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Russian exports by regional origin: disparities, diversity and decentralization in the transformation process

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RUSSIAN EXPORTS BY REGIONAL ORIGIN
Disparities, Diversity and Decentralization
in the Transformation Process

by

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Abstract

This paper analyses the contribution of 71 regional entities to the exports of the Russian Federation outside the Soviet Union in 1989. A distinction is made between export earnings in convertible and non-convertible currency, as well as between four major commodity categories. The focus of the analysis is on the likely consequences of greater regional economic autonomy within Russia. It is found that only very few areas would clearly benefit from enhanced regional control over export earnings, mainly by obtaining a higher share of resource rents. Furthermore, in the present environment of distorted prices and balance of payments constraints, decentralization could lead to substantial windfall gains for established exporters at the expense of areas that happen to supply mainly the domestic market. The speedy introduction of a price structure reflecting genuine scarcities would therefore help not only to eliminate allocative inefficiency, but also to minimize interregional distributional conflicts.

Zusammenfassung

Das vorliegende Papier analysiert den Beitrag von 71 regionalen Gebietskörperschaften zu den Exporten der Russischen Föderation außerhalb der Sowjetunion im Jahr 1989. Dabei wird zwischen Exporterlösen in konvertibler bzw. nicht-konvertibler Währung ebenso unterschieden wie zwischen vier hochaggregierten Güterkategorien. Ziel der Untersuchung ist eine Einschätzung der möglichen Konsequenzen der gegenwärtigen regionalen Autonomiebestrebungen innerhalb Rußlands. Es zeigt sich, daß nur wenige Regionen eindeutig von einer verstärkten regionalen Kontrolle über die Exporterlöse profitieren würden, vor allem durch einen höheren Anteil an den Ressourcenrenten. Darüber hinaus würde eine verstärkte Regionalisierung wegen der noch bestehenden Preisverzerrungen und der beschränkten Devisenverfügbarkeit ganz allgemein bereits etablierte Exporteure auf Kosten derjenigen Produzenten begünstigen, die auf den Inlandsmarkt ausgerichtet sind. Insofern würde die rasche Einführung knappheitsbestimmter relativer Preise nicht nur allokativer Ineffizienz zu vermindern helfen, sondern auch interregionale Verteilungskonflikte entschärfen.

I. Introduction

The breakdown of the central power structure of the Soviet Union in late 1991 has not only given rise to separatists and centrifugal movements in what has become the Commonwealth of Independent States (CIS). It is also threatening the coherence and stability of its leading member state, the Russian Federation. At least two sources of the trend towards greater regional autonomy can be identified: an increasing national assertiveness among some of the many ethnic minorities, and growing opposition to the central bureaucracy in resource-rich, but hitherto neglected regions.

The institutional basis of growing nationalism among ethnic minorities lies in the longstanding existence of sixteen autonomous republics (ASSRs), as well as other autonomous entities (oblasti and okruga), within the Russian Federation. Initially, the rationale behind the formation of autonomous areas was to reduce the degree of ethnical heterogeneity within individual administrative units, and to contain the fear of ethnic minorities of being dominated by the Russian majority population.¹ Nevertheless, in practice, the central institutions of the Party and the government exercised complete control over the affairs of the Russian Federation as well as over those of the entire former Soviet Union.

This situation has changed dramatically with the recent decay of central executive authority and the loss of political credibility on the part of the former ruling elite. As in other former Soviet republics, strong

* This paper reports on research undertaken in a project on prerequisites of integrating the former Soviet Union into the world economy. The project has received financial support from the Alfried Krupp von Bohlen und Halbach Stiftung.

¹ Thus, each titular nationality, down to the level of autonomous okruga, was represented in the Soviet of Nationalities of the Supreme Soviet of the USSR [Great Soviet Encyclopedia, Vol. 22, 1979, pp. 391 seq.].

nationalist movements have come to the fore in several autonomous areas within Russia.² On 31 March 1992, a Federation Treaty was signed by the President of the Russian Federation and representatives of eighteen autonomous entities (with the notable exceptions of the Tatar and Chechen-Ingush ASSRs) to provide a constitutional framework for a coherent, but genuinely federal state. Reportedly, the Bashkir ASSR, as well as several other entities, signed the Treaty only in return for special treatment in areas like foreign trade, budgetary policy, property rights and mineral resources [Financial Times Survey, *The Reforming of Russia*, 13.05.92, p. V]. Given the many of dissenting views on the rights and commitments arising from the Treaty, it is open to question whether the provisions of the Treaty will be sufficient to prevent centrifugal forces from becoming more dominant.

