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1315

USSR: Economics

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IS THE COST OF OIL INVESTMENT FALLING?

Summary: For six years now the USSR has been claiming that the increasing cost of its raw materials, including oil in particular, makes it necessary for the East European consumer countries either to pay higher prices or to provide long-term investment credits. A new study of the oil industry's capital costs, which allows for a "reproduction coefficient" to measure the productivity of oil fields, as well as the cost of finding and exploiting them, seems to cast strong doubt on the usual sales talk of the Kremlin's experts on Comecon trading.

"How large the USSR's capital expenditures on the production of raw materials are, including the raw materials needed by Poland and other countries, is widely known."

M. Lesechko, Deputy Chairman of the Council of Ministers, USSR, writing in Trybuna Ludu, 3 March 1972

Frequent variations on the above-quoted Lesechko theme have been orchestrated by Moscow during the six years since O. Bogomolov and his colleagues first complained of the "exploitation" of the USSR by Comecon. (1)

The dirge has sounded persuasive, since most of the Soviet economists and propagandists could argue plausibly that the cost of capital investment per ton of raw materials was rising fast, and that therefore the USSR should be rewarded by higher prices, long-term investment credits, or similar devices from the East European consumer countries.

Voprosy Ekonomiki is usually one of the main sources of this kind of Zweckpessimismus, but its February issue introduces a new note which seems to change the tune considerably. Here we find a discussion of the basic funds (capital assets) of the oil industry, written by V. Luzin and V. Rezbayev. (2) They have been studying the Tuimazinsk field in Bashkiria, where they discovered that the average life span of 841 wells was 20.9 years, although amortization is now calculated on a well-life basis of fifteen years. Moreover, 75 per cent of the wells there have been working for more than twenty years.

Secondly, they pointed out that the deductions for the amortization charge, and therefore the replacement of the value of capital assets by the value of current production, are carried out in equal shares according to uniform amortization rates, regardless of changes in the productivity of wells. This means that there is a decrease in the prime-cost of oil (or gas) in the first part of a well's life, followed by an increase in the later period.

When it is remembered that amortization charges account for 50% or more of total production costs, the magnitude of the resultant distortion in prime costs is understandable. Hence Luzin and Rezbayev argue that amortization charges should be corrected to allow for changes in the productivity of wells.

To do this, they introduce a "coefficient of reproduction," defined as the relationship between the newly introduced capacity and the decline in the productivity of old wells. This method divides the oil picture of the USSR into three parts. The first group (with a reproduction coefficient of more than unity) consists of the expanding fields of Western Siberia, Byelorussia, Grozny and some other fields.

The second group (reproduction coefficient = 1) includes Azerbaijan, where off-shore drilling compensates for the decline of output on land, the Tatar ASSR (the biggest Soviet field at present), and the Kuibyshev field.

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The third group (reproduction coefficient less than one) contains the Bashkir, Uzbek, Kirgiz and some other fields.

Luzin and Rezbayev provide a most valuable table which shows the indices of capital expenditure and the coefficients of reproduction for the last decade in the oil industry as a whole. The indices have been calculated at comparable prices, taking account of prospecting costs.

Year	Proportionate Capital Costs (rubles per ton)			Index of Coefficient of Reproduction	Proportionate Capital Costs Growth of Oil Output Using Coefficient of Reproduction (Rubles per ton)
	Annual Capacity	Growth of Output	Coefficient of Reproduction		
1965	52.8	90.0	2.43	1.0	90.0
1966	46.6	81.1	2.35	0.97	79.0
1967	42.7	81.0	2.12	0.87	70.0
1968	41.8	89.4	1.88	0.78	70.0
1969	43.3	122.4	1.55	0.64	77.0
1970	43.4	91.0	1.93	0.80	73.0
61-65	43.6	70.7	2.67	1.00	70.7
66-70	44.0	90.0	2.00	0.75	67.5

Luzin and Rezbayev comment that when using proportionate capital costs without the reproduction coefficient, one can draw no definite conclusions concerning the change in the capital intensity of oil production, because the costs per ton of annual capacity decreased in 1966-70, while the costs for the growth of output increased.

