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Export Controls and East-West Energy Trade in the 1990s

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Chapter in Gary K. Bertsch and Steven Elliott-Gower (eds.), Export Control Policy in the 1990s: Perspectives, Problems and Prospects (Duke University Press)

This article examines the changing political climate in Eastern Europe as the basis for changes in the conditions of East-West trade. The authors argue that gas trade is set to rise in general, because the security of supply issue recedes into the background while gas from the USSR becomes a very goodchoice in counter-trade or joint ventures. The environmental factor will play an increasing role in favour of gas use, and the energy policy of the European Community will become more important in both Eastern and Western Europe.

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E: Exports
/trade barriers
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Energy
East West trad
Natural gas
Petroleum markets
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G: USSR
Eastern Europe
Western ...
United States

The energy sector has a long history of having posed particularly difficult issues for export control policy. Twice the United States and Western European countries clashed over Soviet pipeline projects, the "Friendship" oil pipeline of the early 1960s and the West Siberian (Yamal) natural gas pipeline of the early 1980s.[1] And within the United States itself, the politics of export controls on energy equipment and technology have been transformed from the consensus of the 1950s and 1960s to the conflicts of the 1970s and 1980s.[2]

While not attempting to predict the future, there is ample reason to be concerned about new controversies and conflicts over East-West energy trade, both within the Western alliance and inside U.S. domestic politics. On the one hand, with overall East-West security relations still in flux, the foreign and defense policy rationales for past trade controls have not lost their relevance. On the other hand both the economic incentives and foreign policy counterarguments in favor of liberalization and even promotion of East-West energy trade have grown stronger, especially among Europeans. Energy was singled out as a key area of cooperation in the European Community (EC)-Soviet Union trade pact signed in December 1989, and has been stressed repeatedly in visions of a "common European House" articulated by both Soviet and European leaders. Moreover, the European Community's plan for a single internal energy market as an integral part of its 1992 economic integration may add further pressure for increasing the role of the

EC as a potentially competing institution to COCOM in shaping policy towards energy-related trade policy with the Soviet Union.[3]

The "Push-and-Pull" of Trade Controls: A Framework for Analysis

The Trade Control "Pushes"

Four factors can be identified as having been key "pushes" towards controls on East-West energy trade in the past. First is the dual-use problem of the potential military applications of certain energy equipment and technology. This issue is discussed as a more general export control problem in the chapters by Sumner Benson and William Long. It has arisen on energy equipment and technology a number of times in the past, as for example, in the 1978 controversy over the $144 million deal for Dresser Industries to build an oil drill bit factory which included an electron beam welder having potential dual uses for high energy lasers and for the manufacturing of nuclear components and aircraft and space parts. More recently, dual use concerns have been at issue with export controls on certain sophisticated seismic equipment used in oil and gas exploration which also have military applications for anti-submarine warfare, nuclear research and weapons development and design. [4]

A second basis for export controls on energy equipment and technology has been their strategic significance, conceived of as

not just the potential military uses of a particular export but as the broader strategic importance of the energy sector to the Soviet economy. This was the rationale for the original COCOM embargo in 1950 covering "all basic specialized equipment for the exploration, production and refining of petroleum and natural gas". [5] It also was a key factor in the broader "squeeze" strategy underlying the Reagan administration's Siberian pipeline sanctions. "Without constant infusions of advanced technology from the West," Defense Secretary Caspar Weinberger argued, "the Soviet industrial base would experience a cumulative obsolescence, which would eventually also constrain the military industries. . .By allowing access to a wide range of advanced technologies, we enable the Soviet leadership to evade this dilemma." [6] Similar albeit toned down arguments have been made by those (including some members of the Bush administration) who most seriously question how deep perestroika runs, how long it will last or whether its real intent is to create a "leaner and meaner" Soviet Union.

A third basis for controls has been the pursuit of foreign policy leverage. The argument here has followed a similar logic, asserting that Soviet weaknesses in such a critical area of their economy make the energy sector a point of vulnerability at which economic pressure can bring political influence. This was the strategy pursued by both the Carter and the Reagan administrations in their "foreign policy controls" on energy equipment and technology exports in response to Soviet human rights violations,

the invasion of Afghanistan and the imposition of martial law in Poland (see below).

Finally, there has been the import dependence - political vulnerability concern of the United States about Western countries relying too heavily on Soviet oil and gas supplies. This was a major issue for the Kennedy administration in 1962-63, when Italy was importing in excess of 20% of its oil from the Soviet Union. It was made an especially salient issue by the Reagan administration regarding West German, French and Italian imports of Soviet natural gas. "Whether one calls it sensitivity or solicitousness or simply 'reality'," Assistant Secretary of Defense Richard Perle asserted, "is there any doubt that our allies listen more carefully to kings and rulers who supply them with energy than to those who do not?" [7] The allies objected to this position, to say the least, in its tone no less than its substance.

The Trade Liberalization "Pulls"

Pulling back in the other direction as incentives for East-West energy trade have been four other factors. First, there has been the longstanding Soviet demand for Western energy equipment and technology as one of their highest nonagricultural import priorities. The pattern of the past 30 years has been of the Soviets being able to meet many of their energy sector needs through domestic production and bloc trade, but requiring imports from the West to overcome key technological bottlenecks (e.g., wide diameter pipe for the Friendship oil pipeline, turbine-powered

compressor stations for the Siberian gas pipeline). This is a pattern which, as we will discuss below, has grown even more entrenched over time. In the 1950s-60s the easy exploitability of many oil and gas deposits helped compensate for inferior Soviet technology. In the 1970s there was an abundance of new Siberian oil and gas deposits to be opened up. But by the 1980s these previous decades of inefficient production had taken their toll. The gap between the energy technologies the Soviets can produce and what they need has grown wider. Yet at the same time oil and gas cannot but be a high economic priority, given their importance both for fueling domestic economic growth and as the source of almost 80% of Soviet hard currency earnings.

Second have been the economic benefits of the Soviet market to Western exporters. It's important to point out that this has never been a matter of a large absolute value; the Soviet market has never represented any more than 3% of total exports for any Western country. But on a sectoral basis the relative value of the Soviet market has been much greater, as with companies such as Mannessmann (West Germany) which for almost 30 years has built its corporate strategy around large volume sales of wide diameter pipe to the Soviet Union.[8] Energy equipment and technology exports also have had the added advantage of being highly conducive to countertrade agreements, usually in exchange for the oil and gas they produce, and as part of consortiums also involving creditors and energy companies (e.g., Mannesmann working with Deutsche Bank and Ruhrgas).[9]

A third pro-trade factor is the Western European demand for Soviet oil and natural gas. In contrast to most other sectors, here the Soviets have something to sell which the West is interested in buying. This has been especially true for West Germany, Italy and France because of their positions as energy consumer countries and because geographical proximity makes pipeline and other modes of transport economical. Both West Germany and Italy already have exceeded the nonbinding ceiling of 30% on gas imports from the Soviet Union, which had been part of the settlement of the Siberian pipeline imbroglio. [10] The United States has shown some interest in Soviet energy supplies (e.g., the multi-billion dollar North Star and Yakutsk liquified natural gas projects considered in the 1970s), but in general its lesser reliance on energy imports and the greater distances for transport have made imports of Soviet energy less commercially attractive.

Thus, if left to themselves, even taking into account Soviet economic inefficiencies, economic factors would push for a rather active two-way East-West trade relationship in the energy sector. The pro-trade pulls have not, however, been strictly economic. A fourth factor has been the belief that the development of greater economic interdependence would have foreign policy benefits. While this argument often is turned into a straw man of being "a naive theory of interdependence", in its more measured formulations and kept within a broader strategy of military deterrence, this is entirely consistent with NATO doctrine, going all the way back to the 1967 Harmel report and its assertion that "military security

and a policy of detente are not contradictory, but rather mutually complement each other."

