand, economic cycles are at the moment less synchronized than they have been for some time. Expansion does not seem to be ending in Japan and Germany. Moreover, any recession in North America creates an acute policy dilemma. Inflation is moderate, even allowing for the effects of the oil price rises and it is not clear that anti-inflationary policy would take precedent over measures designed to avoid deep

⁴ The phrase was widely used at the time of the UK Radcliffe Report in the late 1950s to indicate that it is easier to constrain by high interest rates than to encourage by low interest rates.

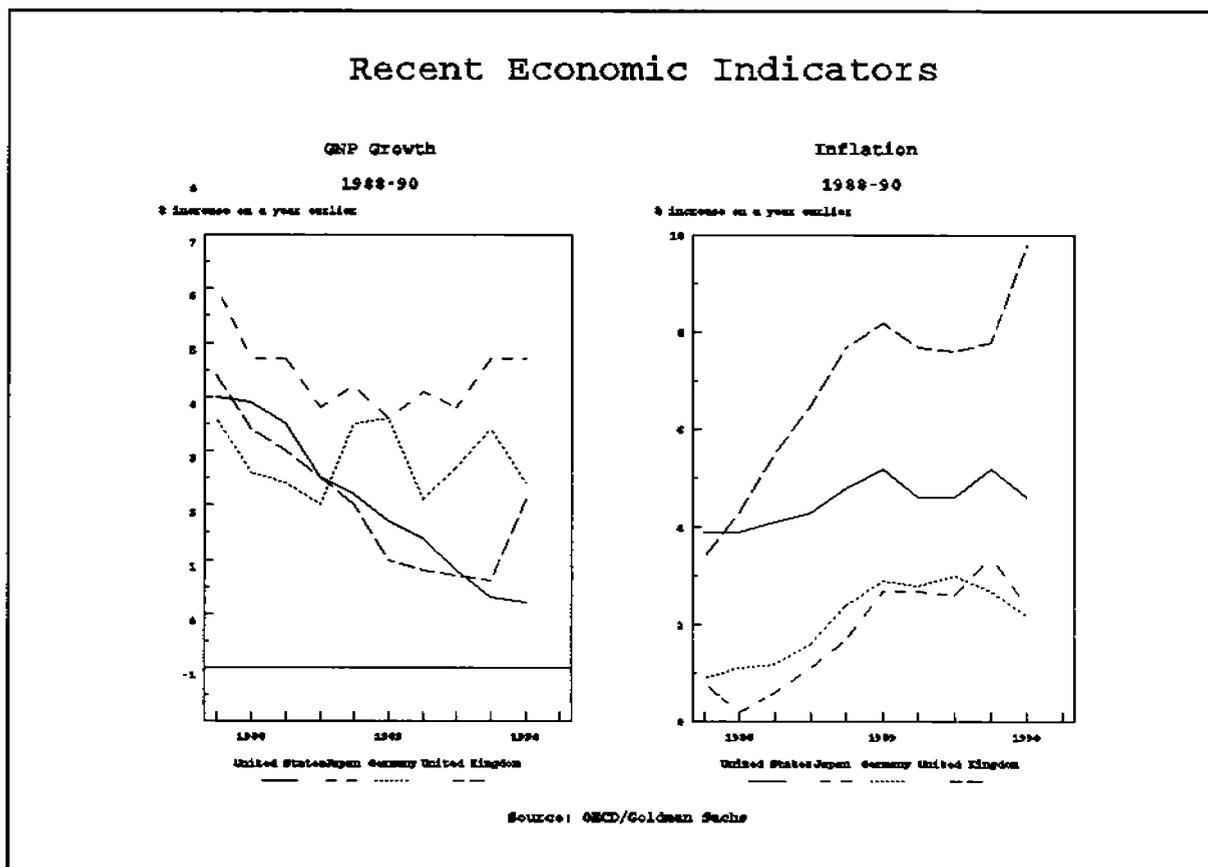


Figure 8

recession. In any event, the additional expenditure associated with the military build-up in the Gulf may well prove more expansionary than the administration's half-hearted attempts to reduce the budget deficit. On balance it seems possible that the Gulf crisis may tip the USA into recession, but not be reinforced by policy measures of the scale of the early 1980s. Any mild slowing of growth would in turn tend to bring down oil demand and reassert the rather weak fundamentals in oil markets which preceded the Gulf crisis. It is therefore difficult to see either a long period of high prices or a serious impact on world growth.

Box 1 describes several of the overall assessments made by macro-economic forecasters using formal models. These analyses normally yield reassuring conclusions, though some (for example the London Business School and Oxford Economic Forecasting) are more pessimistic than others (for example the IMF and Data Resources DRI). The possibility remains that the authorities will respond to accelerating inflation by raising interest rates sharply, and that the ensuing impact on corporate investment and consumers' expenditure will be "non-linear".

All this, of course is on the assumption that there is no serious interruption to other Gulf supplies. It is quite possible, given the experience of August, September and October, that the loss of several more million barrels a day could produce an even more damaging scramble for stock than has taken place in the first three months of the crisis. A sharp acceleration in inflation could reassert the primacy of anti-inflationary policy

Econometric Estimates of the Impact of the Gulf War

Many international organizations, banks and research organizations have made estimates of the impact of the Gulf War using macro-economic models, in an attempt to give a view of the full short-term impact throughout the economy and feedback effects amongst industrial countries and between industrial and developing countries as falls in demand and output affect world trade.

