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THE RESPONSES TO SUPPLY SHORTFALLS :
ACHIEVEMENTS AND SHORTCOMINGS

by

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1. The economic security of industrialised countries will in the 1980s and 1990s continue to be seriously jeopardised through their dependence on imported fuels . While dependence on oil imports will decline as a percentage of total energy consumption , oil will increasingly be used in sectors of consumption where there are no easy possibilities of substitution . And growing imports of natural gas will pose new (although qualitatively less severe) risks and problems for Western Europe and Japan . Oil import dependence , of course , will also be significantly greater in those two regions than in North America .
2. Nevertheless , the economic security risks associated with fuel imports represent a challenge to all industrialised countries - a challenge which has to be met through cooperation between nations as much as through national measures of adjustment and precaution. The reasons for this are as follows : economic and political interdependence (in the double sense of interdependence between nations and between issue areas) will certainly continue at levels where serious economic dislocations in some key countries will affect the economic well-being , and possibly the political and even military security , of others , even if they are not directly affected by the supply disruptions . Secondly, the adjustment costs of supply disruptions can be reduced if the burden is spread widely . Attempts to pass on the adjustment costs to others , or refusal to help in their wider distribution , thus risk to produce serious systemic failures . Thirdly , one important aspect of energy insecurity has to do with systemic weaknesses : the increased risks for industrialised countries represent not only greater vulnerability , but also greater probability of serious crises ; this, in turn , reflects a weakening of structures in and around the international oil market . This threat of structural fragmentation , itself a spin-off from the declining power of the US in

the international system , can be countered only through extended cooperation between industrialised countries , and perhaps between those countries and others , as well .

3. Policies to meet those challenges to economic security thus have to be designed and carried out jointly, although with due consideration to differences in national positions . And they have to address several issues : how to prevent supply disruptions from appearing , how to cope with them with the least damage , and how to strengthen the structures of the world oil market , and the political structures in which this market is embedded . Crisis prevention, crisis management and 'architecture of cooperation' (though perhaps not necessarily 'global architecture') will have to be seen as interrelated dimensions of the tasks ahead .
4. The following analysis addresses itself to a number of risks and threats . The categories used to distinguish them are a) the separation of specific , intentional versus diffuse , undirected threats , and b) threats along the North-South axis of international relations versus the East-West axis . The energy sources considered are oil and natural gas ; coal and uranium do not appear to pose serious risks to economic security . Diffuse threats to energy security with a North-South character are , for example , political disruptions in the Middle East with a direct bearing on oil exports , or turmoil in one or more key OPEC states in general . This type of threat probably poses the most difficult problems - for they are least amenable to political conflict-solution , most likely to produce results which are detrimental for all countries involved , and least calculable in terms of duration and evolution of disruptions . Diffuse threats along the East-West axis , on the other hand, appear relatively unlikely . An example could be serious upheaval in ^{the} Eastern Europe leading to sabotage against gas pipelines from the USSR to Western Europe . It seems likely that the

Soviet Union or national authorities would be able to quell this kind of disruption fairly easily .(Note that the pipeline network to Western Europe so far has skirted Poland). Specific threats along the East-West axis , on the other hand, cannot be ruled out. Examples for this are deliberate interference by Moscow with gas supplies to Western Europe or East-West conflict over oil exports from OPEC states , particularly from the Gulf area . Both these scenarios do not hold a high probability and are conceivable only within the context of a serious deterioration of East-West relations ; the incentives to the USSR to avoid confrontation and to seek political solutions ^(over oil crisis) to maintain supplies of gas are considerable . Specific threats along the North-South axis would comprise the use of oil supply cutbacks and/or embargoes by OPEC exporters for specific objectives - a change in terms of supplies (prices , quantities) of oil and gas , a solution to the Israeli-Arab conflict (likely only in the case of renewed hostilities between Israelis and Arabs) or, perhaps , some highly ideologically motivated lashing-out against the West. Such types of threat appear to be much more amenable to political solutions and more predictable . The rationality of the actors would introduce an element of caution against developments which would affect all concerned negatively ; since cooperation of several states would probably be necessary to achieve the desired effect , the element of caution will be reinforced through the need to find a common denominator of action . The most likely such scenario, the use of supply cutbacks to enforce economic demands , also seems most easily capable of accomodation ; the disruptive implications are likely to be contained through the overall decline of OPEC market power at least in the case of oil . Finally , there is the possibility of a threat combining all elements - specific and diffuse East-West and North-South. This could come about in a two-stage

process , with the first stage consisting of turmoil in the Gulf, and the second direct confrontation between East and West over such a crisis . This could affect both oil and gas supplies to the West from the Gulf , and could lead to explicit Soviet threats with respect to (remaining) oil exports from the Gulf and to gas exports from the Soviet Union .

