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# The USSR's Ability To Increase Nonenergy Hard Currency Exports During the 1980s



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An Intelligence Assessment

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# **The USSR's Ability To Increase Nonenergy Hard Currency Exports During the 1980s**

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**An Intelligence Assessment**

This paper was compiled by [redacted]  
the Office of Soviet Analysis, with contributions from  
the Office of Global Issues. Comments and queries  
are welcome and should be addressed to the Chief,  
Soviet Economy Division, SOVA [redacted]

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**Key Judgments**

*Information available  
as of 1 December 1982  
was used in this report.*

The Soviet Union's hard currency earnings from exports of commodities other than energy amounted to about \$13.5 billion in 1981—roughly 40 percent of its total hard currency receipts in that year. We believe that nonenergy earnings (in 1981 dollars) could be increased to as much as \$17.5 billion by the late 1980s. To achieve that increase, the Soviets would have to allocate more investment and manpower to a variety of industries—at a time when they are short of both resources. In some instances, an effort to raise the volume of Soviet exports significantly could lower world prices; this is especially true of markets driven largely by speculation (such as precious metals and diamonds), in which even rumors of increased Soviet sales can push prices down. As a result, the actual increase in earnings might well be 1 or 2 billion dollars less than the maximum that we project.

We rate the possibilities of the various Soviet export products as follows:

- The Soviets stand a good chance of increasing hard currency earnings from sales of precious metals, nickel, chrome, and chemicals. Yearly earnings from these commodities (about \$4.5 billion in 1981) could increase to almost \$7.5 billion by the late 1980s. The Soviets have large stocks of gold available for sale and are steadily increasing production. Their exportable surplus of platinum-group metals could well double by the end of the decade, the result of sharply increased production. The Soviets are guaranteed increased earnings from chemical exports as a result of long-term compensation and buyback deals with Western firms.
- Chances are only fair that the Soviets will be able to boost their hard currency earnings from sales of machinery or to increase receipts from rail shipments between Europe and the Far East. At most, these earnings could increase by about \$300 million by the end of the decade. This figure must be heavily discounted, however. Western demand for Soviet machinery and rail services will probably remain weak; only a strong and sustained recovery in Western economies would alter market conditions to Moscow's advantage.
- We do not foresee any dramatic increase in Soviet hard currency weapon sales. We do foresee a continuation of current military sales and assistance programs. Indeed, military assistance will remain a principal means of Soviet entree in many countries, and we anticipate more aggressive sales campaigns in the future.

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- Chances are poor that the Soviets will increase sales of diamonds, timber, and cotton. These earnings amounted to about \$2.5 billion in 1981, and we estimate that they will remain constant through the decade.

The Soviets could alter their present export policy if hard currency stringencies became bad enough. They could curtail sales to other Communist countries and divert a greater share of exports to the West. Deep, sudden cuts in Soviet deliveries, however, could compound the economic difficulties already facing Eastern Europe, Cuba, and Vietnam. Moreover, a large portion of Soviet trade is tied to long-term barter deals. It is doubtful that Moscow would renege on these agreements except under the most extreme circumstances.

In some cases, the Soviets may be able to increase exports by limiting allocations to domestic consumers. They already are exporting large amounts of oil, steel, chemical fertilizer, and scrap metal despite domestic shortages. The leveling off of Soviet steel production could free increasing amounts of alloys, such as nickel and chrome, for the export market. Nevertheless, given increasing shortages of a wide variety of essential commodities in their own economy, we doubt that the Soviets will be able to cut back on domestic allocations to any significant extent.



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**The USSR's Ability  
To Increase Nonenergy  
Hard Currency Exports  
During the 1980s**

**Introduction**

Although hard currency exports are only a small fraction of gross national product, the USSR counts heavily on these earnings to help finance priority imports such as grain and state-of-the-art equipment and technology. The slowdown in Soviet economic growth is making it harder for Moscow to increase the volume of hard currency exports while continuing to meet domestic needs and other export commitments. The pattern and composition of hard currency exports in the 1980s will reflect these two factors: domestic economic conditions, and the leaders' perception of the trade-off between the benefits of hard currency earnings and the costs of limiting essential materials for the domestic economy and for the USSR's client states.

After an assessment of the importance of hard currency earnings to the Soviet economy, this paper examines those nonenergy commodities—such as precious metals, some nonferrous metals, chemicals, and timber—that seem to offer the most potential for export growth during the 1980s.<sup>1</sup> In our review, we draw heavily on expert opinions regarding the market outlook for many Soviet exports. The paper closes with a review of choices the USSR will face if the leaders decide to devote a larger share of supply to the hard currency market.

This paper does not examine in detail the outlook for hard currency exports from oil and gas or the measures the Soviets could adopt to manage hard currency problems by limiting imports. These topics are discussed in other assessments. In addition, research under way on Soviet arms sales and the timber, fertilizer, and nonferrous metals industries should permit firmer estimates of the export potential of these important sectors.

<sup>1</sup> In our compilation of the Soviet balance of payments, sales of gold and arms are normally accounted for outside the merchandise trade account. Because this paper addresses Soviet hard currency earnings potential, which is broader than merchandise exports earnings, we include gold and arms sales in our calculations.

Finally, throughout this report we focus on the ability of the USSR to increase the volume of its nonenergy exports. We do not try to project trends in the prices that the USSR may receive for its exports. Projections of earnings are therefore expressed in 1981 dollars. While world commodity price trends will have a major impact on gross Soviet hard currency earnings, we are not in a position to forecast those trends. The current duration of the Western recession, along with the timing and strength of the eventual upswing in Western economies, is clearly the dominant factor in an assessment of this type. At this point, there are wide differences among Western specialists on this matter. In balance-of-payments projections for the USSR, the influence of price trends is best handled by testing the effect of alternative price assumptions in a scenario-type analysis. Single-valued projections of hard currency earnings would be of little help, as illustrated by the very large changes over the past two years in price forecasts for commodities such as oil and gold.

**Trends in Soviet Imports and  
Hard Currency Receipts**

**Rising Imports**

Trade between the USSR and the West climbed steeply in the 1970s as the Soviet Union increasingly looked abroad for help in raising the technological level of Soviet plant and equipment, relieving industrial bottlenecks, and increasing living standards. Purchases from the West as a share of total Soviet imports rose dramatically, from 23 percent in 1970 to 38 percent in 1980—a nearly ninefold increase in value terms and a doubling of volume (table 1).