But by allowing for the reproduction coefficient, a definite tendency can be established toward a fall in the proportionate capital costs for growth of output by comparison with 1965, and in 1966-70 by comparison with 1961-65.

In pre-war days the efficiency of capital investments and of capital assets in the oil industry was considerably below today's level, mainly because the technology of extraction at that time did not permit the full use of reserves, two-thirds of which remained in the field.

But in modern drilling only half of the reserve oil remains untapped as a result of the use of newer methods of extraction. The coefficient of oil yield has risen, whereas the capital intensity and asset intensity of prospecting and extraction have decreased. This in turn has freed funds for more intensive prospecting and for opening up new and highly productive fields, with an increase in the effectiveness of capital investments and of assets in the industry as a whole.

Moreover, Luzin and Rezbayev note that although the USSR's associated natural gas resources have significantly increased in the past five years, the percentage of use made of gas has fallen from 70% in 1965 to 61.1% in 1970. As a result the absolute annual losses of this valuable raw material have doubled, from 7 billion cubic meters to 14.6 billion. The resultant monetary losses now exceed 220 million rubles a year, which is more than the annual growth of profit from the entire oil industry.

In the 20-year period 1951-1970, total expenditure on oil and gas prospecting came to 10.5 billion rubles. In 1971-75 the expenditure on this work is planned to increase by 50% compared with the 1966-70 level. More than 40% of all the capital investment in the industry is used for prospecting.

According to Luzin and Rezbayev, only one-third of productive capital investments in the industry is included in the value of its basic funds (capital assets), while the remaining two-thirds is written off for expenditures which do not increase the asset value.

Another serious defect detected in the present price structure is the system of payments for prospecting. Since 1967 the costs of prospecting for oil and gas have been reflected in prime cost in the form of fixed rates in rubles per ton of output. These rates were established at the previous five-year period's level of costs (presumably 1961-65 - r.r.g.). But that system only solves the problem of transferring the cost of prospecting, i.e., simple reproduction. Luzin and Rezbayev point out that since the present rates per ton charged as deductions for prospecting work are not linked to the level of utilization, they do not stimulate the rational use of reserves in favorable geological conditions.

If a substantial part of oil or gas reserves in a given field are left in the ground as a result of incorrect exploitation, or if part of the gas is burned off instead of being used, this results in a reduction of the efficiency of prospecting costs and a reduction in the state's rental income. But the enterprise concerned suffers neither from an increase in prime costs nor from a reduction in profitability.

They think that this situation could be materially improved by making the value of reserves relate to the actual field concerned and not to the volume of oil and gas sold. They therefore propose that the value of the oil and gas in a field should be considered as "intangible" capital assets, to be recorded in the books of the enterprise and accounted for in judging its work.

Conclusion

The unusual aspect of this article is the way in which it appears to undercut the normal arguments of the USSR's oil salesmen, such as Bogomolov. It is true, it seems, that capital costs for the growth of output have risen from 90 rubles per ton in 1965 to 91 rubles per ton in 1970, but when the coefficient of reproduction is included in the calculation, they have fallen from 90 rubles a ton in 1965 to 73 rubles a ton in 1970.

This is a talking point of some importance for the East European consumer countries, as present plans allow for the pumping of 50 million tons of oil a year to Czechoslovakia, East Germany, Hungary and Poland by 1975. (3)

r.r.g.

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- (1) See r.r.g., "USSR Exploited by Comecon?," Radio Free Europe Research, 2 June 1966.
 - (2) "Features of the Reproduction of Basic Funds in the Oil Industry," Voprosy Ekonomiki, February 1972, pp. 112-117.
 - (3) Radio Prague, 6 March 1972.