The IMF made modest assumptions about the actual rise in prices (40 per cent above the August 1990 level maintained during 1990 and 1991). Their results are as follows, expressed as deviations from the baseline forecast:

	1990	1991
USA		
GNP growth (pc points)	-0.2	-0.3
Consumer price inflation (pc points)	0.3	0.5
Japan		
GNP growth (pc points)	-0.2	-0.3
Consumer price inflation (pc points)	0.3	0.5
Germany		
GNP growth (pc points)	-0.3	-0.3
Consumer price inflation (pc points)	0.3	0.5

Other forecasters assume average oil prices in the region of \$25 per barrel during 1991 and have come to similar conclusions. Goldman Sachs, for example, see GNP losses in the region of ¼ per cent in most industrial countries with oil prices at this level - and each additional \$6 per barrel would have a similar additional impact. Goldman Sachs see the impact on inflation varying more amongst countries - from 0.4 percentage points in the first year in Germany to 0.8 percentage points in the USA - partly because of different shares of energy in GNP but also because of different policy reactions.

Very sharp but temporary oil price spikes can be accommodated within these sanguine views. An average price of \$45 per barrel for one year, combined with inflationary pressure can produce more serious setbacks to world economic growth. The London Business School forecasters have considered such a case, comparing it with their base case which assumes an average oil price of \$25 per barrel in the last quarter of 1990 and the first three quarters of 1991.

Per cent change on previous period	1990		1991	
	\$25	\$45	\$25	\$45
USA				
GNP	1.1	0.9	1.2	0.0
Consumer prices	4.2	5.7	5.3	8.5
Japan				
GNP	5.5	5.2	3.5	1.8
Consumer prices	3.1	3.3	3.4	5.5
Germany				
GNP	4.2	4.1	3.2	2.7
Consumer prices	2.8	2.9	3.7	4.8

While a serious recession hits the USA, the impact on industrial countries as a whole is not apocalyptic. These simulations reinforce the view that any severe global recession is likely to be the result of other (probably financial) weaknesses in the global economy which are triggered by the oil price. Moreover, the major danger of such triggers being activated probably also depends on the assumption of a very tight anti-inflationary policy in the major countries.

Sources: IMF, *World Economic Outlook*, October 1990
 Goldman Sachs, *The International Economics Analyst*, September 1990
 LBS, *Economic Outlook*, September 1990

objectives and the experience of 1979/80 could be repeated. The point remains, however, that if a world recession is to be precipitated by an oil shock alone, this will be the result of a supply crisis far more serious than that in either 1973/4 or 1979/80.

The impact of oil price rises is now much more localized. If anything, the impact on the most severely affected developing countries will be more serious than in either of the two previous episodes of sharply rising prices. These countries cannot now borrow to finance continued oil consumption and must bear the full impact of the terms of trade reversal.

The initial challenge of an energy shock is only half the story for a developing oil importer, as it is in industrial countries. The response is equally important. Table 1 shows that many industrial countries have been able to reduce their reliance on oil imports by sharp cuts in overall energy intensity. Table 2 suggests that even in very well-managed and dynamic developing economies, such as Korea, this route has not been available. Reductions in oil imports through the often uneconomic development of domestic oil and other energy resources have been a more common course of action, especially in countries such as Brazil which are under extreme balance of payments pressure.

Adjustment to high oil prices without sacrificing growth or running up an unpayable debt is clearly possible. But successfully-adjusting developing countries are no more typical than heavily constrained debtors. In terms of numbers of countries the normal effect of an upward oil shock has been a constant balance of payments crisis and serious interruption to growth. This is particularly the case amongst the poorest developing countries. The World Bank has estimated that sixty out of eighty-nine low income oil importers will suffer either losses of GNP of more than 2 per cent, or deterioration in the current balance by more than 6 per cent, of exports, or \$1 billion in at least two years between 1990 and 1992, as a result of an \$8-10 per barrel increase in the crude oil price. Africa, Latin America and Eastern Europe will be especially hard hit. In most cases, they will be able to hope only for official external finance to offset this setback. As some of the worst affected countries are also those with unsustainable debt problems (notably Brazil) much of the progress made in turning around their current balance positions in the last few years will now be dissipated in higher oil import bills.

The essential problem of oil-importing developing countries is that oil in particular and energy in general are still essential to economic growth. Some countries have been able to adjust by encouraging alternative domestic sources of energy, but few have been able to reduce the high levels of energy intensity which characterise growing Third World countries (Figures 2 and 3 and Table 2).

4. The Energy User's Tale

In considering the impact of oil shocks on developing countries, the impact on output and growth arises primarily from the constraints on finance intensified by the terms of trade shift. But the potential effects of high energy prices on the growth of output are far broader than this.