Although hard currency imports are equal to only 1.6 percent of the ruble value of Soviet GNP (domestic ruble price basis), this trade is more important than

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**Table 1**  
**USSR: Share of Hard Currency**  
**Trade in Total Trade <sup>a</sup>** *Percent*

	Soviet Exports			Soviet Imports		
	1970	1975	1980	1970	1975	1980
<b>Total</b>	<b>17</b>	<b>23</b>	<b>31</b>	<b>23</b>	<b>38</b>	<b>38</b>
<b>Fuels</b>	24	36	42	4	34	NA
Crude oil and petroleum products	26	40	43	10	72	NA
Natural gas	2	34	48	0	0	NA
<b>Machinery and equipment</b>	5	9	3	22	37	26
<b>Ferrous metals</b>	10	6	7	47	77	75
<b>Chemicals</b>	18	25	36	34	42	42
<b>Wood and wood products</b>	44	37	48	34	27	15
<b>Agricultural products</b>	14	24	25	27	42	66
Grain	5	1	0	73	87	90
<b>Consumer goods</b>	23	26	13	12	9	9

<sup>a</sup> The importance of hard currency trade in total trade is understated in Soviet statistics because of the favorable prices the USSR extends to the CEMA countries for exports and imports. In 1980, for example, exports to Eastern Europe would have been \$7 billion higher had Moscow received world market prices for the goods it shipped there, but Soviet imports from Eastern Europe would have been \$10 billion lower had world prices prevailed.

Source: Soviet foreign trade data.

[redacted]

this figure implies. Imports from the West have helped the USSR deal with a variety of crucial industrial and agricultural problems. For example:

- Submersible pumps purchased from the West added an estimated 2 million b/d to Soviet oil production in recent years.
- Imported steel accounts for about 6 percent of Soviet supply, including all of the large-diameter pipe needed for long-distance transmission of natural gas.
- Imported chemical equipment enabled the Soviets to double production of ammonia, nitrogen fertilizer, and plastics and to triple production of synthetic fiber.

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- The Kama River truck plant, based exclusively on Western equipment and technology, produces one-half of Soviet heavy-duty trucks.
- Grain imports account for about 13 percent of total grain supplies, even in normal years, and imports of grain, soybeans, and meat directly or indirectly support 20 percent of Soviet meat consumption.

[redacted]

The current Five-Year Plan calls for sharp increases in capital and in labor productivity to provide most of the growth it specifies for the economy.<sup>2</sup> Productivity growth to this degree will be difficult to achieve without continued large infusions of Western technology (which the Soviets must pay for in hard currency). The Soviets could increase imports by additional borrowing from the West. Continued borrowing at the average level of recent years, combined with additional borrowing for the Yamal pipeline, would permit Moscow to maintain roughly stable real imports over the next few years. But in the second half of the 1980s new credits would be exceeded by the debt service obligations on previous borrowing. As a result, in the absence of more borrowing, real imports from the West will be determined largely by export earnings after mid-decade.<sup>3</sup> [redacted]

#### Hard Currency Receipts

Moscow's total hard currency earnings were about \$33.5 billion in 1981—a huge increase over the \$3 billion in 1970 (table 2). In terms of 1981 prices, however, earnings rose from roughly \$21 billion to \$33.5 billion during this period. The rise in the value of hard currency exports resulted largely from higher world prices for oil, gold, and other commodities. In 1981 merchandise exports reached almost \$24 billion, of which oil and gas sales netted about \$16 billion. Arms sales earned an estimated \$5 billion and gold about \$2.7 billion; and interest on assets held in the West, plus earnings from invisibles and transfers (tourism, services), brought in about \$2 billion. [redacted]

<sup>2</sup> See DDI Intelligence Assessment SOV 82-10127 (Confidential NF), September 1982, *USSR: Economic Projections, 1982-90*. (U)

<sup>3</sup> *Ibid*, p. 16. (U)



**Table 2**  
**USSR: Total Hard Currency Receipts**

	Million US Dollars				Percent			
	1970	1975	1980	1981	1970	1975	1980	1981
<b>Total</b>	<b>3,003</b>	<b>11,453</b>	<b>32,721</b>	<b>33,489</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>
Merchandise exports (f.o.b.) <sup>a</sup>	2,424	8,380	23,584	23,778	81	73	72	71
Arms sales <sup>b</sup>	NEGL	1,400	5,800	5,000	NEGL	12	17	15
Gold sales	NEGL	725	1,580	2,700		6	5	8
Estimated interest	74	188	857	1,011	2	2	3	3
Other invisibles and transfers	505	760	900	1,000	17	7	3	3

<sup>a</sup> Includes oil and gas and some deliveries of arms.

<sup>b</sup> Estimated principal and interest payments on weapon systems and major export equipment; excludes follow-on support.

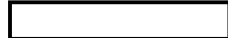


After several years of rapid increases in hard currency earnings (especially the boom years of 1979-80 resulting from the jump in world oil prices), Moscow's hard currency position started to turn sour in 1981. By the end of that year, the Soviets were in a hard currency crunch originating in a confluence of events that apparently caught the leadership by surprise:

- In the first quarter of 1981, Moscow gave Poland almost \$1 billion in emergency hard currency aid.
- Oil prices unexpectedly began to fall.
- A third consecutive bad crop forced the Soviets to buy more grain, meat, and soybeans than they had planned.
- Recession in Western economies lowered the demand for Soviet exports and caused world prices to plummet. Prices of key Soviet exports (gold, timber, platinum, and diamonds) fell anywhere from 50 to 75 percent.

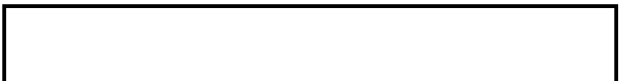
These unexpected expenditures and shortfalls led Moscow to draw down its hard currency assets in foreign banks, divert large amounts of crude oil and petroleum products from client states and the Soviet

economy to Western purchasers, sell substantial amounts of gold in a weakening market, and ration expenditures for hard currency imports other than food and some strategic imports.<sup>4</sup> The emergency measures paid off in 1982, enabling Moscow to improve its hard currency position. The USSR had a good chance to end the year with a hard currency trade deficit substantially less than 1981's \$4 billion.



**The Long-Term Problem**

The Soviet leaders probably expect some relief from their hard currency problems in the near term. They can expect crop yields to be higher than in the past two drought-ridden years, making possible some reduction in grain imports. (In 1981 hard currency outlays for grain and agricultural products exceeded \$11 billion, or 40 percent of total hard currency imports.)<sup>5</sup> In addition, an upswing in Western economies would increase the demand for Soviet exports, a



<sup>5</sup> Soviet grain imports in 1982 will probably be about 10 million tons less than in 1981. Because of lower volume and lower prices, the Soviet grain import bill in 1982 will be at least 25 percent lower than in 1981.