Past Conflicts Over Energy Trade Sanctions

Friendship Oil Pipeline, 1962-63

As already noted, export controls on energy equipment and technology traced back to the earliest days of the COCOM regime. As part of the limited liberalization of COCOM controls in 1958, wide-diameter pipe was decontrolled. The Eisenhower administration maintained U.S. unilateral controls on wide-diameter pipe, and only agreed to the COCOM decontrol because of a Commerce Department study ostensibly showing such limited non-American production capacity that even if other suppliers were "to ship their entire annual output, the small quantity still would retard Russia's gas and oil pipeline program in its current Seven Year Plan."[11]

How seriously Commerce had miscalculated the extent of non-American production capacity soon became apparent. Between the COCOM decontrol in late 1958 and late 1962, the Soviet Union was able to import some 870,000 metric tons of pipe from West Germany, Italy, Sweden, and Japan. West Germany alone accounted for 80 percent. The culmination was an October 1962 contract by Mannessmann for an additional 163,000 tons, which were to provide the final pipe necessary for completion of the Soviets' major new project, the "Friendship" oil pipeline. What made the Friendship

oil pipeline of particular concern to the Kennedy administration was that it would substantially boost Soviet oil export capacity to Western Europe and, with the Soviets already having captured over a 20% share of Italy's oil imports, was seen as threatening to flood the dikes of containment.

The Kennedy administration succeeded in exerting leverage over its allies and getting the West German pipe export contract cancelled and Italian oil imports reduced. American oil companies such as Standard Oil of New Jersey, themselves threatened by the competition for markets they were accustomed to controlling, worked with the Kennedy administration by offering Italy increased volumes of discounted oil. In both Italy and West Germany there was criticism of the American pressure, but both governments nevertheless went along with the U.S. position.

1970s Detente and Energy Trade

The Nixon administration viewed the energy sector as a prime area for developing the economic component of the larger strategy of detente. The July 1972 official report, U.S.-Soviet Commenced Relations in a New Era, reflected the view even before the October 1973 OPEC oil embargo that the United States had strong economic interests in energy trade with the Soviet Union:

> The United States, which historically has spent its energy and resources like a drunken sailor, can now feel the hole in the bottom of its pocket. With the tremendous increases that are projected in oil requirements by the end of this century, it may be very much in our interest to explore seriously the possibility of gaining access to, and in fact to aid in the development of energy fields as rich as those possessed by the Soviet Union.[12]

Export controls were relaxed and licenses granted for gas turbine compressors, pipelayers, submersible pumps and other energy equipment and technology. Occidental Petroleum, Dresser Industries, General Electric and other U.S. firms signed major technical and economic cooperation agreements with the Soviets. And negotiations began on the multibillion dollar North Star and Yakutsk liquified natural gas projects, which were by far the most ambitious undertakings in the history of American-Soviet commercial relations.

However, as with other parts of detente, these projects were undermined by the combined effects of Watergate, Vietnam, Soviet denial of emigration rights to Soviet Jews and a host of foreign policy disputes over arms control and regional conflicts. The prospects of the North Star and Yakutsk projects were particularly hurt by the congressionally mandated denial of MFN status to Soviet exports (Jackson-Vanik amendment) and the limitations on Export-Import Bank credits which included the prohibition of any credits for production, processing or distribution of energy. (Stevenson-Church amendments).

The Carter and Reagan Controls

With the more total breakdown of detente in the late 1970s, embargoes on energy equipment and technology exports were a prime policy instrument. Prior to 1978, when the Carter administration imposed foreign policy controls in response to the arrests and

rigged trials of Soviet human rights activists Anatoly Shcharansky and Aleksandr Ginzberg, the only controls on energy equipment and technology exports were based on national security considerations and covered only those items with direct or indirect military significance (e.g., dual-use items). The 1978 "Shcharansky sanctions" covered oil and gas exploration and production equipment; certain transmission-related pipelaying, coating, and wrapping equipment; drilling fluids, muds, and materials for enhanced recovery; and machinery and other equipment for the manufacture of oil and gas exploration and production equipment.[13] Prior to the Soviet invasion of Afghanistan, however, while these controls were kept on the books, a presumption of approval guided nearly all licensing decisions.

As part of the broader tightening of sanctions in response to the Afghanistan invasion, all other goods and products intended for oil or gas exploration or production were added to the list, all pending expect licenses were suspended and a presumption of denial was imposed for all new license applications. In December 1981, partly in response to the Soviet hand in the imposition of martial law in Poland, but also partly reflective of the more general Reagan strategy of squeezing the Soviet economy, export controls were extended to oil and gas transmission and refining equipment and technology.

This made the controls on energy-related exports virtually complete vertically; i.e., they now covered all aspects of the oil and gas production process, from exploring for possible deposits,

to sinking wells and producing from them, to refining the products and to transporting them through pipelines. The next step, taken in June 1982, was to seek to extend them "horizontally" to Western European exporters. The Reagan administration had been pressuring the allies for months both to join the embargo and to cut back the planned increases in their imports of Soviet gas. This process culminated in the disputes over this issue at the June 1982 Versailles summit. Dissatisfied with the results produced by consultation, the Reagan administration unilaterally announced the extraterritorial extension of the U.S. controls to American-owned or controlled companies in Western Europe and to foreign companies using U.S. parts or technologies. When European governments and companies pledged not to comply, Reagan went even further, imposing punitive countersanctions on the offending companies.

Western European-Soviet gas trade dated back to 1968, when the first contract was signed with Austria. This was based on the countertrade of gas against steel pipe. Voest Alpine delivered 520,000 tons of steel pipe against imports of gas. The pipe was, as in later cases, intended for the construction of gas pipelines. In 1973 the Federal Republic of Germany started importing gas against the exportation of 1.2 million tons of steel pipe. France and Italy also began similar gas-for-energy equipment trade in the 1970s. Britain exported energy equipment but with its newly discovered North Sea gas fields prohibited any imports of natural gas.

Negotiation on the Siberian Yamal pipeline began in 1980, and in fact involved some of the same gas fields which had been part of the U.S.-Soviet North Star project plans. The contracts signed in 1981 and 1982 followed the past countertrade model (except for Britain, which did not include gas imports), only they were much bigger. When the Reagan administration imposed its sanctions, European governments were exceptionally unified in their opposition. Their reasons were precisely those cited earlier in more general terms of the trade liberalization "pulls": the economic benefits of the exports, especially amidst the deep recession of the time; the security benefits of lessening their energy dependence on the Middle East; and the foreign policy benefits of maintaining some positive relations amidst the other contentious East-West issues of the day. Finally, in November 1982 after one of the most bitter disputes in Western alliance history, the Reagan administration (with newly appointed Secretary of State George Shultz leading the way) abandoned its extraterritorial claim and rescinded its punitive countersanctions. The official American position was that a compromise had been worked out, with the Europeans agreeing to a series of multilateral studies, including one by the International Energy Agency (IEA) which proposed a nonbinding ceiling on Soviet gas of 30% of total gas consumption. The Reagan administration, however, had wanted a binding ceiling. And while the downturn in world energy markets slowed the rate of growth of European imports of Soviet gas, by the late 1980s the 30%

ceiling had been breached by West Germany and Italy. And the Siberian Yamal pipeline was completed.

While most attention focused on the costs imposed on European companies, American companies bore a substantial burden of their own. The company hardest hit by the Siberian pipeline sanctions was Caterpillar Tractor, which lost $400 million in contracts for pipelaying equipment and parts. These losses had a particularly high marginal cost because they came amidst the 1981-82 recession, when the rest of business was so bad that Caterpillar racked up a company record loss of $334 million. In fact, in Caterpillar's home congressional district, what the 1982 Democratic congressional candidate labeled the "Republican sanctions" almost cost twelve-term incumbent and House Minority Leader Robert Michel his seat.