Increases in energy costs - as with any other increase in costs - will lower the equilibrium level of output and reduce the real wage or employment, or both. Resources now devoted to energy production are not available to produce other output of goods and services. Substituting domestic energy sources for imported sources is normally a case of providing more expensive energy. Energy conservation will reduce productivity - always assuming, which is certainly not the case, that energy was previously optimally used. Even if higher energy prices accrue as rent to domestic oil, coal or electricity producers, rather than being reflected in more, higher-cost, energy output, resources are not finding their best economic use and, depending on the pattern of investment of these rents, overall efficiency may be reduced. It does not matter whether energy is imported or domestically produced - additional resources are captured either by the need to export more to pay for energy imports or by the domestic energy sector. The effects of energy price rises are therefore wider than simply the terms of trade effects described in the previous section.

These effects are, of course, always present if the "cost curve" of energy production is upwards sloping and increases in output require more energy. The problem with the oil price rises of the 1970s and 1980s is that they involve prices which do not reflect the true global marginal cost of oil. To this extent, the output effects described above represent an unnecessary cost - an inefficiency - which is extremely widespread throughout the world economy.

The precise effect of rises in energy prices will depend on the detailed operation of the productive economy. In particular, it depends on the extent to which energy, capital and labour are substitutable. If energy and capital are strongly complementary in production (so that less capital can be used as energy prices rise and energy use falls), the demand for labour could be increased to such an extent that the equilibrium real wage might rise, and the decline in output be mitigated. On the other hand, if capital can be substituted for energy, this energy conservation will lead (on the proviso mentioned above) to a decline in the productivity of labour and hence of the equilibrium real wage. It is very important, therefore, that the real wage should be able to fall, otherwise unemployment will be increased and additional output lost.

How important are these effects? The economic literature gives very little guide as to whether energy and capital are complements or substitutes. Most studies are anyway done on the assumption that the economy is fairly close to equilibrium before any energy price rise. Many "conservationists" would disagree with this, arguing that there are many ways of doing things (such as highly energy-efficient light bulbs) which should be adopted whether or not energy prices rise. Simple estimates of the share of energy in industrial economies suggest that any effects either way should be small. Energy costs in the United States rose from about 4.5 per cent of GNP in 1973 to around

8.5 per cent in 1981.⁵

Professor Dale Jorgenson has argued that the energy price rises of the 1970s have had substantial effects on economic growth in both Japan and the United States because technical progress in both countries is energy using. The impact has been greater in Japan than in the United States because Japan has suffered higher increases in energy prices to users and has experienced faster growth and more rapid technical change. Jorgenson argued also that technical progress is the most important factor in sustainable long-term growth and that the fall in energy prices in the late 1980s will involve the reversal of many of the changes which resulted from previous crises.

Given the long-term nature of many of these effects, and the manifold changes in the economic environment that major changes in energy prices cause, we cannot hope to suggest precisely how important the "supply-side" and growth effects of energy shocks may be. Much also depends on how permanent the decision-makers expect price changes to be. It is clearly important that many had expected oil prices to fall back quickly after 1974, that most energy price forecasters had incorporated long-term secular increases in the cost of energy into their projection by 1980 and that many also believe that oil prices are likely to fall back dramatically once the Gulf crisis is resolved.

An indication of the relative impact of these effects is given by the shares of oil and energy consumption in total output (Table 3). Because of the complexities outlined above, the data give only limited information about the absolute size of any impact (on the assumption that there is no substitution for energy in production the maximum effect on GNP would be the share of energy costs in total output). The table gives a more comprehensive, but less certain indication of the "supply-side" effects than the data on terms of trade effects given earlier. The latter indicate only those resources which have to be released to pay for more expensive energy imports.

But rising domestic prices may also have a "demand-side" impact. Changes in domestic oil and energy prices redistribute income domestically. Not only may the real wage have to fall as a result of an upward oil shock but there will also be secondary effects arising from changed consumption patterns and shifts of resources between sectors with differential energy intensities. Changes in energy prices will alter relative costs of production and therefore prices and changes in the distribution of income will alter relative demands, even if relative production costs remain the same.

The demands on the flexibility of the economy are therefore great. Countries will vary in the extent of the distributional *impact* of energy price rises and also in their capacity to *respond*. Measuring the degree of domestic differential impact would require a great deal of information about sector energy intensities and elasticities of demand and about consumers' expenditure and the extent of income redistribution implied. Capacity to respond is clearly closely related to the degree of rigidity in the economy. This

⁵ J. Alterman "A Historical Perspective on Changes in US Energy Output Ratios", quoted in D.R. Bohi "Energy and Economic Performance: How Important are Oil Price Shocks?", Resources For The Future Discussion Paper EM86-06, 1986.

TABLE 3
OIL AND ENERGY CONSUMPTION:
MAJOR INDUSTRIAL COUNTRIES

Per Cent of GNP

	1972	1975	1978	1981	1985	1986	1989
Total Energy Consumption (Volume)(2)							
US	6.7	6.3	6.0	5.5	4.9	4.8	4.8
JAPAN	2.8	2.7	2.5	2.2	2.0	1.9	1.8
GERMANY	3.8	3.6	3.5	3.2	3.1	3.1	2.7
UK	4.8	4.3	4.1	3.8	3.5	3.5	3.1
Oil Consumption (Volume)(2)							
US	3.0	2.8	2.8	2.3	2.0	2.0	1.9
JAPAN	2.1	2.0	1.8	1.4	1.1	1.1	1.0
GERMANY	2.1	1.9	1.9	1.5	1.3	1.4	1.1
UK	2.4	1.9	1.8	1.5	1.4	1.3	1.2
Energy Consumption (Value)(3)							
US	2.5	8.8	8.1	14.8	8.8	4.3	4.8
JAPAN	1.8	5.5	3.5	7.6	5.6	1.9	1.8
GERMANY	1.6	4.8	4.0	9.5	8.4	3.0	2.7
UK	2.3	7.2	6.3	9.6	8.7	3.8	3.1
Oil Consumption (Value)(3)							
US	1.1	3.9	3.8	6.2	3.6	1.8	1.9
JAPAN	1.3	4.0	2.6	4.8	3.1	1.1	1.0
GERMANY	0.9	2.5	2.1	4.3	3.5	1.3	1.1
UK	1.2	3.2	2.8	3.7	3.3	1.4	1.2