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factor that could improve the USSR's hard currency balance of trade by several billion dollars. [redacted]

But even though some improvement in its hard currency position is likely in the next few years, the USSR will be increasingly hard pressed to maintain favorable trade trends after mid-decade. The prospect of continued softness in the world oil market, coupled with uncertainties over Soviet ability to maintain the present volume of oil exports to the West, lies at the heart of the problem. Soviet oil output in the latter half of the decade seems very likely to level off, and it could well fall.<sup>6</sup> At the same time, we anticipate that Soviet oil consumption will continue to increase steadily, despite efforts to substitute other energy sources.<sup>7</sup> We believe that, if the Soviets maintain the present volume of oil sales to other Communist countries, they can only do so by cutting exports to the West (see the discussion on shifting from East to West, page 13). Under these circumstances, it is likely that Soviet oil sales to the West will fall considerably by the late 1980s. In 1981 hard currency oil exports amounted to about \$12 billion—about one-half of Soviet hard currency exports of merchandise and about one-third of total hard currency receipts. [redacted]

Soft world oil prices will also make it harder for Moscow's major cash customers (Libya, Iraq, Syria) to continue buying Soviet weapons at recent rates. These countries currently account for about 75 percent of Soviet receipts from arms sales. These sales amounted to at least \$5 billion in 1981 and rank second only to oil in terms of Soviet hard currency earnings (see the discussion of arms sales, page 8). [redacted]

The only large new source of additional hard currency earnings on the horizon is the Siberia-to-Western Europe gas pipeline, which will not be in full operation until the second half of the decade. These

<sup>6</sup> The Directorate of Intelligence is in the process of a complete reexamination of Soviet oil prospects. The judgments expressed here regarding trends in production and trade are thus preliminary. (c)

<sup>7</sup> See DDI Research Paper SOV 82-10161 (Unclassified), October 1982, *Soviet Views on Energy Consumption in 1985*. (U)

<sup>8</sup> See DDI Intelligence Assessment SOV 82-10177X (Secret), November 1981, *Recent Trends in Soviet Oil Exports*, for a detailed discussion of Soviet oil sales. (U)

revenues should reach \$5 billion after all loans have been repaid, and total gas earnings (including existing contracts) could be roughly \$10 billion in the 1990s.

The rise in revenue from gas sales would not be sufficient, however, to offset a marked decline in oil exports to hard currency countries. If the Soviets wish to lift the volume of imports of Western goods and services from the level reached in 1981-82, they will have to look to other exportable commodities to earn the cash. [redacted]

Moreover, Western monetary policy is likely to be more deflationary during the 1980s than it was in the 1970s. Real interest rates probably will remain high, tending to hold down world commodity prices. We consider it unlikely that the Soviets will receive another windfall from rising world prices as they did from the price boom of the late 1970s. If this forecast is correct, future Soviet hard currency earnings will depend more on Moscow's ability to raise the volume of exports than on rising world prices. [redacted]

#### Potential Areas of Export Growth

Our analysis indicates that, of the thousands of products and services on the Soviet export list, only a few offer much chance for increased hard currency earnings during the 1980s. In our judgment, sales of precious metals, some nonferrous metals, machinery, and chemical fertilizer offer the greatest opportunities for export expansion. Sales of arms, timber, diamonds, and cotton are expected to be substantial but not to increase much in the next several years.

Together, nonenergy commodities and services earned about \$13.5 billion in 1981—about 40 percent of total Soviet hard currency receipts. [redacted]

We calculate that earnings from these commodities and services could increase by almost \$4 billion by the late 1980s (table 3). This estimate, however, assumes that Soviet planners are willing and able to increase investment and allocations of labor in order to sustain an export push on a broad front. The estimate also assumes that Western demand will be robust enough to accommodate a large volume of Soviet sales even

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**Table 3**  
**USSR: Estimated Nonenergy**  
**Export Potential**

Million 1981 dollars

	Sales (1981)	Sales Potential (Late 1980s)	Absolute Increase
<b>Total</b>	<b>13,550</b>	<b>17,430</b>	<b>3,880<sup>a</sup></b>
Minerals and metals:	4,480	7,525	3,045
Of which:			
Gold	2,700	4,850	
Platinum-group metals	300	840	
Nickel	230	500	
Diamonds	1,000	1,000	
Chromite	15	100	
Other <sup>b</sup>	235	235	
Arms sales	5,000	5,000	
Chemicals	730	1,240	510
Of which:			
Nitrogen fertilizer	55	400	
Potash fertilizer	95	135	
Methanol	15	140	
Other <sup>c</sup>	565	565	
Timber	1,100	1,100	
Machinery	1,500	1,625	125
Cotton	440	440	
Land bridge	300	500	200

<sup>a</sup> See text for discussion of the uncertainties involved in this estimate.

<sup>b</sup> Primarily sales of aluminum, asbestos, and scrap metal.

<sup>c</sup> Primarily sales of plastics and bulk chemicals.

[REDACTED]

though efforts by the USSR to raise hard currency earnings by increased sales might be hampered by existing capacity in the West—a large portion of which is presently idle. [REDACTED]

For commodities that are sensitive to business cycles—metals, chemicals, timber—Soviet export success will depend largely on the timing and strength of Western economic recovery. For commodities whose demand is partly determined by interest rates and speculative forces—precious metals and diamonds—Moscow must contend with unpredictable forces in which an attempt to sell a larger volume can be self-defeating in terms of its effect on prices and total

revenue. In view of these uncertainties, the actual growth in the volume of Soviet nonenergy exports for hard currency is likely to be less than the projection presented in table 3. [REDACTED]

Individual exports are described in detail in the following section; the general discussion of options and potential resumes on page 13. [REDACTED]

### Minerals and Metals

Minerals and metals historically have been a major source of Soviet hard currency earnings. Sales of minerals and metals netted the USSR about \$4.5 billion in 1981, roughly 15 percent of total hard currency receipts in that year. Gold, platinum-group metals, and diamonds account for the bulk of hard currency earnings. We anticipate that the USSR's exportable surplus of minerals and metals will continue to grow during the 1980s, paced by steady increases in the production of gold and sharp gains in the output of platinum-group metals and nickel. On the basis of our estimates of the probable increase in the Soviet exportable surplus (discussed below), minerals and metals sales represent potential annual earnings of more than \$7 billion by the late 1980s, roughly two-thirds more than earnings in 1981. [REDACTED]