Another big loser was General Electric, with $170 million in compressor-related contracts. Because the export controls also prohibited GE from fulfilling non-Soviet contracts for fear of diversion or transshipment, one GE executive stressed that a true estimate of economic costs had to include such "ancillary consequences". Since 10 percent of GE's business in energy-related equipment and technology was international and only 10 percent domestic --- a sharp reversal of the pattern of even ten years earlier --- these additional costs were far from negligible. "You've got to turn a lot of somersaults these days." remarked one GE executive, "just to get <u>any</u> sales."[14]

Beyond just Caterpillar and GE, and going back to the 1978 sanctions, the Commerce Department estimated that $2 billion in

potential sales were lost.[15] According to the Petroleum Equipment and Suppliers Association (PESA), in 1978 (pre-controls) American exporters had a 40% share of Soviet imports; by 1986 they had less than a 1% share. PESA executives also stressed the even greater magnitude of spillover effects from the contracts lost in other markets because of the delays of the licensing process, and the more general damage done to American exporters' reputation for reliability. Meanwhile the international marketplace was growing increasingly competitive, with an estimated 600 companies in 38 countries producing oil field equipment and technology.

It's important to put these economic costs in their broader sectoral and cyclical contexts. In the early 1970s exports accounted for only 45 percent ($443 million) of total U.S. manufactures of oil field machinery ($980 million). By 1980 industry output had grown to $6.5 billion, and the export share was 51 percent ($3.3 billion). Then, however, came the collapse of world oil prices and the veritable free-fall of the U.S. oil industry. Production plummeted: the number of active rotary rigs fell from 3970 in 1981 to 963 in 1986. The number of new well completions dropped by 64% for oil wells and 61% for gas wells. The number of seismic crews, exploring for new production, went from 681 (1981) to 138 (1988). Domestic orders for equipment followed suit. In 1986 total shipments of the oilfield industry were down to $2.9 billion, with domestic sales at only $413 million. At $2.5 billion in 1986 exports also were down, but not nearly as much. In 1987, however, they fell further to $1.8

billion. They only partially recovered in 1988 to $2.16 billion which still was below 1979 levels, even before correcting for inflation. The "people effects" --- i.e., on profits and employment --- were devastating. Net profits for equipment manufacturers, $4.4 billion in 1981, were -$1.1 billion in 1986. Industry-wide employment fell from 619,000 jobs in early 1982 to 253,000 by early 1989. [16]

Clearly, for such a beleaguered industry, any new markets would have enormous relative value. Partly because of industry pressure, simultaneous with lifting the countersanctions against the allies, the Reagan administration also ended the unilateral U.S. controls on oil and gas transmission and refining equipment (i.e., those imposed in December 1981). It wasn't until January 1986, though, that any of the earlier energy-related export controls were lifted. The new regulations instituted were in effect a repeal of the "1980 set"; i.e., the presumption of denial guiding licensing decisions on oil and gas equipment and technology was changed to a case-by-case review. This meant that exporters still had to apply to the Commerce Department for licenses, but that the prospects for approval were better. The following year, in January 1987, the next step was taken, as all controls were lifted from non-dual use oil and gas equipment and technology.

As important as these measures were, and as much of a contrast with the "squeeze strategy" of the early Reagan administration as they represented, they still left U.S. unilateral controls more restrictive than the multilateral COCOM lists. The

next step was taken by Congress which, as part of its encompassing Omnibus Trade and Competitiveness Act of 1988, included a number of provisions further liberalizing export controls. Two provisions were especially key as far as U.S. energy equipment exporters were concerned. One was the requirement that within six months virtually all unilateral national security controls had to be removed. Exceptions were still allowed for items on which the U.S. was actively involved in negotiations for multilateral controls, or which could be demonstrated to be unique to U.S. producers (i.e., no foreign availability). But the legislative intent that these be given a narrow constructionist interpretation was much clearer than in the past. The Bush administration worked in accordance with this legislative intent, issuing new regulations in February 1989 which pared the CCL to be much more closely in line with the COCOM lists.

The other key provision, the significance of which only became fully apparent the following year when the language of the statute was interpreted for implementation, provided for the decontrol of technical data other than that related directly to COCOM-controlled products. This was how COCOM countries always had applied their own technical data controls. The United States, however, had interpreted them much more broadly, holding technology to a stricter standard of control than products. Sources indicate that the Defense Department strongly opposed this liberalization, but that Commerce prevailed and thus far has made a good faith effort to cut technical data controls. [17] This has particular significance for some of the energy sector joint ventures (e.g.,

petrochemicals, refinery equipment), as it eliminates many of the licensing requirements for technical data needed for the manufacture of decontrolled equipment.

Soviet Interests in Expanded East-West Energy Trade

The competing pressures and compounding problems of their energy sector exemplify the broader dilemmas of the Soviet economy. A first pressure is the need to increase oil and gas production in order to boost exports, in order to earn hard currency. One hears references by Soviets to oil and gas as their "hard currency cow," bringing in as it did in the 1980s about 80% of their total hard currency earnings and on which other imports (grain, industrial machinery, consumer goods) thus are heavily dependent. Accordingly, the 1986 Five Year Plan set a target of a 40% increase in total energy production by the year 2000. [18]

In an effort to meet these goals, during the first half of the 1980s, the energy sector accounted for 90% of the total growth in Soviet industrial investment, giving it a 15% share of total state industrial investment. By the late 1980s this had grown further to an estimated 20%. [19] Yet the Soviets' recent record is aptly characterized by The Economist as "running to stand still". Even with its ample share of state investment, energy sector output increased only 13%. The Soviet's own estimates are that oil and gas investment would have to increase an additional 50% every five

years just to keep output at its present level. Moreover, the decline in world oil prices has cost them an estimated $64 billion in lost export earnings. As an example of the worsened terms of trade, one barrel of Soviet oil can purchase only 25% as much West German machinery as in 1985. [20]

The Soviets have tried to compensate for these declining terms of trade by boosting their oil and gas export volumes as much as possible. But with oil production basically flat, this has been difficult to do. They thus have resorted to a number of other economic tactics: cutting domestic oil consumption through gas and coal conversion and conservation programs; re-exporting large volumes of oil imported from Libya, Iraq and other Middle Eastern countries as countertrade for arms sales; cutting exports to Eastern Europe, Cuba and other traditional allies. Yet while such efforts helped push oil exports to noncommunist countries up 25% in 1988 to an all-time high of 2.43 million barrels per day, with oil prices still falling actual export revenues increased by less than 1%. [21] Gas exports have been somewhat more successful, growing more rapidly and with prices holding steadier, but gas still accounts for less than half of the hard currency earnings of oil ($5 billion to $12.9 billion).

