

The Collapse of Soviet and Russian Trade with the DPRK, 1989–1993: Impact and Implications

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In December 1993, at the conclusion of North Korea's Third Seven Year Plan (1987–1993), Pyongyang officially acknowledged its failure to meet major targets of the plan—a regime first—and warned that the nation's economy was in a "grave situation." A lengthy communique attributed these poor results to the demise of the Soviet bloc: "With the collapse of socialist markets of the world as an occasion, a fundamental change has been affected in our country's external relations. . . . This has . . . caused serious damage to our economic construction. . . ." ¹

This article reports initial results from the "Quantifying North Korean Trade Patterns" project currently underway at the International Programs Center of the US Bureau of the Census. The interpretations and opinions expressed herein are those of the authors and do not necessarily represent the policy of the US Government or the Bureau of the Census.

1 For translation of the complete text, see Foreign Broadcast Information Service (FBIS), *Daily Report: East Asia*, EAS-93-235, 9 December 1993, "Communique Issues on Plenum," pp. 12–9.

Pyongyang's explanation for the country's emerging economic difficulties was not entirely frank—many of the DPRK's economic problems were directly caused by official practices and policies—but it did point to an important truth. The collapse of the Soviet bloc came as a sudden, unexpected, and severe shock to the North Korean economy.

This article will describe the impact on the DPRK's trade with the USSR and the Russian Federation, drawing largely upon "mirror statistics" issued by Goskomstat, the Soviet (and now Russian) State Statistical Committee.

Data and Methodology

Because the DPRK provides virtually no official statistical information on its trade relations with other countries, any picture of North Korean trade patterns must rely upon the mirror statistics published by the DPRK's trading partners—in this case, Soviet and Russian trade statistics.

The process of reconstructing DPRK trade patterns from this data is a straightforward but time-consuming exercise. It involves several steps in which different systems for categorizing trade flows are harmonized; different valuation schemes, harmonized; and different financial measurement bases reduced to a common denominator.

Beginning with the former Soviet Union, and Russia after 1991, we compiled our trade data sets from official Goskomstat materials reported in *Vneshnaya Torgovlya* [Foreign Trade] and other publications. To make these consistent with other trade data sets that cover the Communist and non-Communist world, we adopted the convention of concurring all trade flows recorded in SFTC (Standard Foreign Trade Classification of the Council for Mutual Economic Assistance, or CMEA) to SITC (Standard International Trade Classification of the United Nations, revision 1). This was to ensure consistency with trade statistics on the United Nations' data base, the most extensive series of which are

categorized according to SITC, revision 1. Most of the conversions were carried out in two stages² based upon UN protocols. During the first stage, we utilized the UN Statistical Commission concordance (United Nations, [1982]) to transform SFTC into SITC, revision 2. Subsequently, we applied the tables found in the Series M papers to concord further these interim categories to SITC, revision 1 (see United Nations, [1968]).

The second set of adjustments to the data were intended to make USSR trade flows conform to Western practices concerning FOB and CIF issues.³ The prevailing UN practice is to limit FOB valuation to home country exports, while recording home country imports on a CIF basis.⁴ Up through 1990 all Soviet trade, regardless of direction, was recorded FOB. Since we are proxying DPRK imports with reported Soviet exports to North Korea, some correction for CIF had to be made. In the absence of any specific knowledge about these costs, we adopted the general rule of thumb used by the International Monetary Fund (IMF), and scaled up FOB exports by an additional ten percent to account for those expenses. Conversely, DPRK exports, as mirrored by Soviet imports, were left unadjusted because no CIF charges would have been applied to these trade flows by Goskomstat, and home country exports should, according to Western convention, be valued FOB. After 1990 the USSR and its successor states adopted UN valuation standards. Thus, to produce a proxy for DPRK exports, we have divided USSR imports from North Korea by a factor of 1.1 to remove the charges presumably associated with CIF.