**Gold.** Of all minerals and metals exports, gold is by far the most important in terms of potential hard currency earnings. The USSR ranks second to South Africa in the production and sale of gold. During the 1970s the USSR accounted for about one-third of annual world gold production and about one-fourth of the newly mined gold moving in world trade. In 1981 Soviet gold production amounted to about 325 tons, about half that of South Africa but more than the combined output of all other world gold producers. During the 1970s the Soviets sold about 2,100 tons of gold (roughly 70 million troy ounces), netting about \$20 billion. In terms of ability to pay for imports, gold provided about 10 percent of Soviet hard currency needs in the 1970s. By the end of 1981, the USSR had accumulated a gold stock of about 1,900 tons, an amount worth almost \$28 billion at 1981 prices.<sup>9</sup> [REDACTED]

<sup>9</sup> Based on an average 1981 gold price of \$464 per ounce. See *Annual Gold Review and Outlook*, J. Aron & Co., April 1982. [REDACTED]

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Investment decisions already made indicate that Soviet gold production will continue to increase steadily to about 375 tons by the late 1980s. Allowing for the industrial use of gold in the Soviet economy—some 50 tons per year—Moscow could boost its annual gold sales to 325 tons by the late 1980s without drawing down its gold stocks. Gold sales of this magnitude represent potential earnings of about \$4.8 billion after mid-decade (at an average 1981 price of \$464 per ounce). [REDACTED]

Conceivably, the USSR could try to push its earnings even higher by selling gold out of stocks. Any such attempt, however, would place considerable downward pressure on the price of gold. The international market for gold is extremely sensitive to the volume of sales (or even to rumors). We cannot estimate the effect on earnings of large additional Soviet sales because of the thinness of the market and the importance of speculative factors. Much will depend on South African gold sales policy. [REDACTED]

The Soviets might also try to increase earnings by allocating additional resources to gold production. We believe they have large unexploited gold deposits, mostly in the southern USSR. Boosting gold production would involve comparatively little cost to the economy. The gold industry accounts for less than 1 percent of annual Soviet industrial investment and of the industrial labor force. Moreover, the Soviets still use large amounts of prison labor in the construction of gold plants and in underground mines, at relatively small cost to the state. Nevertheless, if the Soviets launched a program to boost gold production above the levels we have projected, it would be at least a decade before substantial amounts of new capacity could come on stream. In the Soviet Union, leadtimes as long as 15 to 20 years are involved in building new plants. Existing Soviet gold plants are operating at or near their effective capacity, so little additional output is possible from current facilities. [REDACTED]

**The Platinum Group.** During the 1970s the USSR produced about 50 percent of the world's platinum-group metals and accounted for about the same share of world trade. Soviet production consists mainly of palladium—about three times as much palladium as platinum—whereas South African production is

mainly platinum. Platinum commands a far higher price than palladium in world markets. In most industrial uses, platinum and palladium are not readily substitutable. [REDACTED]

The USSR exports most of its output of platinum-group metals. Exports to non-Communist countries during 1970-80 amounted to almost 23 million ounces (about 715 tons), or about two-thirds of total estimated Soviet production during that period. Total earnings amounted to \$3-4 billion during the 1970s. Some additional, although small, amounts probably were exported to other Communist countries. Annual exports peaked during 1972-74, averaging over 2.7 million ounces, then declined to about 2 million ounces during 1976-80. Sharply higher prices in world markets enabled Moscow to sell less and still achieve its hard currency objectives. For example, the peak sales of 2.9 million ounces in 1973 netted the USSR about \$380 million; sales of about 2 million ounces in 1980 earned roughly \$600 million. Because of the drop in world prices and a cut in the volume of sales, Soviet earnings dropped to about \$300 million in 1981. [REDACTED]

The USSR is assured of large increases in the production of platinum-group metals in the 1980s, as production of copper and nickel expands in northern Siberia. We estimate that Soviet production of these metals (mainly palladium) could easily increase to about 5 million ounces by the late 1980s; of this, perhaps 4 million ounces would be available for export. At 1981 prices, sales of platinum-group metals of this magnitude would bring as much as \$850 million per year into Soviet coffers.<sup>10</sup> [REDACTED]

The availability of competing Western supplies could limit the market for Soviet exports, however. South Africa, for example, has large reserves and can easily expand production. [REDACTED]

**Nickel.** The USSR is the world's largest producer of nickel. Output amounted to about 240,000 tons in 1981, roughly one-third of total world production in

<sup>10</sup> Based on average 1981 prices of \$493 per ounce for platinum and \$116 for palladium. Our estimate assumes that palladium will continue to account for 75 percent of future Soviet sales and platinum for 25 percent. [REDACTED]

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that year. The Soviets plan to increase the production of nickel by at least 30 percent during the 1981-85 Plan period. We believe this goal will be met. Perhaps as early as 1985 and probably no later than 1990, Soviet nickel production will increase to about 350,000 tons a year, roughly 45 percent more than output in 1981. [redacted]

During the 1970s the Soviets accounted for 3 to 5 percent of Western supply. Japan, France, and West Germany buy most of the Soviet nickel exports. Exports of nickel to hard currency countries averaged about 20,000 tons per year during 1970-76. Sales dropped to about 11,000 tons in 1977 but rebounded to about 22,000 tons in 1980 and about 30,000 tons in 1981. [redacted]

In 1981 sales of nickel brought in about \$230 million. [redacted] the sales were up sharply through November 1982 and might reach 40,000 tons for the year, worth perhaps \$180 million at currently depressed prices. [redacted]

The USSR should have an exportable surplus of 60,000 to 70,000 tons of nickel by the mid-to-late 1980s—some \$500 million in potential hard currency earnings at 1981 prices. The nickel market, however, is likely to remain weak until the mid-1980s. [redacted] the substantial level of unused nickel capacity presently available in the West, along with major expansions in the less developed countries (LDCs), will be more than adequate to meet any realistic increase in demand for the next few years. The Soviets could not place sharply higher amounts of nickel on the market without pushing prices down. The jump in Soviet nickel sales in late 1982 already has been cited as one of the factors contributing to the drop in world prices.<sup>11</sup> [redacted]

**Diamonds.** The USSR is second to Zaire in the production of natural diamonds. Soviet production has increased slowly since the mid-1950s and in 1981 reached an estimated 2.5 million carats of gem-quality stones and 8.5 million carats of industrial stones. [redacted]

[redacted]