Source: IMF, World Economic Outlook, October 1989.

- (1) Energy is measured in oil equivalent terms.
- (2) Energy and oil are measured in 1989 prices. Real GNP is measured in 1989 prices and converted into US dollars using exchange rates in 1989.
- (3) Energy and oil are valued at current period US dollar world oil prices. Nominal GNP is converted into US dollars using current period exchange rates.

rigidity is relevant to adjust both to the change in distribution between labour, capital and energy (effectively real wage flexibility) and amongst sectors.

Most commentators argue that the US and Japanese economies are in this sense more flexible than those of Europe. This conclusion is contentious and recent work on labour markets has emphasized that economies have different mechanisms for distributing the fruits of economic growth or absorbing the pain of oil price rises. The United States relies on market flexibility, Scandinavia on more corporatist solutions, the UK and Germany have hybrid systems. Each has its advantages and disadvantages and these provide different kinds of flexibility (Japan and the United States provide a stark comparison) which are not in any simple way related to economic performance. What is true, however, is that many economies, partly under pressure from the consequences of the oil price rises of the 1970s have considerably increased the flexibility of their economies in the 1980s - and this is another reason why the impact of oil shocks is likely to be less than in the 1970s. The capacity to respond has probably improved. There is some evidence that this has been the case in developing countries as well. Mexico has made considerable strides in adjusting to changes in oil prices (though as an oil-exporter it is downward movements and their consequences for the debt burden which place the Mexican economy under pressure). Amongst oil importers, Korea, Chile and Thailand are examples of countries which have made considerable strides towards greater domestic responsiveness.

Finally, all these changes will place great importance on policy responses and reinforce the arguments made in the previous section. Consideration of the impact of shocks as a general rise in energy prices, focuses attention much more closely on the responsiveness of economies rather than the extent of the initial impact. Reduction of oil imports is one such mechanism of response. The replacement of low-cost oil imports by high-cost domestic energy production releases the economy from internationally binding constraints, which is particularly important for developing countries and other countries, such as those of Eastern Europe with very weak balances of payments. But it could conceivably worsen the domestic impact of higher energy prices. To reduce energy intensity is a more fundamental change, but not without potential losses in terms of economic growth.

Yet the growth impact of rising energy prices need not always be negative. It is even conceivable that a "long wave" of technological innovation could result from investment in energy conservation. The same possibility exists for environmentally-related investments. The rise to prominence of environmental issues is especially interesting. It implies that the social cost of energy use has been and increasingly will be above the free market price. But the exertion of producers' power has also kept the cost of energy above its free market price. Of course, for oil importers, this "tax" has been paid to other countries as well as domestically and has also created many economic distortions - particularly the exploitation of the wrong energy resources (high-cost hydrocarbons). But the social inefficiency of high energy costs has probably been less than might have been imagined before the rise of the environmental movement.

It is once again difficult not to conclude that the impact of high oil prices in the past reduced the significance of changes in energy prices today. The whole of the energy

sector has adjusted and not just the oil trade. It is, however, more difficult to quantify this reduction in leverage of the energy sector as a whole than in the case of demand-side terms of trade effects. For responsive economies, energy conservation has proved a stimulus to investment and technical progress and probably an indirect approach to pricing nearer social cost. These advantages will to some degree be maintained if and when world market prices for oil should fall. Those countries which have, however, been forced to adjust by adopting high-cost sources of domestic energy may see the consequences for economic efficiency very clearly when world prices fall.

5. The Oil Producer's Tale

The experience of the effects of terms of trade changes would suggest that changes in the distribution of income do not necessarily leave overall demand unchanged. Similarly, changes in the distribution of the resources available to finance economic growth do not leave the overall potential for growth unaffected.

The macro-economic effects of sudden increases in the value of oil exports have spawned a vast literature relating to exchange rate changes and their effect on domestic industry. The basic point is that the current balance improvement brought about by the increase in the value of net oil exports can only be reaped domestically if it is reflected in increased imports of manufactured goods. In oil-exporting countries, the terms of trade effect works against manufacturing industry and can bring about an absolute, or in a growing economy relative, decline in domestic manufacturing industry. This is the so-called "Dutch Disease". It is not in itself bad - indeed it is the mechanism by which a country benefits from its possession of valuable resource rents. If this reduces technological dynamism and is difficult to reverse when oil prices fall, the impact on longer-term prosperity may be negative. For countries which are small net exporters of energy, the disadvantages of high energy prices for the domestic economy have, however, to be set against the terms of trade from exports. The UK economy, for example, with a large manufacturing sector but relatively modest net exports of oil probably benefits more from falling than rising oil prices.