2 Beginning in 1991, USSR trade flows were reported according to the UN's "Harmonized System" (HS). Thus conversion to SITC-1 entailed additional steps in which HS codes were first concorded to SITC, rev. 3, and from that nomenclature to SITC, rev.2. See United Nations, (1990).

3 FOB means "free on board"; CIF means "cost, insurance, and freight."

4 The UN recommends using FOB method for exports and recording import values on both an FOB and CIF basis. Not all countries adhere to this guideline when it comes to companion FOB valuations of imports.

A final set of adjustments converted all trade flows from rubles to dollars at the official exchange rate (United Nations, *Monthly Bulletin of Statistics*).⁵ The problems—both theoretical and practical—in determining an appropriate exchange rate by which to translate trade transactions from a non-convertible currency into hard currency terms are formidable and self-evident, and we do not mean to minimize them. By utilizing the official ruble-dollar exchange rate, and valuing all trade flows in dollar terms, we simply conform to standard UN practices with respect to these issues.

We should also remind the reader that our calculations are in nominal rather than constant dollars. We have left all figures in current dollars because we lack the appropriate price indices for converting current trade rubles into constant dollar terms. While this problem may bias the interpretation of time trends, its impact is neutral as far as the analysis of commodity structure in any given year is concerned.⁶

Background

USSR-DPRK relations moved through distinctly warmer and cooler phases over the years between the founding of the DPRK in 1948 and the final crisis of the Soviet state. The early 1980s—the late Brezhnev era—was a chilly period for Moscow and Pyongyang. With the accession of Yuri Andropov in 1983, however, Soviet–North Korean relations began to improve markedly. This improvement continued through the tenure of Konstantin Chernenko (1984–85), and into the early years of the Gorbachev

5 See various issues in the financial section covering exchange rates. Also see Table 40, "Official Exchange Rates of the Ruble, 1986–1991," as cited in International Monetary Fund (1992, p.82).

6 In a simple test, we deflated the trade flows for 1972 to 1993 to constant 1987 dollars using the US implicit price deflator. The alternative presentation of the data made virtually no difference: positive trends, as measured by the slope of the regression curve, remained as such, and critical turning points or outliers persisted in the patterns of residuals.

era. In the late 1980s Soviet–North Korean relations began to sour once again, due largely to Pyongyang’s mistrust of Mikhail Gorbachev’s “new thinking” and Gorbachev’s disdain for Pyongyang’s “old thinking.” The temperature dropped sharply in 1990, as Moscow opened diplomatic relations with Seoul, and again at the start of 1991, when Moscow began to insist on hard currency terms of settlement for its trade with the DPRK. In August 1991, Pyongyang indicated its support for the abortive Moscow coup (and by implication, its opposition not only to Gorbachev, but also to Boris Yeltsin). By December 1991, the Soviet Union had dissolved, leaving relations with the new Russian Federation largely in limbo.

Soviet–North Korean Trade Trends, 1980–1988

Throughout its history, North Korea’s main trading partner was always the Soviet Union, irrespective of the current state of relations between Moscow and Pyongyang. But trends in Soviet–DPRK trade also reflected the current state of relations between the two capitals. In 1980, the DPRK’s dependence upon the Soviet Union as a source of imports and a market for exports was near its all-time low: by one estimate, Soviet–DPRK trade accounted for just over one-fourth of North Korea’s total trade volume.⁷ By 1988, according to several estimates, that share had risen sharply, to nearly three-fifths of North Korea’s total trade turnover.⁸

Putting a dollar value on ruble-denominated transactions is, one should stress, a problematic venture. Based on existing exchange rates, however, it would appear that increases in turnover with the USSR accounted for *all* of North Korea’s trade

7 Soo-young Choi, “Foreign Trade Of North Korea, 1946–1988: Structure And Performance,” unpublished PhD Dissertation, Northwestern University, 1991, pp. 313–4.

8 See for example Savada (1993), p. 285.

growth in the 1980s. Between 1980 and 1988, in fact, North Korea's dollar-value of trade actually *fell* in nearly all of its other markets: with China; with Japan; with the developing countries; even with the Soviet Union's East European allies (see Table 1).