Efforts to boost diamond production have been limited mainly by the remote location and harsh climatic conditions of the country's principal deposits. The largest deposits are in the Magadan Oblast and Yakutsk and can only be worked during the summer. Because of the long leadtimes involved in bringing new deposits into commercial operation—10 to 15 years—it would take the Soviets at least a decade to increase production substantially. We believe that Soviet production of gem stones will remain level at about 2.5 million carats per annum during the rest of the 1980s. Output of industrial stones probably will inch forward, possibly reaching 9.0 million carats by the mid-1980s. [redacted]

The USSR has exported gem-quality and industrial diamonds for many years. Practically all of the exports of industrial diamonds go to other Communist countries; shipments to the West are small, amounting to only a few million dollars in recent years. The Soviets are believed to export about one-half of their annual output of gem diamonds. Almost all are marketed in the West through the de Beers cartel, which controls 80 to 90 percent of world diamond trade. Sales of gem diamonds averaged about 1.2 million carats per year during 1970-80, about 10 percent of the diamonds moving in world trade. Because prices were sharply higher toward the end of this period, Soviet earnings increased from about \$175 million in 1970 to about \$1.3 billion in 1980. According to unconfirmed press reports, the Soviets substantially increased the volume of diamond sales in 1981, and this in turn contributed to the slump in world diamond prices. Prices fell by almost 50 percent from the 1980 peak, and Soviet earnings did not match the peak posted in 1980. [redacted]

According to the US Bureau of Mines, increased world production of diamonds (paced by sharp increases in Australian output) should be more than adequate to meet demand, and prices are likely to remain stable. (This estimate assumes that the de Beers cartel will continue to stockpile diamonds in order to protect prices.) We, therefore, judge that the USSR will not be able to increase its exportable

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surplus of gem diamonds much during the rest of the 1980s. The Soviets could try to divert a greater share of annual production to the export market, but such a policy could backfire by increasing world supply and placing additional pressure on prices. Much would also depend on the willingness of de Beers to accept increased Soviet offerings. On balance, we believe that sales of diamonds will continue at about \$1 billion annually in 1981 prices. [redacted]

**Chromite.** The USSR is the world's largest producer of chromite, an alloy used mainly in the production of stainless steel. Production has remained at 3.0 to 3.5 million tons per annum since 1970. This stagnation (the result of the depletion of the richest and most easily accessible deposits) will soon end. The Soviets recently started to work a huge deposit in Kazakhstan, which will add 800,000 tons to current output by 1985 and possibly 2 million tons by 1990. Even with the depletion of older deposits, total chromite production will increase to about 4 million tons by 1985 and possibly 5 million tons by 1990. We believe the Soviets planned to use most of the increment to support production of stainless steel and other specialty steel products. But Soviet steel production has leveled off and will probably increase only slowly in the 1980s.<sup>12</sup> As a result, a greater portion of domestic chromite production could be diverted to the export market. [redacted]

The Soviet Union has sold chromite on the world market for many years. Exports to the West, however, fell from about 775,000 tons in 1970 to about 115,000 tons in 1981—a drop of about 85 percent. The Soviet share of Western supply fell from about 25 percent to less than 5 percent during this period. Domestic production problems, increased availability from other sources, and the effect of recession on Western demand have contributed to the weakening of Soviet chromite exports in the last few years. [redacted]

We believe that the USSR could increase the amount of chromite for sale to the West from about 100,000 tons in 1981 to over 800,000 tons by 1985 and still meet export commitments to other Communist countries and domestic requirements. At 1981 prices (\$135

<sup>12</sup> See DDI Intelligence Assessment SOV 82-10089 (Confidential NF), June 1982, *Sluggish Soviet Steel Industry Holds Down Economic Growth.* (U)

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per ton), a sale of 800,000 tons in 1985 represents more than \$100 million in potential hard currency earnings—about seven times the \$15 million in 1981. [redacted]

Actual Soviet earnings will probably be less than the amounts implied by this number. Much will depend on the policy of other exporters who have large unused capacity, on the extent and timing of recovery in Western steel production, and on the ability of the market to absorb the increased Soviet offerings. In any event, chromite exports will continue to account for only a small fraction of Soviet hard currency receipts. [redacted]

**Arms Sales**

Arms sales have long been one of the leading sources of hard currency for the USSR. Between the early 1970s and 1981, estimated annual hard currency earnings from arms sales (including larger amounts of military hardware as well as support services) increased from negligible amounts to at least \$5 billion and perhaps as much as \$9 billion annually.<sup>13</sup> Specifically:

- Soviet sales of weapon systems and major support equipment have totaled about \$55 billion since 1973, sparked by the resupply efforts following the Middle East war.
- Four Arab states—Algeria, Syria, Libya, and Iraq—accounted for about two-thirds of the purchases and had the ability to pay for the arms in hard currency. [redacted]

We do not foresee any loss of enthusiasm on the part of the USSR for military sales and assistance programs. Neither the political nor the commercial interests of the USSR would be served by a change in policy that would deny or curtail the supply of arms or advisers to Third World countries. Indeed, military assistance will remain the principal means of Soviet entree, and we anticipate a more aggressive sales campaign in the next decade as Moscow focuses on stiffening competition from major Western suppliers.

<sup>13</sup> Research presently under way in the Directorate of Intelligence indicates that in addition to the annual payments for major arms, the USSR may be earning \$3-4 billion annually in hard currency for follow-on support (including maintenance, ordnance, and other supplies and services). [redacted]

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Moscow will almost certainly provide arms and technical assistance as long as opportunities exist and will try to earn the maximum return in hard currency—although, as noted below, its ability to do so has been eroded by the deterioration in the current account balances of the USSR's LDC customers. [redacted]

Algeria, Syria, Libya, and Iraq are likely to continue to depend primarily on Soviet weaponry and military equipment through the 1980s. These countries give Soviet weapons the highest import priority, and (barring a collapse in world oil prices) we expect little change in the volume of their arms trade with the USSR over the next several years. These countries account for about 75 percent of the \$20 billion in major equipment orders on which delivery had not yet been made as of late 1982. [redacted]

While the USSR is likely to retain most of the market it already holds, its ability to expand its sales is limited. Financial constraints probably will prevent Moscow's LDC customers from increasing their purchases much beyond present levels. LDCs, including oil producers, are short of cash and simply do not have the ability to increase weapons purchases dramatically. [redacted]

Even for the USSR's present customers, financial stringencies could lead to adjustments in payment terms. [redacted]

[redacted] If payment stringencies became serious enough for the countries buying Soviet arms, however, Moscow might be forced to accept barter deals as partial payment for weapons and to offer customers more liberal repayment terms. [redacted]

**Chemicals**

Soviet exports of chemicals to hard currency countries amounted to \$730 million in 1981—roughly 12 times the 1970 level in current prices and a threefold increase in constant 1970 prices. About 60 percent of Soviet chemical exports go to other Communist countries, largely under long-term barter agreements. [redacted]