The impact of high oil prices on growth in the developing world is, however, more difficult to assess, despite the very large net oil earnings which many producers have obtained. We saw earlier that for some time the "absorption" of oil revenues was a problem and that shortage of realizable domestic investment opportunities led to the investment of oil revenues overseas. Some important oil exporters, for example Nigeria and Mexico, were never low absorbers but suffered from chronic shortages of foreign exchange and investment capital which were immediately relieved. The growth output record of oil-producing countries is, however, nowhere near as impressive as their cumulated oil revenues. Why should this be so? And does it represent an overall reduction in world growth as a result of the transfer of income which higher oil prices had brought about?

High oil prices have greatly increased the prevalence of a kind of economy which existed before 1973 - the so-called rentier state. In such economies a very large proportion of income is derived from economic rent from outside the economy in return for exports of resources. This revenue accrues directly to the state, and its distribution may be the state's main economic function. Productive activities are relatively unimportant. In the Gulf, the oil-exporting rentier economy is a rather natural development of the circulation or trading-orientated economies which have existed for many hundreds of years.

These countries are inexperienced in the productive industry. Development, therefore presents very special problems of social and economic organization, changes of education and culture and the fostering of industrial comparative advantage. Industrialization is frequently carried out by the state and represents a significant arena

for the development of state power. The problems of modifying a whole economic system to harness the potential for productive growth are not dissimilar to those facing the Soviet Union at the present time. Institutional and infrastructural changes are every bit as important as money. Other problems exist in Nigeria or Mexico, but it is difficult to resist the conclusion that industrial growth cannot take over from oil exports for some very considerable period of time. For this period there may be relatively little traditional economic return from investment, and many resources may be "wasted".

The overall impact on world growth of sharp increases in energy prices may, therefore, be negative for some period of time. Despite the demand for manufactured goods - and arms - and the recycling of investment funds through international markets which the growth of oil revenues produces, the overall level of return to investment may fall. This may be reflected in serious debt problems - not only of oil importers but of oil exporters such as Nigeria.

How has this growth impact of oil price changes been modified over time? A three-phase development seems to have taken place. In the first phase, "low absorbers" placed a large proportion of their increased funds in international markets from which it was frequently lent to sustain energy consumption in oil-importing developing countries. In the next stage, oil-exporters quickly learned how to spend, but were inexperienced in making well-chosen productive investments, although infrastructural improvement was often considerable. In the third stage, as prices fell and expenditure increased, oil exporters were forced to become more discriminating in their investment and expenditure strategies. The net impact on investment and growth of redistribution by oil rent increases has probably diminished. Such effects would be extremely difficult to measure, especially as they depend as much on the rate of change of oil revenues as their absolute amount. But once again we can probably conclude that the "growth leverage", like the "terms of trade leverage", of oil prices changes has diminished over time.

6. The Role of Oil in Economic Growth

Putting the arguments of the previous section together enables us to draw some tentative conclusions about medium-term changes in the role of oil in economic growth. The overall macro-economic leverage of oil has undoubtedly fallen for a whole host of reasons, most of them related to conscious strategies to adjust to high energy prices. The impact of oil prices on global economic growth may, however, still be significant. Specific impacts could be assessed - for example the capital constraints on development in Latin America. But whatever the overall balance of specific effects there are several continuing difficulties with the relationship between oil and economic growth:

First, the role of rent in growth.

As a result of increases in oil rents, some economies have been under increased stress, others provided with almost unlimited finance. Some highly stressed economies responded extremely well - for example Japan and Korea. Some rent receivers found it practically impossible to create output growth at all commensurate with the income which they had received - for example Nigeria and Norway. Great doubt must be thrown on the ability of "rentier economies" - most notably the Gulf oil exporters and those countries heavily dependent on remittances from their citizens working in the Gulf states - to create investment opportunities. The impact of oil price changes has probably had as much to do with already-existing capacities to respond as with the impact itself. Nevertheless, it would appear that the distributional impact of oil price increases on medium-term growth performance is at least as important as immediate macro-economic effects. The greater the resource rent element in global income, the greater the "growth distortion".

Secondly, the impact of a "false cost curve".

When energy prices are high for any considerable period of time, either because of physical disruption to supplies or because of the assertion of market power by low-cost producers, high-cost supplies are substituted for low-cost supplies. Energy conservation measures may have the same effect. Investment may therefore increase but overall efficiency may diminish. Yet the process of investment itself almost certainly accelerates technical progress and improves the overall dynamic behaviour of the economy. Moreover, the increasing consciousness of the environment indicates that in many cases the effects of higher prices on demand may mimic the true social costs of fossil fuels (though there will be inefficiency on the supply side).

It is very difficult to draw any general conclusions except that purely "economic" considerations are becoming less important in many investment decisions. Thoughts of energy security or conservation based on very general grounds may greatly outweigh quantitative considerations of cost effectiveness.

Thirdly, the impact of volatility.