From 1980 onwards, North Korea's economic policy explicitly stipulated expansion of the nation's trade. To the extent that any

**Table 1. DPRK Exports and Imports from
Selected Regions, 1980-88**

(in million dollars, current prices)

	Total	USSR	China	Other Communist Countries	Japan	OECD	Developing Countries
Exports							
1980	1,627	438	276	156	164	260	333
1981	1,131	347	215	119	127	63	260
1982	1,289	500	278	119	138	145	109
1983	1,139	439	232	111	115	140	102
1984	1,185	453	246	115	132	152	87
1985	1,222	484	242	145	163	68	120
1986	1,356	640	254	138	157	84	82
1987	1,485	683	217	140	220	114	110
1988	1,792	882	212	76	293	81	218
Imports							
1980	1,824	488	412	160	412	137	216
1981	1,574	424	337	127	320	170	195
1982	1,593	482	311	128	344	157	170
1983	1,475	388	302	125	360	140	160
1984	1,413	471	251	134	280	104	173
1985	1,786	865	260	136	272	101	152
1986	2,102	1,186	276	127	202	133	176
1987	2,576	1,393	308	155	235	262	223
1988	3,093	1,909	380	71	263	204	267

Note: Some of these figures are slightly different from estimates prepared by the International Programs Center of the US Census Bureau.

Source: Soo-Young Choi, "Foreign Trade of North Korea, 1946-1988: Structure and Performance," Doctoral Dissertation, Northeastern University, Boston, 1991.

expansion was registered, this was only achieved through steadily greater reliance upon the USSR.

The Soviet Union, for its part, accommodated this trade expansion by putting issues of profitability to the side. CIA estimates indicate that Soviet economic aid to North Korea was marginal in the mid-1980s, and that net transfers over the 1987–1990 period were *negative*.⁹ If “economic aid” is very narrowly and formally defined, this might be true. But as a description of the Soviet Union’s economic interactions with the DPRK during the 1980s, this would be tremendously misleading. From 1984 onward, the USSR’s economic relations with the DPRK appear to have been conducted on a significantly concessional basis, and the absolute value of Soviet subventions appear to have increased dramatically over the decade.

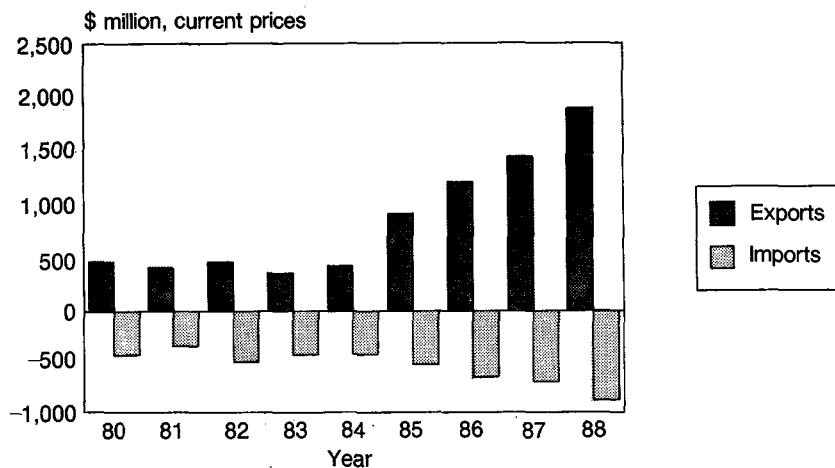
A principal mechanism for concessionality was provided through Moscow’s willingness to finance Pyongyang’s deficit in the balance of trade. Between 1980 and 1990, the DPRK’s trade deficit with the USSR was permitted to balloon. Goskomstat data illustrate the reported trend (see Figure 1). At official ruble-dollar exchange rates and in current dollars, the cumulative deficit reported for 1985–1990 would have exceeded four billion dollars.