A large share of the present and projected Soviet chemical exports to the West are tied to long-term compensation and buyback deals with Western firms. The Soviets have signed several long-term product exchange agreements which call for a substantial increase in two-way chemical trade during the 1980s. We estimate that hard currency sales of all chemicals could reach over \$1.2 billion (1981 prices) by the late 1980s. [redacted]

**Fertilizers.** The USSR is the world's largest producer of chemical fertilizers and is a major exporter. It has recently accounted for about 15 percent of the potash and about 8 percent of the nitrogen moving in the world trade. In 1981 nitrogen exports to hard currency countries amounted to about 145,000 tons, earning some \$55 million. Potash sales to the West amounted to about 405,000 tons in 1981, netting about \$95 million. [redacted]

Because of rising production, the USSR's exportable surplus of nitrogen probably will double to 2.5 million tons per year by 1985. We estimate that two-thirds of the increased exports will go to hard currency countries. Total hard currency exports in 1985 could reach \$400 million, of which about half would be in the form of compensation for earlier equipment imports. Increased Soviet offerings should not by themselves be enough to upset the market. The Soviets' 8-percent share of recent world nitrogen fertilizer trade will probably not change much during the 1980s. [redacted]

The USSR's exportable potash surplus is likely to increase to about 3 million tons by 1985, about 800,000 tons more than in 1981. Assuming that other Communist countries continue to use about three-fourths of annual Soviet sales, potential hard currency earnings at 1981 prices—\$180 per ton—could reach about \$135 million in 1985. The Soviet share of world potash trade probably will increase gradually throughout the 1980s. [redacted]

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**Methanol.** The USSR is second to the United States in the production of methanol—an alcohol widely used in industry and as a fuel extender for gasoline. Output amounted to 1.9 million tons in 1980 and is likely to increase to about 3.4 million tons by the mid-1980s, when two plants purchased from the United Kingdom are completed. Barring an unlikely sharp jump in domestic methanol consumption, the exportable surplus of methanol could increase to about 835,000 tons by the mid-1980s, nearly triple the current amount. Of this total, about 485,000 tons already are committed as a payback under compensation agreements. If exports to Eastern Europe hold at present levels (roughly 140,000 tons), the Soviets would have about 210,000 tons available for sale to the West outside of the compensation channels. At 1981 prices (\$200 per ton), potential earnings (including compensation) could reach about \$140 million by the late 1980s. [REDACTED]

#### Timber

Soviet production of industrial roundwood (unprocessed logs) fell from about 313 million cubic meters (mcm) in 1975 to 276 mcm in 1981. The poor performance of the timber industry reflects obsolete logging equipment, insufficient infrastructure, transportation bottlenecks, shortages of labor, and inadequate investment. The industry has had a low investment priority for the past 10 years, as Moscow has shifted more investment to energy and agriculture. We estimate that the timber industry will receive no increase in investment during the current Plan; more than likely it will receive less. As a result, the Soviets will be increasingly hard pressed to forestall further drops in output. [REDACTED]

The USSR has been a major timber exporter for many years. Hard currency exports consist primarily of low-value industrial roundwood (mainly to Japan) and semifinished lumber (mainly to the United Kingdom). Hard currency earnings from timber sales averaged about \$1 billion per annum during 1976-79. Earnings peaked at about \$1.5 billion in 1980, the result of sharply higher world timber prices, but fell to about \$1.1 billion in 1981. [REDACTED]

In terms of volume, about 75 percent of Soviet exports of industrial roundwood go to hard currency countries—they account for about 10 percent of the

Western supply. Most of the remainder go to Eastern Europe. Because of the low quality of Soviet wood products (such as paper and cardboard), hard currency exports are small and are likely to remain so for the foreseeable future. Exports of wood products go mainly to Eastern Europe. [REDACTED]

Soviet plans call for production of industrial roundwood to increase to 325 mcm by 1985—an outcome we consider clearly unrealistic. We estimate that Soviet output will stagnate at about 275 mcm for the foreseeable future. Even this estimate assumes that Moscow will adopt measures to alleviate current problems, particularly transportation bottlenecks, and that more labor and investment will be allocated to the timber industry. [REDACTED]

The Soviets could take some steps to boost production, at least in the short term. They could increase cutting in the more accessible forests in the western USSR (though many of these have already been overcut). This would increase timber production in the short term but would delay large-scale development of the remote Siberian forests that form the bulk of the USSR's wood resources. Moscow also might try to increase the supply of labor available for the timber industry, possibly by increasing the number of foreign workers. About 300,000 forced laborers are engaged in the timber industry, primarily in logging camps and sawmills.<sup>15</sup> Their number could only be increased, however, by taking forced labor away from other construction projects. [REDACTED]

Exports of industrial roundwood have consistently amounted to about 5 percent of annual domestic production. If this ratio holds and output levels off at about 275 mcm, export earnings will level off at about \$1.1 billion (1981 prices). There would not be much of an increase in the exportable surplus by diverting timber away from either domestic uses or other Communist countries. Shortages of wood products already are plaguing many sectors of the Soviet economy and interfering with many construction projects. Moreover, most exports to Eastern Europe are

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covered by long-term reciprocal barter agreements, under which the Soviets receive goods that would have to be paid for in hard currency if the reciprocal shipments ceased. In any event, sales to Eastern Europe are comparatively small. [redacted]

The Soviets may well benefit from increased demand for timber in Western Europe and rising world prices later in this decade. [redacted]

[redacted] the Soviets can reasonably expect a strong market in Western Europe as a result of forced reductions in exports from Sweden and Finland—major Soviet competitors. The Scandinavian forests have been overcut and cannot sustain previous export volumes for long. Moreover, world timber prices should rebound with the expected economic recovery in hard currency countries. [redacted]

**Machinery**

Soviet machinery exports amounted to about \$1.5 billion in 1981. Earnings increased nearly sevenfold during 1970-81 and now account for about 5 percent of total Soviet hard currency receipts. The Soviets can mass-produce simple machinery and equipment at low cost and have had some success exporting such products for hard currency. The bulk of exported Soviet machinery consists of industrial transport equipment, simple machine tools, small tractors, trucks, and passenger cars. As a rule, however, these exports are technically inferior to Western hardware and are not backstopped by an efficient network of service and spare parts. Thus, the Soviets account for only negligible shares of Western machinery markets. [redacted]