A second pressure, however, has been the need for fiscal reasons for a 40% cut in the budget for the fuel and energy sector. Even with its high economic priority, the energy sector could not escape the consequences of the crash effort to halve the 120 billion ruble budget deficit ($190 billion at the official exchange

rate). This has meant cuts in existing projects (e.g., exploratory and development drilling). Consequences already are apparent in the "tens of thousands" of workers in the Tyumen region whose jobs either have been eliminated or who have been transferred to lower paying jobs in Moscow. With work stopped on most major pipelines originally scheduled for completion in 1990, one trade union newspaper reported "expensive imported pipe for these projects is rusting." Consequently, through the first three quarters of 1989 oil production declined and gas production recorded its smallest annual average gain since 1981.[22]

The net effect has been to further increase the value of Western energy equipment and technology. We refrain from saying "need" because of the implications of exploitable dependency that word has been given by advocates of sanctions. But there can be no question about the historical pattern of energy industry equipment but the recurrent technological bottlenecks for which Western energy equipment and technology imports have been needed. The decline in oil production in the first quarter of 1989 was directly attributed by PlanEcon to inadequate equipment. [23] Similarly, a recent Tass report stressed "the urgent need to search for new methods to increase oil extraction from currently developed deposits. The present level of technological development... leaves more than half of their liquid fuel underground."[24]

Among the consequences of energy sector technological deficiencies have been a series of accidents in the Soviet pipeline network. The greater openness of the Soviet press today reveals

that gas pipelines and compressor stations are very poorly maintained, and that the many accidents lately with pipelines are due to this. According to reports in energy journals, the need for Western equipment is acute. The situation has been described as one where the "grid is in a dangerous condition from the standpoint of both human life and the environment."[25]

Moreover, as production moves into the Arctic region and to offshore sites, where many of the new major oil deposits lie, the value of Western technology grows even greater. A report on problems in the Barents Sea in the Oil and Gas Journal is typical:

> The Soviet Barents mobile rig fleet...has from the first suffered from frequent accidents, equipment malfunctions, personnel errors.... Even if major oil and gas fields are found soon in the Barents Sea, development of deepwater reservoirs will long be delayed. Maximum water depth for Soviet fixed drillers/production platforms is only 110 meters. The Soviets have no equipment to lay and repair pipelines in deepwater and the USSR only recently reported its first subsea well completion.

The report continues that "Soviet petroleum industry officials concede that the USSR lags 15 years behind the West in offshore production technology." [26]

Similar problems have begun to mount in the Soviet refining industry. Their technology is heavily based on primary distillation, which is adequate for producing heating oil. But they have a very limited capacity for catalytic cracking and other secondary processes needed to produce gasoline, diesel and other refined products. The 11th Five Year Plan failed to bring on any of the more sophisticated refineries it promised, and the 12th Five

Year Plan has been plagued with "insufficient investment and overambitious construction plans". Already there are reports of gasoline and diesel shortages, yet one of Gorbachev's most prominent promises to consumers is more cars.[27]

At the same time the Soviet Union has been experiencing a budding environmental movement protesting against a number of oil and gas projects. While Western oil companies are not exactly environmentally conscious in many of their practices, the Soviet use of nuclear blasts to stimulate oil production is in a class by itself. This practice apparently traces back to the mid-1960s, and was done as recently as August 1987. It has been resorted to in efforts to get old wells or difficult to reach deposits flowing, as but another attempted compensation for technological shortcomings. [28]

Another instance of environmentalist protest against traditional methods of production came in the natural gas-rich Yamal region, where the development of new gas deposits had to be scaled back because of strong local opposition over the economic, ecological and social damage being done. In an article published in Sotsialisticheskaya Industriya one L. Gayardin, chairman of the Yamalo-Nentskiy Okrug Soviet of People's Deputies Executive Committee, laid out a list of 28 rivers "hopelessly polluted and have lost their value as feeding grounds" (a 31 percent drop in the annual fish catch), 6 million hectares of reindeer pasture taken away, the destruction of bird nesting grounds, and major social problems such as 60 percent alcoholism, declining life

expectancy for local inhabitants and increasing infant mortality.[29] There are notes here of general anti-development sentiments, but if any further gas exploitation is going to make it, it is likely to be through Western intensive rather than Soviet extensive methods and technologies. [30]

It thus is in the energy sector, more than anywhere else in the Soviet economy, that we see the complex interconnectedness of Soviet economic relations with the West: the need for imports of Western energy equipment and technology, in order to increase production of oil and gas, to export to the West, to earn the hard currency necessary to import grain and other industrial goods, to further develop the overall national economy....

Western Europe and Energy Trade Controls in the 1990s

Western European nations have never supported export controls for energy-related equipment beyond those with direct and major military significance. They also have vehemently opposed the U.S. view that imports of energy should be limited and that one should not aid in the development of Soviet gas resources. As we look to the 1990s, it is quite apparent that for Western Europe the pushes towards export and other energy trade controls have been growing even weaker, while the pulls towards trade liberalization have been growing that much stronger. Since the Reagan sanctions were ended, there has been little or no discussion of East-West

energy trade in either COCOM or the IEA.[31] This does not mean, however that a similar conflict may not arise again. We feel confident in stating that any future effort by the United States to target the energy sector for sanctions would meet with even greater outcry and opposition in Western Europe than did the Siberian Yamal pipeline sanctions.

Overarching Foreign Policy Context

One reason for this view stems from the overarching foreign policy context of truly historic improvements in East-West relations. There is a widespread and powerful interest across Western Europe in assisting the democratization and economic restructuring of Eastern Europe and the Soviet Union. There is virtually no opposition to the argument that greater economic interdependence between the European Community (EC) and the Soviet bloc is vital to the building of a "common European House," as visualized by both EC President Jacques Delors and Soviet General Secretary Mikhail Gorbachev.

Many consider gas as ideal for this purpose. European gas trade is very long-term: contracts have a duration of 25-30 years as a rule. They thus involve a close physical "pipelink" as well as a financial bond between nations for the length of time of an old-fashioned marriage. Contracts are therefore often closed at the governmental level, although state energy companies as a rule negotiate the commercial deal. Usually contracts require government approval, and often they form the basis for a wider

political-economic agreement, also in West-West gas trade. Gas, even more than other areas of trade, thus creates genuine economic interdependence and even physical links between the two Europes.

The significance of this argument cannot be stressed enough in view of the revolutionary changes now taking place in all of Eastern Europe. Its logic is essentially an inversion of the Reagan pipeline embargo of 1981-83: Gas trade will create physically tangible interdependence of both an economic and a political kind, as this is just what is needed to build a truly stable European continent. Moreover, both the FRG and the EC show a considerable willingness to act both economically and politically to stabilize the reform process in the CMEA and to encourage it in the USSR. Discussions of renewed imports of larger quantities of natural gas thus could well become an item on the EC political agenda, especially as it is the FRG which is the key decision-maker in European gas trade and through which the gas enters Europe. The IEA 30% import limitation is likely to be formally removed, especially given that it already has been abridged in practice. As long as the present favorable foreign policy climate continues, the Soviet gas imports issue is not likely to be repoliticized.

Export Controls on Energy Equipment and Technology

Three factors stand out from the European perspective as immediate and continuing concerns for export control policy as it pertains to energy equipment and technology. First is the dual use issue. The October 1989 COCOM meeting was characterized in the

press as rather contentious, with the United States being outnumbered 18-to-1 in debates over whether to decontrol seismic equipment, computers, machine tools and other high technology exports.[32] These have general relevance but also are of particular bearing to the energy sector because many of the major deals being contemplated for offshore oil and gas exploration, modernization of Soviet refineries and major petrochemical complexes involve precisely these technologies. There should be concern therefore about a conflict-feeding synergy, of the more general decontrol issue being exacerbated by particular export interests in energy projects.