Further concessionality may have been granted through Soviet pricing arrangements with the DPRK. Soviet coal and oil exports to North Korea, for example, went at substantially less than world markets prices for most of the 1980s. Very roughly speaking, these energy subsidies may have saved the DPRK an additional \$400 million between 1980 and 1990—although by the late 1980s North Korea appears to have been paying world market prices for its Soviet energy products.

Goskomstat data offers an official picture of the sectoral patterns of USSR-DPRK trade in the 1980s. In its exports to the

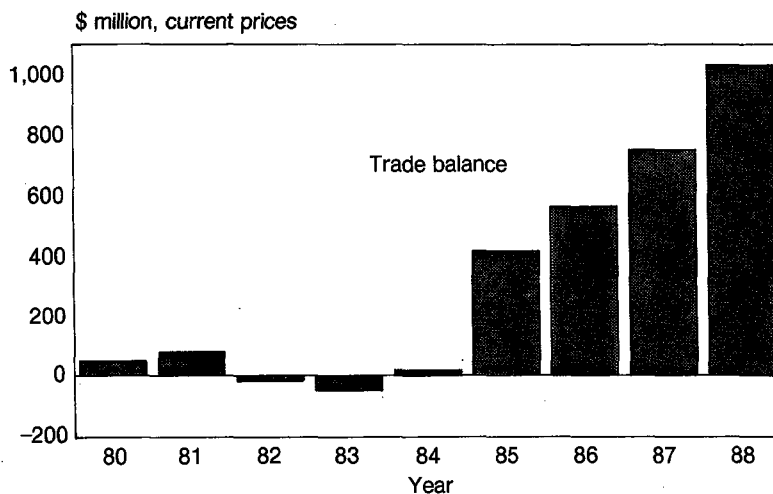
9 CIA, *Handbook of Economic Statistics*, 1991, p. 160. According to these estimates, Soviet economic aid to North Korea totalled \$99 million in 1984–1986, and \$-90 million in 1987–1990.

Figure 1A. Reported Soviet Exports to and Imports from the DPRK, 1980-88



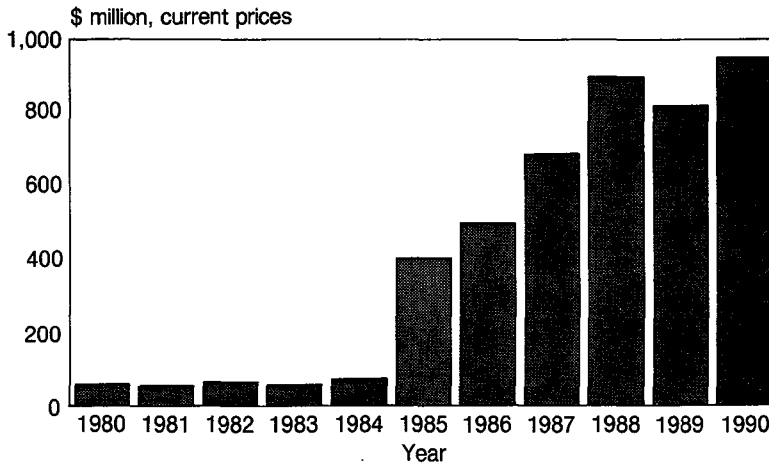
Sources: MVES SSSR and Goskomstat SSSR, *Vneshniye Ekonomicheskiye Svyazi SSSR*, (1988-91); MVES SSSR, *Vneshnaya Torgovlya SSSR*, (various issues 1971-98).