The value of Soviet hard currency machinery exports increased at about 20 percent per annum during the 1970s, largely because of steadily rising prices in the West. In constant 1970 prices, the increase was only 11 percent per year. For some types of machinery exports (machine tools, grain combines, mining equipment, pumps), the volume of sales has fallen substantially in recent years, probably in response to growing domestic needs. [redacted]

Sales of passenger cars seem to be the best hope for increased Soviet hard currency earnings for the next few years. The USSR began exporting them to Europe in the late 1950s. Its strategy then and now has

been to focus on low-cost, durable cars, with sales since the late 1960s spearheaded by the "Lada." Because the Lada is basically a Fiat 124 with some BMW technology, it can be easily serviced in existing facilities in the West. Parts are interchangeable as well. France, Belgium, and the United Kingdom are the major hard currency markets, although the Soviet market share is less than 1 percent in each country. [redacted]

Earnings from car sales amounted to about \$350 million in 1980 and about \$375 million in 1981 (based on sales of about 70,000 and 75,000 units, respectively). We believe that such earnings can increase considerably if Soviet production rises as expected. The Soviets should have an exportable surplus of about 100,000 cars by 1985. At the current average export price for Soviet cars (\$5,000 per unit), potential earnings could climb to about \$500 million by the mid-1980s. [redacted]

Even with a rise in sales of passenger cars, we doubt that the rapid growth in earnings in the 1970s can be sustained during the 1980s. The market for machinery is generally stagnant, and prices have fallen in recent years. Although prices are likely to increase in line with increased Western economic activity, the Soviets will face stiff competition from other machinery exporters in newly industrialized countries and possibly Eastern Europe. Moreover, given the stringencies in steel and other raw materials, Soviet machine builders will be hard pressed to meet the demands of the domestic economy. The Soviets may in fact be forced to reduce the quantity of some types of machinery allocated for export—for example, earthmoving and mining equipment and machine tools. [redacted]

Because of the large number of products involved, potential hard currency earnings from machinery exports are extremely hard to predict. Our best estimate is that hard currency earnings will increase slightly to about \$1.6 billion after mid-decade, paced almost completely by increased sales of private automobiles. [redacted]

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**Cotton**

In some years the USSR grows more cotton than the United States. It exports about 30 percent of its annual ginned crop, although only part of these exports are for hard currency. Sales of about 180,000 tons of ginned cotton (mainly to France, Japan, West Germany, and the United Kingdom) brought in about \$440 million in 1981. Because Soviet production is leveling off, however, and there is little prospect of higher world prices, we doubt that Soviet earnings from cotton sales will increase much during the rest of the 1980s. [redacted]

Soviet targets for production of raw cotton<sup>16</sup> average 9.2-9.3 million tons per annum during 1981-85, somewhat less than the 9.6 million tons achieved in the late 1970s. Longer range plans call for production to reach 10.7 million tons by 1990, an outcome we consider unlikely. Cotton yields in the USSR are already the highest in the world, and potential for expanding irrigated land in the cotton-growing area is limited. Nor are the Soviets likely to benefit from increased world cotton prices. According to the US Department of Agriculture, world cotton production will match or exceed demand through the decade and prices will probably remain stable.<sup>17</sup> If the Soviets tried to divert more cotton to hard currency countries, the increased Soviet offerings could well force world prices down. [redacted]

The growth in Soviet cotton textiles production has been steady at a rate slightly below the growth in population. Cotton textiles now account for 70 percent of total textile production. Reports of cotton shortages over the past few years, combined with the disappearance of excess inventories of fabrics and clothing (a problem that plagued retail trade for years), suggest a substantial unsatisfied demand for cotton products. With consumer discontent already manifest over food shortages, the leadership probably will not reduce domestic allocation of cotton in order to increase export earnings. [redacted]

<sup>16</sup> As a rule of thumb, to convert ginned cotton to raw cotton, multiply by 3 [redacted]

<sup>17</sup> See US Department of Agriculture *Foreign Agricultural Report* No. 154, 1979, "World Cotton Production and Use Projections for 1985 and 1990." The USDA projections assume no changes in synthetic fiber prices (for example, as a result of petroleum price increases). Sharp increases in synthetic fiber prices would tend to increase demand for cotton and push prices up. [redacted]

**Trans-Siberian Land Bridge**

The Soviets may be able to earn additional hard currency from the Trans-Siberian land bridge (TSLB)—the system that moves container cars from the Far East to Europe via the Trans-Siberian railroad. Earnings amounted to about \$300 million in 1981—a tenfold increase over those in 1972, the first year of operation. We believe that earnings will rise to \$400 or \$500 million by the late 1980s. [redacted]

Traffic levels on the TSLB increased from about 330,000 tons in 1972 to about 2.6 million tons in 1981. The security and low rates contributed to its early popularity. A 40-foot container shipped from Tokyo to Rotterdam costs \$4,000 via the TSLB and \$6,500 via a transoceanic conference containership. Competition from the TSLB has become so intense that British containership traffic reportedly will be forced to withdraw from the Europe-Far East trade route in the next few years.<sup>18</sup> [redacted]

A key link in the TSLB is the port of Vostochnyy, which is dedicated exclusively to container traffic. The Soviets are taking steps that will triple the port's capacity to about 8.5 million tons of container freight by the late 1980s. The Soviets also are improving computer tracking of containers and making greater use of large containers. Moreover, completion of the Baikal-Amur mainline railroad (BAM) in the late 1980s will speed up traffic by offering alternate routes for at least part of the way. [redacted]

If freight volume increased to some 8.5 million tons per year—to match the freight-handling capacity of Vostochnyy—potential hard currency earnings could jump to about \$1.0 billion per annum. This level of earnings is out of reach for many years, however, for a variety of domestic and international reasons:

- Operations at Vostochnyy have been handicapped by inefficient loading and unloading procedures.