The need to generate stable long-term expectations about energy prices is, however, made considerably more difficult by short-term gyrations in oil prices. This

difficulty arises partly from the tremendous changes in the place of energy which have arisen as a result of the oil price rises of the 1970s. Much of the uncertainty comes from the role of price. Have we been experiencing a secular decline in energy intensities which is primarily the result of independent changes in technology and consumption as time passes and income increases? Will national high-cost oil energy sources always be developed? Or have we been seeing price effects? If price effects dominate, are they reversible - will a long period of lower energy prices (to allow for investment vintage effects) once again increase energy intensities? Energy has undoubtedly been experiencing a very profound transitional period and the extent and durability of that transition are not clear. Because we do not understand the true nature of that transition we find it difficult to interpret market signals and to design appropriate strategies and policies. That is one of the dangers of the present situation.

Many would argue, however, that oil markets are intrinsically subject to price "roller coasters" and the expectational uncertainty generated by volatility is probably not its most significant effect. More importantly, the combination of price volatility with domestic economic rigidities and ratchet effects may cause "unimportant" changes in energy prices to have unexpectedly deleterious consequences.

The inability of economies to adjust flexibly to price changes has already been noted. Rigidity of the real wage, or of sectoral differentials will make it more likely that a "once-and-for-all" increase in the price level will give rise to lasting inflationary pressures. This results in "stop-go" policies which have a long-term effect on the overall rate of growth.

In the present situation, volatility increases the chance of an important threshold being triggered. The macro-economic impact of the present level of oil prices may do more than tip the US economy into recession. It may precipitate economic crisis.

The reason for this lies not in anything intrinsic to energy markets but in the precarious state of the global financial system. The problems of the US savings and loans industry are well-known; energy banks and agricultural banks have also gone through very sticky patches. Some international financial markets, such as the Eurobond new issue market have recently shown much reduced activity and very low profitability. The latest financial sector to come into question is that in Japan. This has been the result of stock market declines which have reduced share values by more than 50 per cent this year, combined with the realization that many banks do not meet the BIS capital adequacy ratio which is due to become effective on 1 January 1991. The banks have found the value of their stock market holdings reduced and raising capital on the market considerably more expensive than they are accustomed to. They may be forced to respond by drastically pruning loan portfolios - which could have knock-on effects throughout the economy.

The immediate problems are not that large. But it is possible that they reveal a more fundamental uncertainty about the Japanese economy. Much Japanese economic activity has been only distantly related to calculable rates of return but much more closely driven by considerations of long-term market and technological strategy. One example of this indeed, is the stockbuilding which the Japanese have engaged in on oil

markets since the invasion of Kuwait. Much of this is presumably ultimately financed by the Japanese banking system. Paradoxically, the Japanese economy could be more threatened by a fall in oil prices, which causes enormous stock losses, than by the initial rise. More generally, the days in which Japanese companies could ignore short-term profit may be ending.

The problems of the US, international and now Japanese financial banking systems in recent years have frequently been described as a fundamental threat to economic growth. So far all these Jeremiahs have been proved wrong. But that does not mean that the risk does not exist. Indeed this is precisely the problem which Charles Kindleberger was alluding to when examining the "lessons of 1929" in the early 1980s. The "dangerous transition" which Kindleberger feared was, and is, very deep seated, marking the end of US political and economic hegemony and the emergence of a multi-polar internationally-based financial system. His point was that we do not know the rules by which such a system operates. We may therefore make policy errors.

Such a trigger could conceivably be sprung if a worsening Gulf crisis is followed by significant inflation and a slowing of economic activity. We cannot be sure how the immature international financial system, which has been subject to so many mistakes and scares, but survived, will fare if the "long boom" which the world economy has experienced since the early 1980s were to come suddenly to an end. Like Gavrilo Princip, the oil market could still have a small but crucial role to play in releasing pent-up forces of adversity.

We know that both the energy industry and the global economic and political system are undergoing extremely deep-seated transitional phases. Our ignorance is therefore considerable and the possibility of error high. The raw macro-economic strength of oil may have been eroded but it could still be the Achilles' heel of the world economy.

7. The Economic Role of Oil in the 1970s and 1980s

To summarize, in the 1970s oil realized its power - in the senses of both perception and assertion. It did so in a world which was institutionally unprepared and macro-economically fragile. The result was a sharp shock to world output, but a relatively rapid ability to respond - by broadly neutral policy and innovation in international finance - in ways which enabled the avoidance of the fundamental issues. By the time the second shock came in 1979, matters had reached the point where a concerted and severe effort to remove inflation proved feasible and largely successful. The developing world was still able to maintain consumption (which was essential since energy and development are necessarily more closely tied than in industrial countries) until the ability of debtors to borrow was virtually ended in 1982. Throughout the 1980s fundamental adjustment to expensive oil continued apace, even though the oil price was falling, and indeed collapsed in 1986. The 1980s were therefore a decade of adjustment and disillusion.

By the end of the decade, as is now very well known, dependence on oil was greatly reduced and energy intensities considerably lower. The problem of energy dependence now seems confined to oil-importing countries in the developing world. Yet even these, through luck, initiative and solid economic policy could in some cases instigate healthy growth and structural change - Korea, Uruguay and Ghana are diverse examples.

The lesser leverage which oil prices hold over global prosperity may be one of the reasons why the authorities feel confident in a policy of avoiding using oil stocks to stabilize prices. If prices rise, the consequences will not be what they appeared to be in 1973 and 1979.