5. Looking now at elements of crisis management, the industrialized countries command - in principle - the following mechanisms of defence and adjustment to supply disturbances : spreading the shortfall among as many countries as possible, stepping up alternative supplies , substitution through fuel-switching, use of stocks and demand constraint . The task of adjustment is complicated by the fact that the threat - at least in the case of oil - does not only come from the supply shortfall itself . but also from price increases it could produce . In the case of gas , there are limits to possibilities of spreading the shortfall among consumer countries - limits inherent in the functioning of the natural gas market which is strongly regionalised . Within Western Europe , the possibility exists , however, both through existing infrastructure (the European pipeline grid) and through contracts which often tie several consumers to one producer (particularly with respect to supplies from the Soviet Union) . In Japan, on the other hand, the shortfall would have to be absorbed nationally - but the careful diversification of sources of supply and the fact that most natural gas is used in electricity generation should make the burden of adjustment manageable . (The US will only be marginally dependent on gas imports and thus does not have real problems) . Stepping up alternative supplies will also be possible in Western Europe to a significant degree - although surge capacity is concentrated in the Netherlands and will decline as production from the Groningen field declines . The ability to switch fuels also exists in both Europe and Japan : a significant share of

natural gas sales in Europe is based on interruptible contracts , which implies the capacity to change from gas to other fuels , mostly oil, if deliveries are temporarily suspended . The Japanese have implicit fuel-switching capacities through the concentration of natural gas consumption in power stations , although the ability to 'wheel in' electricity generated from other sources of energy might have to be improved . Stocks , on the other hand , have so far only limited utility in the case of serious supply disruptions as reservoirs are mostly needed to cope with seasonal fluctuations of demand . Storage capacity is being expanded, however , with some small margin for security purposes in the offing .

6. In the case of oil , crisis management procedures are internationally coordinated through the International Energy Agency and the European Commission . Beyond a critical shortfall level of 7 % of oil imports for the group or for individual member countries , the following measures are envisaged , depending on the severity of disruptions : demand restraints , draw-down of emergency stocks , and distribution of available oil among member states according to a detailed calculation of supply rights . The market structure tends to distribute shortfalls widely , although recent changes (proliferation of companies involved , more precise restrictions on destination in OPEC export contracts) have undoubtedly reduced market flexibility. The emergency system has so far been tested only in trial runs; it was not activated in the two real disruptions after 1974 - the Iranian revolution and the Gulf war oil crises. In both crises, however , the IEA played a role - in vain, in turned out , in the second oil crisis , successfully (though with a lot of luck) in 1980 . Some surge capacity will undoubtedly be available , although this capacity will continue to be located primarily in OPEC states , putting a question mark behind the willingness of suppliers to step up production . The key country in this respect is, of course , Saudi Arabia. Members of the IEA

and the EC are obliged to maintain emergency stocks corresponding to a level of 90 days of consumption or imports , but in practise the coverage of supply disruptions through emergency stocks differs widely : most of the stocks are integrated with commercial petroleum stocks , which cannot be depleted fully without impairing the functioning of the distribution system . Preparations for demand restraint are of different quality ; their implementation raises difficult political issues . Moreover , price signals and the growing concentration of oil in non-substitutable sectors of consumption have undoubtedly tended to melt some of the fat which previously existed and provided some additional margin of flexibility . Possibilities for fuel-switching also exist , particularly in power stations, but also in industry .(The possible conversion to coal will not affect this ability , although it would then consist in an ability to switch to oil if coal supplies were severely curtailed) .

7. How adequate are these mechanisms as a defence against supply interruptions ? In the case of natural gas , problems will come to the fore in the 1990s , when dependence of several European countries on Soviet supplies will reach 50 % or more, in some case paralleled by similarly high levels of dependence on Algerian gas , and Dutch surge capacity will decline . In the '90s , and beyond, several weaknesses of the present defensive mechanisms could become apparent : surge capacity might be too small to ensure adequate protection , its activation for prolonged periods and its distribution might no longer sufficiently be handled by the companies since issues of distribution of adjustment costs are involved . The width of the European gas network might turn out to be smaller than desirable (although the inclusion of Scandinavia and perhaps even Britain would help) . Fuel-switching might turn out to be oriented too much towards the combination oil/gas, both of which might well be affected by disturbances , or possible

disturbances , simultaneously . Demand restraint opportunities could also turn out to be insufficient to avoid economic and social dislocations in several European countries - although it must be said that the dimension of those problems would be qualitatively different from those in the case of oil supply disruptions . Besides, enhanced storage capacity could offer an additional measure of security . In sum , the possible risks appear reasonably manageable - provided , precautions are taken in time and political arrangements are established during the period ahead . There is considerable breathing space , which ought to be utilized constructively .