Figure 1B. Reported Soviet Trade Balance with the DPRK, 1980-88



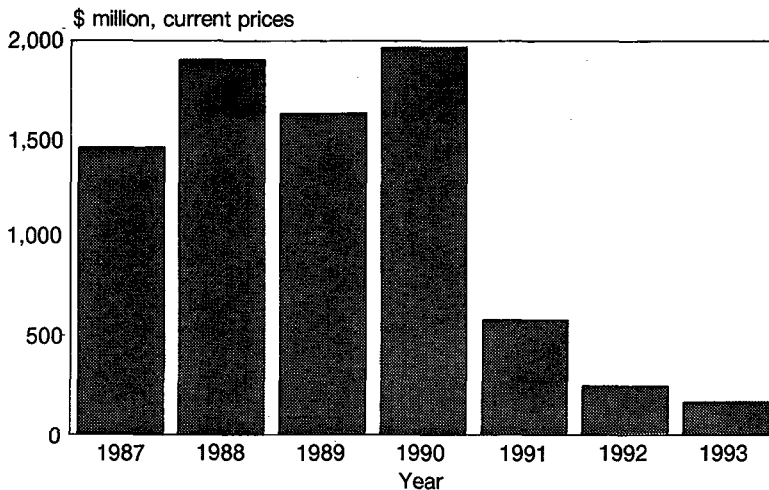
Sources: MVES SSSR and Goskomstat SSSR, *Vneshniye Ekonomicheskiye Svyazi SSSR*, (1988-91); MVES SSSR, *Vneshnaya Torgovlya SSSR*, (various issues 1971-98).

Figure 2. Soviet Exports to the DPRK of Commodities and Transactions Not Classified to Kind: 1980–1990



Sources: MVES SSSR and Goskomstat SSSR, *Vneshniye Ekonomicheskiye Svyazi SSSR*, (1988–91); MVES SSSR, *Vneshnaya Torgovlya SSSR*, (various issues 1971–98).

Figure 3. Total Reported Soviet and Russian Exports to the DPRK, 1987–1993



Sources: MVES SSSR and Goskomstat SSSR, *Vneshniye Ekonomicheskiye Svyazi SSSR*, (1988–91); MVES SSSR, *Vneshnaya Torgovlya SSSR*, (various issues 1971–98).

Soviet Union, the DPRK's principal products were reportedly clothing, iron and steel, and non-metallic mineral manufactures of powdered magnesite—presumably payment-in-kind in return for Soviet capital equipment and spare parts for the factories producing the output in question. The USSR, for its part, identified oil and coal, machinery, and yarn as among its principal exports to North Korea during the 1980s.

A curious, and important, component of North Korea's imports from the USSR is the category described in SITC as "Commodities and transactions not classified according to kind" (SITC group 9). This residual category came to dominate Soviet exports to North Korea during the late 1980s: already a sizeable seventeen percent of total imports on average for the years 1980–1984, it rose to an average of forty-eight percent of the reported total for the 1985–1990 period (see Figure 2).

For 1985–1990, at official dollar-ruble exchange rates and in current dollars, these otherwise unidentified imports would have been valued at over \$5 billion. It is likely that military equipment and materiel, and other military-related services, would be registered in this catch-all category. But it is impossible at this point to tell exactly how much of this category was defense-related¹⁰—or even how much of the Soviet Union's defense commerce with North Korea was captured in Goskomstat accounts.

10 Of course, when one considers the other items encompassed by SITC group 9, under Revision 1—e.g., "postal packages not classified according to kind"; "special transactions not classified according to kind"; "animals, n.e.s., (including zoo animals, dogs and cats)"; and "coin (other than gold coin), not being legal tender"—it seems reasonable to guess the great preponderance of the transactions in question involved the only other listed subgroup, namely "firearms of war and ammunition therefor."

North Korea's Trade Shock with the USSR and Russia, 1989–1993

As the Soviet state entered its final crisis, the volume of USSR-DPRK trade, and the value of the implicit Soviet subsidies in this trade, were at their all-time high. Trade flows abruptly collapsed in 1991, with the advent of hard currency terms of payment for Soviet products and services. North Korea's trade with the former Soviet area appears to have been depressed still further in 1992 and 1993, with the demise of the USSR and the emergence of Russia and the other newly independent states.