A slightly different manifestation of the dual use issue is that many of the areas targeted for offshore exploration also are highly geostrategic (in effect, a "geographic dual use"). For example, Finnish Neste Oy, Norwegian Hydro, and American Conoco are together negotiating a joint venture with Russian oil companies for exploring and producing the huge gas reserves in the Barents Sea. If realized, this would be a spectacular example of multinational cooperation in a highly geostrategically sensitive region. The information manager of Hydro aptly remarks that "the mere thought of such a project would have been totally unrealistic a little while ago." So far a letter of intent has been signed between the Western companies and the Soviet Oil and Gas Ministry.[33]

Second is that given Soviet hard currency and ruble inconvertibility problems, there is a consequent need for a great deal of trade to be conducted as countertrade -- for which the

energy sector is ideally suited. Thus the December 1989 EC-Soviet Union trade pact stressed the energy sector as a key area of cooperation. The suitability of the energy sector for countertrade arrangements is perhaps even truer for joint ventures than for export contracts. A recent business conference in Moscow concluded that the introduction of joint ventures would lead to the continuation of countertrade, albeit in more sophisticated forms.[34] That oil and gas are high among the most desirable Soviet goods to take to Western markets remains a commercial fact. Thus a recent joint venture agreement with Italy was for the construction of an oil pipe manufacturing factory in Volzhsk and a drill pipe plant in Zhlobin, with more than 80% of the Soviet exports to Italy being petroleum.[35] Similarly, after Gorbachev's visit to France in the summer of 1989, the state oil company Total and ten other French companies signed a joint venture agreement to explore for and produce oil in the USSR and take out the profits as a percentage of the oil sales to the West.[36]

In addition, Western companies are being invited into Eastern Europe for energy joint ventures. The recently established exploration and oil production company Petrobaltic, consisting of Polish and East-German firms, has set up a joint venture with Deutsche Texaco and Royal Dutch Shell to explore for oil in the Baltic Sea, with one oil find already reported.[37]

A third factor, given these tensions, is that for the first time serious questions are being raised about the role of the EC as a potentially competing institution to COCOM. In addition to

its spur to economic integrations, the 1987 Single European Act also strengthened the political structures for coordination of foreign policy, in particular policy towards the Soviet Union and Eastern Europe. The general concern was forcefully stated in the Report of the Advisory Committee for Policy and Negotiations to U.S. Trade Representative Carla Hills:

> With the current Soviet and East Bloc leadership focused on internal economic restructuring and pursuing trade and defense initiatives with the West, most EC Member States are increasingly persuaded that new realities have overtaken the postwar consensus... In this context, Europeans view the continuing U.S. preoccupation with restrictive East-West technology transfer policies as misguided...The danger is that, if the U.S. does not move rapidly enough and cannot find common ground through COCOM, then European tolerance for U.S. export control policy may diminish further.[38]

To understand why this concern both bears particularly on the energy sector, and why the energy sector bears particularly on it, the concomitant issue of efforts to create a single internal energy market (and, in particular, a single internal natural gas market) has to be brought in to the analysis.

Changing Western European Gas Markets

Gas increasingly is the primary type of energy exported to Western Europe from the USSR. One reason, as noted above, is the much greater success of Soviet gas production over oil production. Most recently, in the offshore areas off Sakhalin Island in the Barents Sea, which have been partially explored, seismic studies indicate mainly gas finds.[39] Gas is thus the energy type that the USSR will seek to export more of in the future. Already oil is

being replaced by gas in existing countertrade agreements, for instance with Finland.[40] Here a new gas contract has recently been closed, more than doubling the annual gas imports from the USSR. The gas will be paid for in terms of countertrade. The Finns would prefer oil to gas, but are not interested in a reduction in their export level. (Coal, which used to be an important Soviet export article, has today very limited importance.)[41]

What limits the intake of gas into Western Europe? With political conditions conducive to increased gas use, the key factor will be market conditions. The market for natural gas today in Western Europe is artificially limited by the monopoly structure of the decision-making in the market. The pipeline owners are diversified energy companies which, as for instance in the case of Ruhrgas, have corporate interests in other energy forms. Further, the pipelines are amortized to a large extent, thus creating little need for market expansion. Instead, it makes sense to transmit a certain smaller amount of gas against good fees as opposed to selling large volumes at lower prices. Further, national energy policies have often determined the "energy mix," thus politically limiting the use of gas. The EC has also limited the market for gas in the power generation sector with a directive stipulating that only 20% of such generation may be based on gas. Thus, one may conclude that European gas use has been kept artificially low for a number of national political and structural reasons.[42] However, all these factors are in the process of changing as the internal energy market of the EC takes shape. On May 2, 1988, the

Commission published its key document entitled "The Internal Energy Market."[43] This working document sets out to define areas of the energy sector in which legislation is needed to accord with the general principles of the single market, as well as to identify obstacles to the realization of these. It was the Council of Energy Ministers which in the summer of 1987 requested an inventory of such obstacles because energy is known to be a very difficult sector to make more responsive to free market forces. Each member state has had its own energy policy which defines energy mix and import structure. The report accordingly opens with the statement that "in the last 20 years there has been little progress towards a genuinely common market in energy although the example of the United States or Canada shows that in those states with a federal structure a common energy market can have favourable consequences."

Concerning natural gas three areas command attention: pricing, infrastructure, and security of supply. Greater price transparency is a priority for the Commission. Hitherto, natural gas prices between producer and transmitter have remained industrial secrets of the highest order. Although a need for "business confidentiality" is recognized, the Commission desires improvements in price transparency both for transportation tariffs and for gas sales to large industrial consumers.[44] Another aspect of price reform involves harmonization of taxation within the internal market. The harmonization of indirect taxation (V.A.T.) is currently being debated in the member countries. The Commissions's proposal is the range of 14-20%.

Leaving aside questions of price, the major issue concerning gas is that of transportation. There are three concerns involved here: how to make sure that the transportation system is used optimally in supply sharing in a crisis situation, how to ensure greater integration of the grid, including a cross-channel pipelink, and how to ensure that the grid may be used by producers and consumers for transportation of their own gas ("common carriage"). The new issue is that of common carriage. While the transmission systems for natural gas extend all over continental Europe, most transmission lines are owned by national and regional gas companies, whereas the major import lines for Soviet and Norwegian gas to the continent are owned by the large transmission companies.

So far there has been relatively little public or industrial debate on whether the internal market in the EC should include legislation providing for common carriage in gas transportation. Both producers and transmitters share an interest in retaining the present market structure, which does allow for long-term stability and predictability, while the consumers, who potentially are the beneficiaries of this reform have yet to form a lobby to partake in the debate. An introduction of common carriage is some form or other would entail uncertainty and risk: Would it lead to a spot gas market? Who would be the actors? What would be the role of the transmitters? Potentially there would be more competition and less cooperation among the actors in the gas market, something which could lead to lower prices and difficulty for a high-cost

producer like Norway. The advantage of the present gas market structure in Europe is certainly that it ensures the long-term stability that is essential to gas supplies.

How realistic is the introduction of common carriage in Europe within the next few years? In an examination of the issue of common carriage in the US and Europe, Uffe Bundgaard-Jorgensen[45] underlines that the likelihood of a development towards common carrier rules also in the EC will depend on three factors: one, a political will to bring gas transportation into line with the internal market philosophy, second, interest on the part of the large producers Norway and the USSR in market expansion for large volumes of gas in the future, and third, consumer interest in gas for environmental reasons if the price is low enough. On the latter point the EC Energy Commission has stated that environmental concerns will figure very prominently in the energy policy of the future, in fact may become the most important variable for deciding on measures to promote a certain energy mix in the member countries. Coal is the energy type which is gradually disappearing: for example, the EC Commission is pushing ahead with the abolition of West German coal subsidies at a pace far faster than the FRG government itself. Currently the Ruhr trade unions have taken the Commission to the European Court to protest the decision to decrease coal production at such a pace.

This is but one example of the role the EC Commission intends to play in an internal market where political power is gradually transferred to it. It will thus play a strong role in

decision-making in the area of energy. Gas use may therefore be encouraged on the political level in a very different way than before once the internal market is realized. Finally, an added reason for the choice of gas as a fuel in the future is the political stigma attached to nuclear energy. The "Chernobyl effect" is still very real in Western Europe.