But the world economy has still not freed itself from the hold of oil. Energy prices, costs and availability are still an important factor in economic growth, sometimes positively, more often negatively. Rigidities in domestic economies increase the disruptive influence and ratchet effects of gyrating energy prices. And the world economy remains vulnerable to a fatal trigger - the chance of which is increased as oil prices become more volatile.

7.1 Two Misconceptions about the 1980s

This assessment of the role of oil in the world economy at the beginning of 1990 may seem rather sanguine. But the changing global role of oil became a much-discussed topic in the second half of the 1980s. Two views in particular are worth discussing:

First, it was widely argued that oil was now "just another commodity", that it had moved from the arena of highly-charged Middle Eastern politics into the market place. Its price was now primarily determined by market forces (and was therefore falling). Oil markets themselves were being released also from the grip of a few big industrial players through the development of widely-used spot markets, then futures markets, then swaps and options. All these new markets were globally interlinked. Oil resources were increasingly diversified in terms of ownership (by the development of non-OPEC resources) and the power of the majors was declining. The majors' share of western

refining capacity fell from around half in 1970 to under one third in 1988, and their share of product sales from about 60% to one third. All in all, a move from macro-politics to micro-economics. The result was a drastic reduction in the rent element in the price of energy.

The view that oil is "just another commodity" is at best a half-truth. This is not so much demonstrated by the fact that Gulf politics has once again been the cause of crisis - war can cause the disruption of supplies of any commodity, however "economic". It is better illustrated by the way in which the crisis has revealed the operation of oil markets. This topic has been discussed extensively in the papers in this series by Paul Horsnell and Christina Caffarra.

The new markets have performed poorly, at least in so far as they have made disequilibrating stock behaviour easier and more acutely self-reinforcing. The rise in the price of oil has been seen, quite rationally, as a motive for increasing stocks, because it is taken as a signal that prices will rise further, yielding stock profits, or because physical shortages or "stockouts" are feared. Any initial market imbalances will therefore be magnified.

This is indeed a characteristic common to many commodity markets which Nicholas Kaldor pointed to as a reason for the basic division of economic goods into "primaries" and "manufactures". In the case of manufactures, producers "expanded or contracted their rate of production according to whether the flow of new orders exceeded or fell short of what was required to keep stocks in a normal relation to turn over"⁶. In the case of commodities, traders do not typically perform this function. They buy when prices are rising and sell when prices are falling. This aspect of oil as a commodity has certainly been borne out by the Gulf crisis.

But there is more to it than this. The crisis has also revealed a very high degree of market segmentation. Oil is not one global commodity. Shortages of "wet barrels" in individual markets have forced the prices of particular products up (or down in the case of surpluses of fuel oil) without either the transportation system or manufacturing capacity being able to smooth out these imbalances by either physical movement of products or transformation or alteration of the "cut of the barrel". The apparent interlinking of markets which allows financial arbitrage between them has thus been revealed to be empty. Oil is certainly not just a single commodity and in the sense that the new markets suggested that it was, we need to reappraise the role of those markets.

In fact, the market segmentation revealed by the crisis is not the only form of market segmentation and product differentiation which has been gaining ground in the industry in recent years. It may seem as if "progress" lies in the unification of oil markets, but this is an oversimplification. Energy markets have been changing in subtle ways for some years. It can be argued for example that traditional product divisions are breaking down. In some circumstances, new products, such as unleaded gasoline, will

⁶ "The Role of Commodity Prices in Economic Recovery", *Lloyds Bank Review*, July 1983.

segment the market; in other cases efficient energy use may be the service provided (and therefore involve the provision of energy control as well as energy itself); in others the products may be sold on the basis of another resource than simply an oil-based product (for example, regarding gas stations as simple sales points for a number of goods). The nature of market segmentation is therefore constantly changing. Forces of product differentiation are battling with forces of uniformity. Improved transportation may reduce the segmentation of the US gasoline market at the same time as varying consumer requirements are increasing it. Oil is not therefore one homogenous commodity. It is a collection of industrial products and industrial and consumer services.

Global homogenization can never, therefore, be complete. Indeed partial globalization may be much more disruptive than either simple "localization" or complete integration. Professor Paul Krugman has made this point in relation to capital movements and international finance. Currency markets link almost all national economies. At the same time, markets for ordinary products are not integrated - the same price does not rule in each national market. This means that (real) exchange rate changes are still needed to bring current accounts into equilibrium. Yet exchange rates have become decreasingly effective as a mechanism for adjusting current account imbalances precisely because the integration of capital markets has made them so volatile that decision makers are not inclined to base decisions upon them. In other words, partial integration - of the capital and money markets but not the goods or services markets - gives us the worst of both worlds.

Much the same arguments hold in oil markets. Dealings in "paper" barrels are highly integrated. Prices move around a lot depending on "news", speculation or whatever. But the linking to real investment decision-making is thereby diminished. The markets work very ineffectively. The tension between segmentation and integration provides a high potential for instability.

Trends in oil markets are very complex, but the overall conclusion should not be that oil is becoming more like a commodity. It retains some of the features of a commodity, in Kaldor's sense, in that adjustment is supposed to be by price and that this tends to produce destabilizing stock behaviour in the presence of unexpected and half understood shocks. But at the same time, oil is becoming more like an advanced industrial commodity with increasing emphasis on product differentiation, the provision of services and "value added".