North Korea's Third Seven Year Plan began in 1987. According to Goskomstat data, between 1987 and 1990 North Korea's imports from the USSR averaged over \$1.7 billion annually (at official ruble-dollar exchange rates); by this reckoning, they would have comprised roughly three-fifths of total DPRK imports.¹¹ In 1991, officially reported imports from the USSR dropped to under \$600 million—a fall-off of two-thirds from the 1987–1990 average, and of over seventy percent from the preceding year (see Figure 3). The decline was equivalent to two-fifths of North Korea's *overall* import level in 1987 and 1988 (again using official exchange rates and current dollars).

Imports from the former Soviet area continued to decline in 1992 and 1993. By 1993, on the basis of official dollar-ruble exchange rates, Russia's exports to North Korea amounted to less than a tenth of what the USSR had annually been sending Pyongyang between 1987 and 1990.¹² A complete picture of

11 Or to be more precise: they would have comprised roughly three-fifths of total DPRK imports reported by North Korea's trading partners.

12 In all likelihood, official current Russian statistics overstate the drop in trade with the DPRK somewhat. Russian trade statistics appear to have suffered from the country's ongoing political, administrative, and economic transitions (including the new incentives for entrepreneurs to conceal their cross-border transactions). Russian analysts, for example, have argued that trade with Japan is significantly underestimated by official Russian statistics; see *Izvestiya*, 24 June 1994, p. 4, translated as "Statistics Obscure True State Of Trade With Japan,"

exports from the NIS cannot yet be compiled. But if we use Soviet-era patterns as a benchmark—the RSFSR provided 75 percent of Soviet exports to the DPRK in the late 1980s—the Russian Federation's trade figures would suggest that overall NIS exports to the DPRK may have totalled about \$330 million in 1992, and about \$220 million in 1993. If these estimates were accurate, they would indicate declines from the average Soviet 1987–90 level of four-fifths and seven-eighths, respectively.

Table 2. Index of North Korean Imports of Selected Goods from Soviet Union and Russia, 1987–1993

(average 1987–90 value = 100)

Year	SITC 3	SITC 7	SITC 9	Total Imports
1987	141.4	67.4	81.8	83.8
1988	110.1	107.5	107.2	109.5
1989	80.3	81.2	97.7	93.7
1990	68.2	144.0	113.3	113.0
1991	17.3	48.5	23.3	33.3
1992	6.1	26.1	5.4	14.3
1993	8.7	10.0	2.2	9.7

Notes: SITC 3: Mineral fuels, lubricants, and related materials.

SITC 7: Machinery and transport equipment.

SITC 9: Commodities and transactions not classified according to kind.

Imports valued in current dollars at official ruble-dollar exchange rates.

Sources: Ministervo Vneshnikh Ekonomicheskikh Svyazey SSSR, Vneshniye Ekonomicheskiye Svyazi SSSR, Statisticheskii Sbornik, Moscow 1988–91; MVES SSSR, Vneshnaya Torgovlya SSSR, Moscow (various issues) 1971–87; Russian Federation State Committee on Statistics and Russian Federation Ministry of Foreign Economic Relations, Russian Federation External Trade in 1992, Moscow 1993. All 1993 data were unpublished Ministry of Foreign Affairs figures.

FBIS Daily Report: Central Eurasia, FBIS-USR-94-075, 14 July 1994, pp. 66–8. While North Korea is hardly as attractive a trading partner as Japan, Russia and the DPRK do share a border—a fact which may facilitate some unofficial commerce. While official figure may well overstate the drop in Moscow's trade with Pyongyang to some degree, there can be little doubt that the actual decline in trade between the two countries has been precipitous.