There are thus both market and political reasons why gas use may increase considerably in the future in Western Europe. And a large share of this gas will potentially come from the USSR.

U.S. Policy and Energy Trade Controls in the 1990s

Recent Developments in U.S.-Soviet Energy Trade

Pressures also have mounted within the U.S. Congress and among industry groups (e.g., PESA) for further liberalization of U.S. unilateral controls. Technically speaking, there no longer are any specific export controls targeted at energy equipment and technology. However, as a number of industry sources attest, their trade and joint venture potential remains restricted by broader controls on computers, machine tools and other high technology items. As an example, the controls on computers cover almost 22 pages in the Code of Federal Regulations. The controls on machine tools have not been reviewed for 15 years. Yet even the issue of liberalizing controls on personal and office computers, which came up in July 1989, caused the Defense Department to fight hard

(albeit unsuccessfully). What many of the energy-related joint ventures need is more sophisticated industrial computers (e.g., for computerized quality control production systems), as well as more advanced machine tools, which are contingent on more general policy changes in dual use exports.

In addition, there continues to be uncertainty as to how for the export control reforms mandated by the 1988 Omnibus Trade Act will extend. One of the provisions of the 1988 Act was a prohibition on any unilateral controls for reasons of national security unless it can be demonstrated that there is no foreign availability (exceedingly rare in today's technologically proliferated world), or unless negotiations are underway to gain multilateral collaboration. This can point the Bush administration in any of three policy directions. It can make a habit of invoking foreign availability or ongoing negotiations and maintain unilateral national security controls --- yet find itself in conflict with Congress and under pressure from industry. It can push harder within COCOM to get multilateral controls so as not to lose the unilateral ones --- but surely complicate relations with the allies in the process. Or it can genuinely push the decontrol process ahead, maintaining those controls on exports with direct and significant military applications but narrowing the traditionally broad American conception of dual use and allowing a wider range of computers, machine tools, etc., to be exported as part of energy projects as well as for other purposes.

Even amidst these uncertainties, in the past few years, while well short of a boom, there has been a marked upturn in U.S.-Soviet economic activity in the energy sector. This has been manifested in three principal respects. First, there already has been a significant increase in trade. According to official Soviet trade statistics, imports of U.S. petroleum industry equipment were $24 million in 1988. While still not a particularly large volume, this represented a greater than 200% increase over 1987. And in the first six months of 1989, in oil and gas drilling use alone, exports reached $41.5 million, making it the leading nonagricultural export to the Soviet Union.[46]

Second has been the prominence of energy-related deals among the joint ventures (JV) thus far signed or under discussion, both for production of energy industry equipment and for the development of oil and gas resources. Combustion Engineering was the very first U.S. industrial company to conclude a joint venture, Applied Engineering Systems (AES), with the Soviet Ministry of Oil Refining and Petrochemical Engineering as its partner. AES involves the installation of instrumentation and control systems at a petroleum refinery near Moscow, and also a joint production facility for the manufacture of petroleum industry equipment. While AES lost money in 1988, but Charles Hugel, chairman of Combustion Engineering, has predicted turning a profit for 1989. [47]

Another U.S. company, Foster Wheeler International, signed a JV agreement in December 1988 for a number of petroleum industry construction projects. In September 1989 Professional Geophysics

Inc. (PGI) of Houston signed a JV to market data covering onshore and offshore prospects to foreign companies considering oil exploration. Of particular interest because of its implications for the dual use export control issue is the contract signed by PGI in October 1989 with the Ministry of Oil and Gas Industry and the Ministry of Geology to bring American seismic crews into the Soviet Union for oil and gas exploration. Two other companies, Bailey Controls and the Gerhard Owen company, reportedly have been considering joint ventures for manufacturing geophysical equipment for seismic exploration. [48]

In terms of oil and gas production, a number of American oil companies have been considering JVs. Amoco has had initial contacts, as have Atlantic Richfield, Conoco and Occidental Petroleum. The most active has been Chevron, which signed a protocol of intent in early 1989 with the Soviet Ministry of the Oil Industry for development work in the Soviet Tengis oil field. This is a good example of the central role of the energy sector in the broader East-West economic relationship. Chevron is part of the American Trade Consortium (ATC), along with such other major corporations as Eastman Kodak, Johnson and Johnson, Archer Daniels Midland, RJR Nabisco and the Mercator Corporation (a merchant bank headed by James Giffen, long a major corporate figure in East-West trade). The commercial logic of the ATC is to join together in order to try to better manage many of the constraints and problems of doing business in the Soviet Union, among which are the problems of ruble inconvertibility and repatriation of profits. In the same

way that oil and gas exports account for the vast majority of overall Soviet hard currency earnings, Chevron is intended to play a similar role for the ATC. Chevron would exchange some its hard currency earnings from its crude and petroleum products exports for some of the ruble earnings of the other ATC companies to cover its domestic expenses. [49]

A related area, in which JVs are being contemplated on an even larger scale, is petrochemicals. Estimates of the capital involved for five major projects are as high as $38 billion. Occidental Petroleum, Combustion Engineering and McDermott all are involved in the negotiations on one or more of these projects, along with Mitsui and Mitsubishi (Japan) and Enichem and Montedison (Italy). Companies are understandably reluctant to invest in such mammoth projects, and these negotiations are being approached very deliberately. The only firm agreement to be signed as of late 1989 was by Occidental for a smaller scale project (valued at $200 million), which itself had been under discussion since late 1987. [50]

The third principal manifestation of energy sector economic activity has been in the government-to-government agreements which have been signed. In May 1989 two agreements were signed for scientific and technical cooperation in geological research. One agreement was between the National Science Foundation and the USSR Academy of Sciences, the other between the U.S. Geological Survey and the Soviet Geological Ministry. They established joint projects and information sharing in basic research in such areas as deep continental drilling and the mapping of possible oil and gas

deposits in Alaska, Siberia and other parts of the Arctic region. [51]

Another even more significant agreement was signed in April 1988 by the Joint Commercial Commission setting up a Working Group on Oil and Gas Equipment as one of only five such working groups designed to promote trade in key sectors.[52] This working group is co-chaired by Jon M. Huntsman, Jr., Deputy Assistant Secretary for Capital Goods and International Construction, and V.A. Reznichenko, Deputy Minister of the Soviet Ministry of Chemical and Petroleum Machine Building. It has met twice, most recently in May 1989 in Houston. At that time a joint statement was issued delineating a number of activities intended "to encourage increased trade in oil and gas equipment," including regular exchanges of information on major Soviet investment plans and on Soviet internal bureaucratic reform, and in the other direction on relevant U.S. export control regulations.[53] At the news conference releasing the joint statement, Soviet Deputy Minister Reznichenko whetted local Houston appetites when he spoke of a planned 300% increase by the year 2000 (over 1985 levels) in the volume of equipment supplied by his ministry to the oil and gas industries.[54] Additional working group meetings are planned for early 1990, when another U.S. delegation is scheduled to go to the Soviet Union.

U.S.Policy in the 1990s

In considering the possible future directions of U.S. policy, we need to go back to the basic push-pull tension between the inhibitions for trade controls and the incentives for trade

expansion. Surely the pushes towards trade controls have been lessened amidst the extraordinary and hope-inspiring events in East-West relations of the past few years. But we should bear in mind that the shifts in US policy only came after the rise of Gorbachev and the transformation of the overall U.S.-Soviet political relationship by glasnost and perestroika --- in fact, only with a rather substantial lag and not just on this issue, as critics both within the U.S. and among its allies have pointed out). We thus should be wary of mistaking this assessment of the conditions of the moment for resolution in a fundamental and necessarily lasting sense of the basic tension. Should there be a downturn in U.S.-Soviet relations, past experience indicates that the energy sector is likely to be high on the list for export controls.