The changing nature of oil as a product is accompanied by a changing industrial structure. The majors now form a smaller element of almost all aspects of the industry. National oil companies are in the ascendancy. Links outside the "core business" are increasingly common. This is a new form of oligopoly, but it is not perfect competition.

The changing micro-economics of oil have also been associated with the changing character of oil as a "political commodity". The impact of politics within the oil industry now encompasses more than Gulf and OPEC politics. The extremely close relationship between energy and environmental concerns and the implications for the detailed structure of downstream taxation; the importance of the exploitation of national

resources, even though small and high cost; and issues of market power in the changing downstream all involve oil closely with politics - but again at the micro-level.

The transition in energy use noted earlier is therefore complemented by a transformation in the structure of the industry which is only just beginning. This transformation does not involve the reassertion of oil as simply a commodity but its development as a complex industrial product. To misunderstand this transition - and believe that "paper markets" are adequate to deal with shocks and disequilibrium is another potential danger.

The second misconception of the 1980s is quite closely related to the first. It is that oil has become "decoupled from the industrial economy". This is a specific application of the argument made by Peter Drucker that all primary products (he was most concerned with agricultural products) had become so decoupled⁷. This was not something to be expected; it had already happened. It was part of the *changed* (rather than changing) world economy. It implies that it is now more important to study the impact of global economic developments on oil, than the impact of oil on economic developments.

This again is a potentially dangerous half-truth. As we saw earlier in this paper, the world economy is less dependent on energy in general and oil in particular. However, we also saw that this delinking is not true for the primary-products economy and the industrial economy within the developing world. Indeed, in some cases the linking has intensified. In the industrial countries, the linkages between oil and the rest of industry form an increasingly complex network of relationships which both extends and intensifies as the "decomposition" and "industrialization" (indeed "servicization") of oil proceeds.

⁷ Peter Drucker, "The Changed World Economy", *Foreign Affairs*, Spring 1986, pp 768-91.

8. A New Role for Oil?

It is therefore quite wrong to see oil as a simple commodity sold in global markets with decreasing power and influence on the rest of the world economy. It is true that oil's role as a simple macro-economic lever is now past and will not return, at least for some considerable period of time. This is a fate that other pivotal products have suffered in the past. Coal, sugar and steel, for example. Of these, the product cycle for oil is perhaps most similar to that of steel.

Like steel it has been a reasonably homogenous "commanding height" of the world economy. Like steel its cost curve covers a wide range. It has also developed in a similar way with investment in both low-cost production in areas with clear comparative advantage and in high-cost areas for reasons of security (and in the case of steel for employment maintenance). This has made steel a strongly political commodity, domestically and internationally. As with steel the role of politics has often led to considerable economic inefficiencies. In the steel industry, the most profitable areas tend to be those with high value-added - specialist steels and allied products. This is not yet the case with oil; it could well be if the global rent element were to be reduced by continuing declines in energy intensity or aggressive upstream investment policies.

The comparison with steel is, of course, only suggestive. Nevertheless, the oil industry may be entering a phase of tension between the politics of commodity dependence and the economics of product differentiation.

9. Conclusions

The conclusions of this exploration of the role of oil in the world economy are therefore as follows:

1. The power of oil to determine global prosperity or recession is much reduced. But it has not disappeared. It is quite possible that a full-scale Gulf war could raise prices high enough for long enough to precipitate a serious recession. As it is, the oil price is probably just one force amongst others tending to tip the US and perhaps the global economy into mild recession. It is not impossible that a relatively modest further rise in prices could trigger a financial downwards spiral.
2. Oil has played, and will continue to play, a rather ambiguous role in development. Oil money has not brought development. Oil shortage has sometimes stimulated growth. Oil has certainly divided the Third World. Although the relative place of oil in industrial economies is much diminished, in absolute terms demand is still growing. This will continue to provide finance for development in a limited number of countries. The role of oil as a pump-primer is therefore unchanged and there is some hope that experience may yield better returns in the coming decade.
3. The Gulf crisis has revealed that the "universal joint" of markets has proved inadequate under stress and contributed to volatility. It is increasingly the volatility of prices, rather than, within reason, its level which provides the most serious threat to global stability. There is some evidence that volatility of prices is reducing their leverage in economic allocation (as has already happened with exchange rates).
4. Oil remains an industry which is fundamentally unstable, with long period cycles. For this reason we cannot be sure that the macro-economic leverage of oil has been permanently diminished. And many of the developments which have taken place as the role of oil has been reduced may work to increase this instability.
5. Oil is still a "political" commodity, but the meaning of this is changing. Its political ramifications are increasingly detailed and widespread, rather than being only concerned with Gulf and OPEC politics (though these still remain important).
6. The oil industry is experiencing the effects of a number of transitional stages: in geopolitics; in energy use; in the incorporation of environmental concerns into economic and political decision-making; in the definition of the industry's products; and in the structure of the industry itself. In such circumstances we cannot be sure of the rules of the game. We cannot be sure that policy will be effective. This is the message which Kindleberger was anxious to canvass. When our understanding is diminished by change mistakes may happen. What is certain is that the role of oil in the world economy has not "changed"; it is still "changing". Oil has not yet found its new role.

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