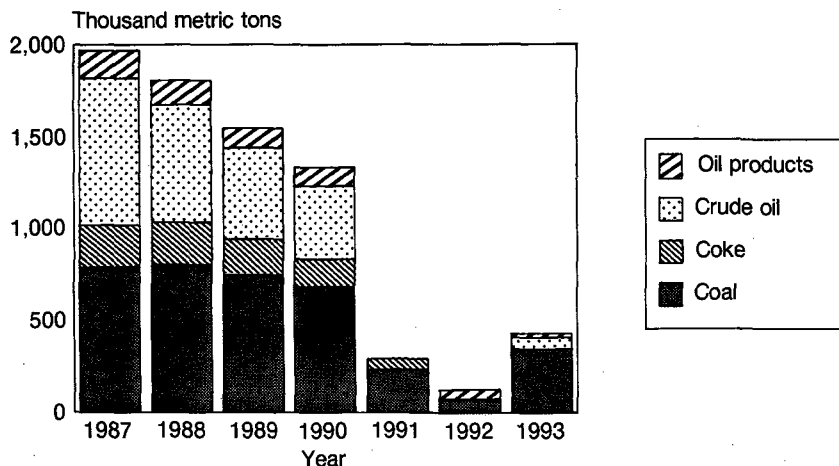
While Soviet and Russian exports of all categories of goods and services to North Korea plunged between 1989 and 1993, some dropped more sharply than others (see Table 2). The most radical fall-off came in "Commodities and transactions not classified according to kind," which plummeted by 99 percent between 1990 (USSR) and 1993 (Russia). Machinery exports, by contrast, were less severely affected, with "only" a 74 percent drop between the Russian level of 1992 and the Soviet average for 1987–90. Transportation equipment was perhaps the category of exports least affected by interruptions: according to official figures, in 1992 Russia maintained 54 percent of the average Soviet level of shipments from 1987–90, and 22 percent of that level in 1993.

As for the value of energy exports to the DPRK, this fell by three-fourths between 1990 and 1991. In 1993, Russian energy exports to North Korea were valued at only nine percent of the average Soviet level for 1987–90.

"Values" of energy exports, of course, are sensitive to dramatic fluctuations in pricing. The physical volume of energy products exported to North Korea provides a second look at the impact of trade interruptions (see Figure 4). According to official data, the Soviet Union shipped the DPRK an annual average of 950 thousand tons of hard fuel (coal and coke) and an average of over 700 thousand tons of oil and oil products during the first four years of the Third Seven Year Plan. For 1992–93, shipments of hard fuel from Russia averaged only 21 percent of the 1987–90 Soviet level; oil and oil products, only nine percent.

North Korea's exports to the Soviet Union and Russia fell off just as sharply between 1989 and 1993 as did its imports from that region (see Table 3). Overall, DPRK exports to the USSR fell by over 60 percent between 1990 and 1991. For 1992–93, North Korean exports to Russia averaged under \$60 million a year—only 6 percent of what Pyongyang had reportedly been sending the USSR in the 1987–90 period. (Based on Soviet-era patterns, when the RSFSR was receiving about half of the DPRK's Soviet-

Figure 4. Reported Soviet and Russian Energy Exports to the DPRK, 1987-93



Sources: MVES SSSR and Goskomstat SSSR, *Vneshniye Ekonomicheskiye Svyazi SSSR*, (1988-91); MVES SSSR, *Vneshnaya Torgovlya SSSR*, (various issues 1971-98).

bound exports, these numbers would suggest an overall drop in exports to the NIS area of nearly 90 percent between 1987-90 and 1992-93.)

To some degree, exports to the USSR and Russia appear to have collapsed for lack of sustaining inputs from Moscow. Clothing exports to Russia, for example, fell as the USSR, then Russia, curtailed their shipments of yarn and sewing machine equipment. Some sustaining inputs may also have been political in nature. The fall-off in North Korean exports to Moscow of "Commodities and transactions not classified according to kind," for example, may reflect the chilly relations between Pyongyang and Moscow after 1991, and the correspondingly lower level of cooperation between their militaries in terms of port services, overflight charges, and the like. As for the drop-off in exports to Russia of iron and steel and powdered magnesite, the implications are ambiguous. These particular drops may

Table 3. Index of North Korean Exports of Selected Goods to the USSR and Russia, 1987–1993

(average 1987–90 value = 100)

Year	SITC 6	SITC 7	SITC 8	SITC 9	Total
1987	127.1	96.3	42.5	41.0	77.1
1988	110.7	89.1	91.5	52.6	94.7
1989	89.3	66.1	119.9	79.4	95.3
1990	72.9	148.5	146.1	227.0	133.0
1991	4.6	226.1	25.1	57.3	50.1
1992	1.7	6.3	5.3	13.2	6.4
1993	0.8	5.9	7.8	9.8	5.8

Notes: SITC 6: Manufactured goods classified chiefly by material.