8. The assessment of the quality of protective measures cannot be as sanguine in the case of oil . For one thing , the effectiveness of the IEA emergency allocation scheme is still open to doubt ; a former high US official has recently qualified it as window-dressing , as a "cosmetic" device .¹ Secondly , the fact that the scheme addresses supply disruptions of great proportions only has turned out to be a serious draw-back . The "sub-crisis" of 1979/80 has resulted (so far) , according to OECD calculations , in losses of about 5 % of the combined GNP of the industrialised countries in 1980 and of close to 8 % in 1981 ² - and those calculations do not take into consideration the longer-term effects, the impact on non-OECD countries , and even some of the immediate costs of the price increases of 1979/80 . Also neglected are the consequences for the fabric of the world economy , which could as yet turn out to be very severe . Particular problems with regard to the crisis management instruments appear to lie in a near-total lack of agreement and even of a strategy of how to use them - in particular, how to use stocks . This is all the more critical since the US government has recently abolished most of the other instruments of crisis management , and thus relies now almost ex-

clusively on stockpiles and market mechanisms to deal with supply disruptions . There can be no question, however , that stocks are the key element in the defensive mechanisms available to the industrialised countries , not least because stocks have so far displayed a tendency to aggravate market tensions . Reliance on market mechanisms , which is now visible in the reluctance of the German and the US governments to consider a strategy for "sub-crises" à la 1979/80 and their emphasis on flexibility and ad-hoc decisions and consultations , seems inadequate : after all, it was market mechanisms which in 1979/80 produced the colossal costs and the as yet not fully definable damage to international structures .

9. A lot needs to be done to strengthen crisis management instruments in the industrialised countries - this conclusion is hard to avoid. This need not be confined to a clear notion of how to use stocks in an emergency, and perhaps also their expansion and re-arrangements to achieve a more realistic protection . Fiscal measures , allocation arrangements , volume controls , and improved standby and demand restraint measures could also be used to strengthen defenses . If this cannot be achieved , then the temptation to try to remove supply constraints through other steps will grow . This externalisation of adjustment costs could take various forms - all highly risky : attempts to remove the supply disruptions through military intervention , to pass on the burden of adjustment to others through reliance on economic and political power or through appeasement and *sauf-qui-peut* tactics . But if better coordination and preparation of crisis-management capabilities are essential - they are not sufficient to reduce threats to Western economic security .
10. The two other important tasks faced by the industrialised world are crisis-prevention and a building of more viable structures in and around the world oil market . Some parts of this task are de-

pressingly familiar : the Israeli-Arab conflict , one major source of tensions and instability in the area , will have to be brought on the way to a solution acceptable to a majority of the Arab world . This would remove important constraints on the freedom of manoeuvre of conservative Gulf monarchies - both vis-a-vis their peoples and in terms of cooperation with the West . Instability in the Gulf has now acquired the dimensions of another , durable focus of conflict and instability - and so far, the West has been unable to do much more than watch the unfolding of the Iran-Iraq war . To reverse trends towards fragmentation and increased potential for conflict in the whole of the Middle East is a herculean task - but it has to be undertaken . Some indication of how that might be done can be provided by the period of relative stability in the Middle East from 1974 to 1978 . This relative stability was made possible by a number of positive factors : some sense of movement , and of optimism , about the Israeli conflict ; a preponderance of moderate forces in close cooperation ; a concentration on economic and social development at home made possible (or so it was thought) through the vastly increased amounts of oil revenues , and a preparedness to seek political solutions to existing conflicts . Needless to say , conditions have deteriorated enormously since then - but possibilities to attempt to build viable domestic and regional structures of cooperation still exist .