<sup>18</sup> See *Journal of Commerce*, 22 July 1980, and *World Business Weekly*, 31 March 1980. [redacted]

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- Movement along the railroad has been hampered by chronic shortages of rolling stock and severe transportation bottlenecks in the western USSR. Also, the military often disrupts schedules with its requirement to move military supplies.
- Finally, the Soviets are limited in their ability to cut rates. Most of the USSR's modern transoceanic containerships are concentrated in the Far East-to-Europe route, since they were forced out of the US market in 1980. Thus the land bridges might undercut the Soviets' own ships. The TSLB also will face growing competition from nonconference containerships. These carriers consistently offer rates below those of either conference carriers or the TSLB. [redacted]

#### **Possible Soviet Adjustments to the Bleak Outlook for Exports**

In addition to the measures described above, the Soviets have other options for coping with hard currency stringencies. They could divert exports from client states to the West or even divert more to the export market at the expense of domestic customers. In addition, there are some small steps that Moscow could take to extract hard currency from the population. Finally, the Soviet Union could improve its export prospects considerably in the long term if it were willing to accept some fundamental changes in the management of its trade sector and in the role of Western firms in that sector. [redacted]

#### **Shifting Exports From East to West**

A substantial diversion of goods from other Communist countries to the West would enhance hard currency revenues considerably. Indeed, the Soviets have much to gain by shifting resources to the Western market. Soviet trade subsidies to allies have posed a major opportunity cost for Moscow. Exports of raw materials and fuel to Eastern Europe, Cuba, and Vietnam at below-market prices have represented an increasingly large amount of forgone hard currency revenue. Oil shipped to Communist countries in 1981, for example, might have earned roughly \$20 billion if sold in the West, and sales of ferrous and nonferrous metals could have brought in \$2 billion more. (This calculation assumes that such sales would not have lowered world prices substantially.) [redacted]

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hand, the "tough steps" offer the potential for a major hard currency payoff but would take years to effect.



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**Nickel-and-Dime Steps.** A relatively painless step would be for the government to encourage or compel Soviet citizens to turn in goods that can be sold for hard currency. Gold and diamonds would be probable candidates. Although the USSR already has large gold reserves, obtaining additional amounts from the population would be an alternative to increased investment in gold mining and would permit larger sales should market conditions warrant them. The government has raised the ruble price it will pay for gold at least three times since 1964. As an additional enticement, Moscow might offer consumer goods, vacations, or coupons allowing purchases at hard currency stores. Equally plausible, the leadership might adopt a Stalinist approach and order the confiscation of privately held gold and diamonds. We cannot predict the success of the carrot or the stick approach, but either could probably be more effective in amassing gold and diamonds in the hands of the state in the short run than could a program to boost production.

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**Giving Higher Priority to Export Industries**

Diverting resources from domestic to export-oriented industries would also pose tough choices for Moscow. It would almost certainly challenge existing planning priorities and create potentially serious bureaucratic disputes. Moreover, such a program would require major changes in industrial management.



Diverting additional investment resources to those industrial sectors that offer the greatest potential for export growth (precious metals, some nonferrous metals, and chemicals) would probably add to Moscow's investment problems. Overall investment growth has fallen dramatically, from 3.4 percent in the last half of the 1970s to a planned growth of 1.6 percent annually during 1981-85. All sectors of the Soviet economy (except energy and agriculture) are facing investment stringencies. Any decision to direct additional investment to one sector would require cuts in other sectors.<sup>19</sup>



Even if Moscow increased investment allocations in those sectors that offer export growth, there is little likelihood that output could increase much beyond the amounts we currently project. Leadtimes of at least a decade are required to bring new capacity on stream; little additional output would be available until the 1990s at the earliest.

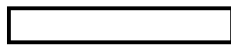


**Other Options**

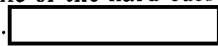
In addition to the measures discussed above, the Soviets have other ways of coping with hard currency stringencies. Some steps could be taken easily; others would require ideological accommodations. The list of options discussed below is by no means exhaustive. The measures described as "nickel-and-dime" steps could be taken quickly with little, if any, shock to the Soviet system—but they would improve the hard currency situation only marginally. On the other



Moscow could also consider establishing hard currency savings accounts for Soviet citizens, similar to the hard currency savings accounts in Poland. It is illegal for Soviet citizens to hold hard currency. Nevertheless, the authorities know that Western currency is in circulation in large amounts and is a primary medium of exchange in the black market. Perhaps the major hurdle to be overcome would be a general suspicion that it would be simple to put the money into such an account but difficult, if not impossible, to get it out.



Similarly, the leadership could simply make it legal for Soviet citizens to hold hard currency and allow citizens to spend the money in hard currency shops. This is done in East Germany. Such a step would allow the government to tap some of the hard currency being held by Soviet citizens.



Another approach available to Moscow is an intensive campaign to boost tourism, perhaps offering large discount rates to hard currency customers. To limit

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the strain on hotels and other facilities, Moscow could limit visitors from Communist countries. Although the Soviets have a long way to go in terms of attracting Western tourists, they gained experience and built better tourist facilities during the 1980 Olympics. [redacted]

**More Adventurous Options.** The USSR has enormous mineral and timber resources. These resources will be in increasing demand in the world in the longer term, but the USSR has not made the most of its position.<sup>20</sup> Exploitation and marketing of Soviet resources could be helped greatly by joint arrangements with Western firms or governments. Such arrangements would require the Soviets to make substantial ideological concessions, of course, but if necessary they could do it. Lenin's advocacy of using Western firms to develop Soviet resources might serve as a justification. [redacted]

The timber industry seems an ideal candidate for some type of equity arrangement. The bulk of the USSR's enormous forest resources are located in Siberia. They could be exploited by Western firms with little visibility and, from Moscow's point of view, little contamination of the Soviet population. Given the capital-intensive nature of Western logging operations, the number of Western workers would be small. Furthermore, any proposed project would be dedicated solely to the export market and thus would not directly affect the domestic economy or Soviet military potential. Finally, the Soviets would not have to add much infrastructure beyond that already in place. Completion of the BAM in the late 1980s, for example, will open up millions of acres of forests that were hitherto unexploitable. [redacted]

<sup>20</sup> See, for example, *USSR and East European Role in Raw Material Markets: Year 2000*, A. D. Little Corp., 1977; and *Wood, Pulp, and Paper, Demand, Supply and Trade*, Food and Agricultural Organization of the United Nations, 1977. [redacted]

The Soviets also might consider establishing export zones in the country, possibly similar to those in China. The principal output of such a region would be dedicated for the export market. Western firms could be called in, possibly on a profit-sharing or equity-participation basis.<sup>21</sup> Some of Siberia's huge mineral deposits could be candidates for this type of scheme. The giant deposits at Aldan and Udokan are conservatively estimated to account for about 5 percent of the world's proven reserves of iron ore and copper, respectively. The Soviets could export all of the output from these deposits and still have more than enough iron ore and copper from deposits in more accessible regions of the country to meet domestic needs and provide a comfortable margin for export. Assuming a rapid repayment period for development of these deposits—20 years—the potential earnings from sales of the minerals could amount to over \$3 billion per annum. [redacted]

<sup>21</sup> Under a profit-sharing scheme, the Soviets would share the profits with the Western firm on a mutually agreed upon basis. Under an equity-participation arrangement, the Western partner would own part of the assets of the project and be entitled to part of the output. [redacted]

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