SITC 7: Machinery and transport equipment.

SITC 8: Miscellaneous manufactured articles.

SITC 9: Commodities and transactions not classified according to kind.

Exports valued in current dollars, at official ruble-dollar exchange rates.

Sources: MVES SSSR and Goskomstat SSSR, *Vneshniye Ekonomicheskkiye Svyazi SSSR*, Moscow 1988–91; MVES SSSR, *Vneshnaya Torgovlya SSSR*, Moscow (various issues) 1971–1987; RFSCS and RFMFER, *Russian Federation External Trade in 1992*, Moscow 1993.

All 1993 data were unpublished Ministry of Foreign Affairs figures.

point to production constraints within the DPRK, or they may indicate a turn in Pyongyang toward other potential markets for products previously paid for in rubles. Further research may point to an explanation.

Concluding Observations

From the standpoint of economic planners in Pyongyang, the disappearance of the Soviet bloc came at a particularly inconvenient moment. During the “buffer years” of 1985 and 1986, between the Second and the Third Seven Year Plans, relations with Moscow were on the upswing. The DPRK’s Third Seven Year Plan appears to have been framed on the presumption of substantial and growing trade with and aid from the USSR.

The collapse of North Korean trade with the USSR, and then Russia, between 1991 and 1993 can only be described as a serious

blow for the DPRK economy. Despite the proclaimed goal of self-reliance, North Korea's economy is in fact inescapably affected by its international sector; its international balances limit domestic economic capabilities in a variety of directions.

The advent of hard currency terms of settlement with the USSR in early 1991 meant the end of most subsidized trade with its very largest trading partner. Between 1991 and 1993, the DPRK's imports from the Soviet Union and the NIS were perhaps \$4 billion lower than they would have been had 1987-90 patterns continued.

Some of the imports lost through the Soviet breakup could be replaced through world market purchases: oil and coal, for example. Such purchases, however, now require the use of scarce hard currency earnings.

Other Soviet inputs do not lend themselves to easy substitution. The DPRK's industrial base was largely constructed with Soviet material and technical assistance. The fall-off in machinery exports from the USSR and Russia would suggest that North Korea may now be experiencing a shortage of Soviet spare parts. Such a shortage could affect North Korean industrial production out of all proportion to the value of the missing inputs.

Furthermore, there is no obvious international substitute for the military products the DPRK was obtaining from the USSR. If military goods and services were counted within the huge residual category in Soviet exports to the DPRK, and accounted for the bulk of that undescribed commerce, the virtual cessation of these flows would pose a serious challenge to North Korea's military industries. To maintain current levels of readiness, the economy would presumably have to move even further towards a war footing. North Korea's security strategy, and international behavior, since 1991 have presumably been informed by these particular stresses.

At the same time, the collapse of Soviet trade may also affect North Korea's limited consumer industries. The near-cessation

of North Korean clothing exports to the USSR and Russia after 1990 is suggestive of this possibility. (We may note that the late Kim Il Sung, in his 1994 New Year's Day address, identified "light industry" as a priority sector for the coming year.) It is likely that North Korea's consumer industries are more labor-intensive than other industrial sectors; if so, any adverse impact that interrupted Soviet supplies would result disproportionately in an idling of manpower.

Responding to the Soviet trade shock will require administrative flexibility and economic ingenuity on the part of planners in Pyongyang. It will also require economic policy makers to familiarize themselves with the workings of the international market economy. Throughout the foreseeable future, most of the international inputs required by the DPRK economy will have to be purchased with hard currency. The DPRK will have to generate the hard currency purchases, or command the hard currency remittances, necessary for such purchases. How the North Korean regime, and system, will cope with these challenges remains to be seen.

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