Yet it is also clear that the domestic political pressures favoring liberalization of export controls affecting the energy equipment and technology exports and JVs, while still not akin to those of the 1980 grain embargo, have increased substantially. This is in part a reflection of the greater sensitivity to the economic interests at stake for the energy equipment and technology industry. But it also is an effect of the shifts in the broader foreign policy debate, in which much greater credence is being given today than ever before to the possibilities of expanded economic relations contributing to the improvement of overall East-West relations.

Summary

Double benefits can be achieved by avoiding any further intra-alliance imbroglios over pipelines, and by fostering the mutual benefits which are possible from expanded East-West energy trade. The need for Western multilateral controls on militarily significant exports is likely to continue for the foreseeable future. COCOM thus will continue to have an important place within the structure of the Western alliance. Yet it has never dealt effectively with export controls on energy-related equipment. It would be ironic, not to mention self-defeating, if an issue which never fit very well within the COCOM regime were to end up sowing such discord as to undermine cooperation on those issues and exports on which alliance collaboration in fact continues to have strategic and security importance.

This year's COCOM conference in Oslo will discuss the recent changes in Europe, and already one political party in Norway, the Left Socialists, has proposed that Norway leaves the organization because it is, in their opinion, becoming obsolete.[55] Although this view is extreme in the present political debate, it could become less so if a U.S. President were to reach again for the sanctions weapon.

The energy sector also shows how U.S. influence on European policy towards Eastern Europe has further diminished as the EC becomes a more effective institutional structure for such policymaking, and as the German-French leadership in the formulation of security and foreign policy takes shape.[56] The area

of energy will probably become even more important in East-West relations than it is today, as gas takes a larger share of energy consumption within the internal energy market of the European Community. To the extent that gas trade with the USSR comes to be seen within Europe as an exclusively European affair, US intervention will be even less acceptable than in the past. With the more general political strengthening of the EC with regard to foreign and security policy, potential questions of export control may start to be handled more and more within this institutional structure.

Finally, in addition to damage avoidance, there are the potential benefits to be gained from expanded East-West energy trade. Precisely because of its economic centrality to the Soviet economy, the energy sector does have significant potential to contribute to a more positive East-West relationship. This point is not to be overstated, but it is to be emphasized. There are no magic formulas out there, but there are sensible policies.

FOOTNOTES

1. Bruce W. Jentleson, Pipeline Politics: The Complex Political Economy of East-West Energy Trade (Ithaca, N.Y.: Cornell University Press, 1986.

2. Bruce W. Jentleson, "From Consensus to Conflict: The Domestic Political Economy of East-West Energy Trade Policy," International Organization 38 (Autumn 1984), pp. 625-60.

3. Janne Haaland Matlary, Political Factors in Western European Gas Trade (Oslo: Norwegian Institute of International Affairs, 1985), and EC Petroleum Policy and the Single Market: Possible Developments and Their Implications for Norway (Oslo: Norwegian Institute of International Affairs, 1988).

4. Ambassador Allan Wendt, "U.S. Stance Toward the Soviet Union on Trade and Technology", U.S. Department of State, Bureau of Public Affairs, Current Policy, No. 1128, October 27, 1988.

5. U.S. Department of State, Reports to the Congress under the Mutual Defense Assistance Control Act of 1951 (commonly known as The Battle Act), Report No. 1 (1951), p. 43.

6. U.S. Department of Defense, Annual Report to the Congress of the Secretary of Defense, FY 1983, Section I, pp. 22-23; Section II, pp. 26-32.

7. Testimony before U.S. Congress, Senate, Committee on Banking, Housing and Urban Affairs, Proposed Trans-Siberian Natural Gas Pipeline: Hearings, 97th Congress, 1st session, 1981, pp. 113-17.

8. As another example, Finland had what many considered ideal: an assured market for about 30-35% of their industrial production in ship-building and drill-ships in counter-trade with the USSR. This saved the Finnish ship-building industry during the crisis in the early eighties, a fact taken notice of throughout Europe. There is, however, also a potential down-side. The main Finnish ship yard, Wartsila, which had relied on deliveries to the USSR for about 30% of its annual output, filed for bankruptcy in November 1989. The reason given for the bankruptcy was that "the USSR no longer guaranteed such a share" but was now looking for more competitive bidding. "Dyr finsk konkurs", Aftenposten, 25.10.1989

9. Matlary, Political Factors in Western European Gas Trade, and H. Feigenbaum, The Politics of Public Enterprise: Oil and the French State, (Princeton: Princeton University Press, 1985).

10. "Exploding Exports", The Economist, June 17, 1989, pp. 82-83.

11. Memorandum for the Record, Department of Commerce, "East-West Trade," June 10, 1959, in Joseph Rand Records, 1954-61, Eisenhower Presidential Library, cited in Jentleson, Pipeline Politics, p.88. The summary account that follows draws on Pipeline Politics, chapters 3 and 4. See also Angela Stent, From Embargo to Ostpolitik: The Political Economic of West German-Soviet Relations, 1955-1980 (New York: Cambridge University Press, 1981).

12. Peter G. Peterson, U.S.-Soviet Commercial Relations in a New Era (Washington, D.C.: Government Printing Office, 1972), p. 14. The summary account that follows draw on Jentleson, Pipeline Politics, chapter 5.

13. R. Caron Cooper, "Opportunities for Oil Equipment Sales to the Soviet Union," PlanEcon Report, Volume III, November 7, February 20, 1987, p. 6.

14. Jentleson, Pipeline Politics, p. 205.

15. Journal of Commerce, September 24, 1987.

16. Figures from U.S. Department of Commerce, Bureau of the Census and International Trade Administration, "Oil Field Machinery Product Shipments and Trade Data" (mimeo.), and from documents provided by the Petroleum Equipment Suppliers Association.

17. Interview, November 3, 1989.

18. "Exploding Exports", pp. 82-83.

19. U.S. Congress, Joint Economic Committee, "The Soviet Economy in 1988: Gorbachev Changes Course", a report by the Central Intelligence Agency and the Defense Intelligence Agency, April 14, 1989 (mimeo.), p. 28.

20. "Exploding Exports", p. 83; Michael Parks, "Soviets Willing to Cut Production in Effort to Boost world Oil Prices", Los Angeles Times, March 7, 1989, p. 17.

21. "Soviet Foreign Trade Performance in 1988", PlanEcon Report #13-14, April 7, 1989, p. 14.

22. "Moscow's Campaign to Cut Deficit Jolts Soviet Petroleum Operations," Oil and Gas Journal, October 16, 1989, pp. 17-20.

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24. FBIS-Soviet Union, "Energy Official Talks About Oil Production, Cites Plan to Cut Oil Exports," March 7, 1989, pp. 92-93.

25. "Soviet Pipelines in Trouble," International Gas Report, December 8, 1989, and Ibid. "Soviet NGL Line Repairs Proceeding," October 13, 1989.

26. Oil and Gas Journal, September 28, 1987, p. 26.

27. R. Caron Cooper, "Looming Crisis in the Soviet Oil Refining Sector", PlanEcon Report #5, January 27, 1989; Oil and Gas Journal, October 16, 1989, pp. 17-18.

28. "Soviets Report Wider Use of Nuclear Stimulation", Oil and Gas Journal, September 25, 1989, p. 30.

29. FBIS-Soviet Union, "Yamal Industrial Schemes Resisted," March 29, 1989, pp. 60-61.

30. Gorbachev clearly has been feeling the environmentalist pressure. In his April 1989 speech on economic reform to the Communist Party Central Committee, he assailed the "barbarous approaches to the utilization of natural resources"; Ecotass, May 15, 1989, p. 13.