11. One area which has to be given attention in this respect is the oil market itself . There are a number of indications that the longer-term trends in this market have been decisively reversed . Export markets for OPEC countries might well decline throughout the 1980s , although this does not exclude cyclical fluctuations, perhaps exaggerated by politically-induced crises . Still : the odds are that structurally OPEC markets will decline , with important implications for oil revenues . The relative decline in OPEC

exports will also imply a decline in OPEC's share of the world energy markets and a shift in patterns of trade towards non-oil developing countries . This will have important implications for OPEC's market power , for OPEC oil revenues and for the economic and political stability of individual producer countries. It remains to be seen how demand - and supply-related elements of market contraction interact : on the one hand , oil exports of several OPEC members will fall as a result of declining reserve positions and increasing indigenous demand ; on the other hand, demand in the importing countries will also decline . Constraints on OPEC members resulting from lower revenues have already become apparent , and are likely to increase over the coming years , particularly in countries affected both by declining export availability and eroding real prices . Some of those countries (Algeria, Indonesia) will perhaps be able to compensate ^{for} the loss of oil income through sales of natural gas , but it would not be surprising to see some of the peripheral OPEC members (Nigeria, Indonesia, Algeria , Ecuador) or other oil exporters (Oman) experience economic recession and political turmoil . This, in turn could well produce supply disruptions . Moreover, it would add to pressures of market instability as those countries will be reluctant to forego opportunities to push up prices , or to cooperate (and share in the burden) on price stabilization . The other important development in the oil market will be increasing concentration of export capacities in the Gulf , thereby exacerbating the risks of instability emanating from this region .

12. All this suggests that the oil market of the 1980s and 1990s could well be highly unstable . Does this matter , if the overall trend develops in a direction favourable to consumers ? In my judgement, it certainly does. For one thing , market instability could well lead to political upheavals in the Gulf region , with dangerous

implications for supplies , and for the geopolitical balance and stability in this area of the world - which , after all, has both Superpowers closely involved . Secondly, market instability is likely to be associated with very large economic and social costs: oil, through the volume and value of this market , is a commodity of a very special character . Third, the energy transition from oil will be compromised by erratic price movements - witness the impact of an after all very modest decline in real oil prices during 1980 and 1981 on synthetic fuel programmes .

13. What strategies could be pursued to achieve a greater stability and predictability of market conditions in the oil business ?
- Efforts to reduce dependence on OPEC oil are certainly important in this , although it would be important not to overshoot the target , since this would imply very large economic inefficiencies. Some of those inefficiencies in resource allocation are unavoidable in the sense of a political insurance premium , but overinsurance would be costly . Secondly, possibilities of closer cooperation with OPEC countries, particularly in the Gulf , could be explored. It should not be forgotten that Saudi Arabia played a decisive role in both the 1979/80 and 1980/1 supply disruptions - lack of Saudi cooperation helped to produce huge price increases , full cooperation in 1980/1 contributed to a happier ending of the 1980 disruptions . I recognise the problems of cooperation with OPEC, or individual OPEC members , but both industrialised countries and oil exporters share an interest in stable oil markets ; this might provide a starting point for closer cooperation . A third strategy might consist in efforts to reduce the links between the world oil market and domestic markets (the US did this for a long period in the postwar era) . Fiscal measures could be used in theory to introduce a cushion between world market disruptions and the domestic economy . Politically, however , this would probably very hard to implement .

14. Returning to the original assessment of threats , it is clear that improved crisis management abilities would be important with regard to all the different types of threat . Specific threats are also less likely to materialise with adequate crisis management capabilities which would probably have a certain deterrent value . Specific threats along the North-South axis are , in any case , not the greatest problem . If they should materialise , they would require political crisis management with energy measures as a collateral . Specific threats along the East-West axis are probably more serious but the deterrent effects of adequate crisis precautions are also likely to be more significant . The management of such a crisis would again involve other aspects than energy security instruments . which are beyond the scope of this paper . Here , as in the case of other specific threats , crisis management capabilities to deal with supply shortfalls will , if properly developed , buy time and flexibility , and demonstrate alliance cohesion . If implemented inadequately , however , they might signal vulnerability and weakness to the other side ; and the disarray would probably also seriously erode alliance cohesion . Those weaknesses would even be important in a situation of diffuse threat : consumer disarray in 1979/80 certainly encouraged individual OPEC countries to exploit the opportunities for price increases .
15. Are efforts directed at enhancing the structural stability of the oil market also conceivable along the East-West axis ? Specifically , are talks with the Soviet Union about matters of energy security and stability desirable or even possible ? My answer would be: yes - provided such talks are approached with caution and justifiable confidence . The rationale for such talks lies in the high risks involved in Superpower confrontation over the Gulf , which give both sides a common interest in avoiding risks of confrontation . Meaningfull discussions would be possible, however , only if crisis management capabilities are adequate and if dependence on

Gulf oil can be reduced to manageable proportions .

Notes :

- 1) J.F.O'Leary , Objectives of the Oil Importing Countries , in:
Edward H.Krapels (ed) , International Oil Supplies and Stock-
piling , London : The Economist Intelligence Unit 1982, pp.58-6
- 2) OECD Observer , No.115 , March 1982

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