31. Interviews with Norwegian ministry officials (Foreign Office and Energy Ministry), October 1989.

32. Steven Greenhouse, "U.S. Divided From Allies on Easing Export Bans," The New York Times, October 27, 1989, p.D3.

33. "Hydro kan bli med pa gassavtale", Aftenposten, November 1989.

34. See the Paris-based daily newsletter Europe: Bulletin d'information internationale, for the months June-July 1989 for details on the trade agreements between the EC and CMEA-countries. See also "More Glasnost Than Perestroika," Petroleum Economist, July 1989. see also the thorough analysis by Axel Lebahn, "Political and Economic Effects of Perestroika on the Soviet Union and on its Relations to Eastern Europe and to the West", Aussenpolitik 11, 1988. Recent developments in trade with major Western countries continue along traditional lines, vide articles in the Soviet publication Foreign Trade such as Oleg Pichugin, "USSR-France: Moving A Stage Ahead", No. 7, 1989, and A. Brezhoy, "Joint Ventures and the Economic Reform", No. 7, 1989.

35. Foreign Trade, 8/89, "USSR-Italy: New Cooperation Tendencies," by Sergei Andreyev.

36. European Energy Report, July 1989.

37. "Soviet Bloc Company Hopes for Western Help in Baltic Sea Search," International Gas Report, November 24, 1989.

38. Report of the Advisory Committee for Trade Policy and Negotiations to the U.S. Trade Representative, Europe 1992 (November 1989), pp. 34, 36.

39. The Soviets and the Norwegians share the Barents Sea (although there is no sign of agreement on a border line as of yet). The area is however one seismic province, and so far no oil finds have been made in Norwegian surveys. On the contrary, gas finds are made with regularity. (See Oljedirektorates Arsberetning 1988 - Annual report by the Norwegian Petroleum Directorate 1988). Soviet officials in Oslo recently revealed a huge gas find in this region. In November 1989 there were reports of a big oil find in the Barents Sea, by the Soviets. The reports are so far unconfirmed.

40. "Soviets to Increase Gas Exports to Finland," International Gas Report, 7.7.1989. It is well-known that it is a problem for the Finns to absorb the quantities of gas that the Soviets would like to export to them, but that the problem of finding other suitable goods for countertrade is a larger problem. Thus the Finns have in recent years developed their gas infrastructure to accommodate larger intakes of gas, and hope to build a pipeline to Sweden under the Bothnian Gulf and thus act as a gas transmitter, not only as a consumer.

41. For details on the energy exports from the CMEA, see L. Gouni, "Existing International Energy Links in Western Europe," and B. Stranz, "Cooperation in Coal Production, Transport, and Utilization," both in C.T. Saunders (ed.), East and West in the Energy Squeeze: prospects for Cooperation, Workshop papers from the Vienna Institute for Comparative Economic Studies, 1980. See also M. Afansjew, "East-West Cooperation in Energy," in C.T. Saunders, (ed.), East-West Trade and Finance in the World Economy: A New Look for the 1980s, Vienna Institute for Comparative Economic Studies, 1985, and G. W. Hoffmann, The European Energy Challenge: East and West (Durham, N.C., 1985).

42. Professor Peter Odell has made this point repeatedly, much to the irritation of the gas industry (cite article here).

43. European Commission, Working Document (88), 238 final.

44. See Com/89/123 which sets out plans for implementing price transparency in the gas and electricity sectors. The Commission has created a group of experts from the interest groups in the gas and electricity industry as well as industrial consumers, large and small, which is to make suggestions on specific rules for such price transparency. "Commission Presses Ahead With Price Transparency Legislation," EC Energy Monthly, June 1989, p. 10.

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53. "Joint Statement," U.S.-U.S.S.R. Working Group on Oil and Gas Equipment, May 4-6, 1989 (mimeo.).

54. John Ira Petty, "Oil Equipment Suppliers Get Soviet Invitation," The Houston Post, May 9, 1989, p. C1.

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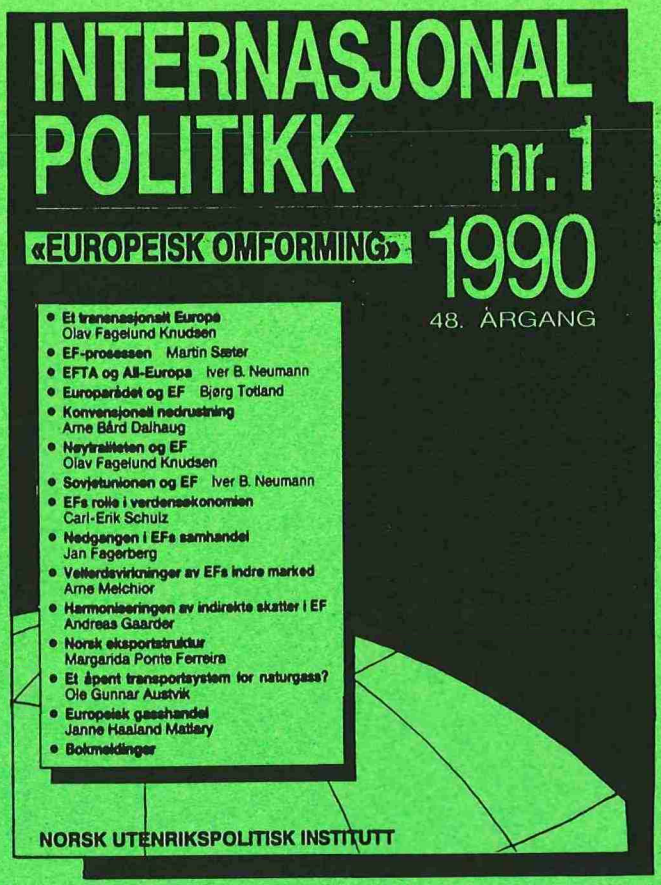

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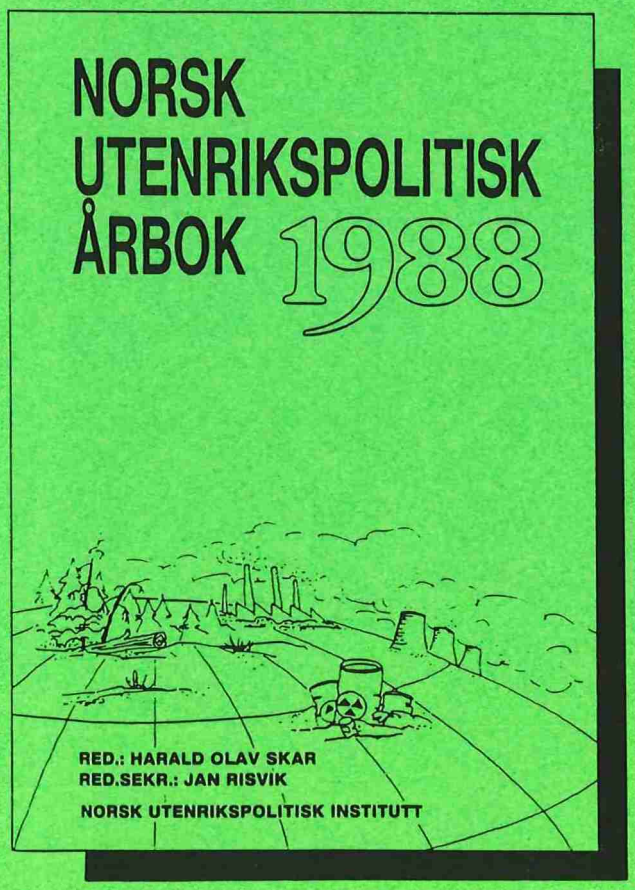

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