The second source of regionalism within Russia is of an economic nature. For many years the populations of certain resource-rich but otherwise economically backward regions have voiced discontent, ever more openly, with their primitive living conditions.³ The power vacuum left by the decay of central authority is now allowing regional entities to insist on receiving a much larger share of the resource rents. A recently adopted law apparently provides for a revenue-sharing scheme under which the Russian federal government would receive only 40 per cent of the profits from the extraction of natural resources, while the remainder would be divided between local and regional bodies [Frankfurter Zeitung, *Blick durch die Wirtschaft*, "Gesetz über Rohstoffvorkommen", 5 March 1992; *Nachrichten für den Außenhandel*, "Rußland fördert Randgebiete", 13 May 1992; -, "Jakutien startet Außenhandel", 15 May 1992].

² On 22 March 1992, a referendum calling for the independence of a "Sovereign State of Tatarstan" was approved by 61.4 per cent of the voting population. According to the Tatar government, however, this referendum was to provide leverage for greater political and economic autonomy within the Russian Federation, rather than for secession from it.

³ This is exemplified by the increasing frequency of strikes by Siberian coal miners in recent years.

The purpose of this paper is to shed light on the economic rationale and implications of enhanced regional autonomy within Russia. It is based on a recently released statistical survey [Goskomstat RSFSR, 1991] that lists extra-Soviet Union exports from the Russian Federation in 1988, 1989 and 1990 by about seventy areas of origin (autonomous republic, kray, or oblast) and major commodity categories (raw materials and semi-manufactures, consumer goods, machinery and equipment). In addition, exports from each regional entity to the convertible currency area are reported separately. Although these data must be considered historic, given the rapid change in economic conditions in Russia, they provide at least approximate evidence on each area's export capacity.

The presumption underlying this analysis is that the future economic development of each area will depend to a large extent on its access to resources that can generate export earnings in the new economic environment. In particular, export earnings in hard currency have a crucial role to play in the transformation process. They are not only a prerequisite for imports of technical and commercial know-how as well as capital goods when balance of payments constraints become binding, but they also link the regional economy to the network of international investors and customers. Therefore the benefits from enhanced regional autonomy will tend to be greatest for areas with relatively large hard currency exports.

A related argument applies to the commodity composition of exports. Exports of raw materials can be expected to be relatively unaffected by the transformation of the economic system. By contrast, exports of final goods to formerly protected markets (mainly barter trade with CMEA and developing countries) have already declined substantially in the face of increasing competition [IMF, 1992, Table 24]. Furthermore, the emergence of a price structure more responsive to market signals will frequently necessitate the introduction of more realistic (i.e. higher) prices of final goods exported to the convertible currency area. In sum, exporters of final goods will have to struggle hard for survival, compared with exporters of raw materials. Therefore, areas within Russia with relatively large exports of raw materials can be expected to benefit most from greater regional autonomy.

This paper is structured as follows: Section II provides an extract of the raw data (which are presented in full in Appendix Tables A1 and A2). In Section III statistical tools like concentration measures, correlation analysis and cluster analysis are applied to assess the likely direction of changes in the relative positions of the individual areas in export revenues. Section IV exploits the availability of export data by economic ministries, traditionally organized along branch lines, in order to assess the importance of individual product groups in total exports. Section V summarizes the results.

II. Russian Exports by Major Regions and Commodity Categories

Table 1 presents a breakdown of Russian exports in 1989 by economic regions and important areas.⁴ As a major result it emerges that there has been a clear discrepancy between the contributions of individual regional entities to exports in non-convertible and convertible currency. While the urban agglomeration centers like Moscow, St. Petersburg, Gorky, Yekaterinburg (the former Sverdlovsk) or Perm accounted for a large share of exports in non-convertible currencies, almost 50 per cent of Russian export earnings in convertible currency originated from two rural regions: the Northern region hosting the Archangel'sk and Murmansk Oblasts, and the Western Siberian region with Tiumen Oblast as the leading individual regional entity in terms of export earnings. Other rural regions like Eastern Siberia and the Far East also contributed sizably to hard currency exports.

This regional pattern coincides with a sectoral one. While the urban centres commanded the quantitatively small segment of consumer goods and machinery exports (with the Central and Volga regions being particularly important), the lion's share of the largest segment of Russian exports, that is raw materials and semi-manufactures, originated from those rural regions which were mentioned above. There is one remark-

⁴ 1989 was chosen as a reference year because it can be still considered as approximately "normal" compared to 1990 when the political and economic decay began. Data for 1988 were not fully available.

Table 1: Extra-USSR Exports of Russia by Major Area of Origin, 1989 (internal prices; percent)

Exporting region/ administrative unit ^a	By currency area		By commodity category			
	convertible currency	non- convertible currency	raw material and semi- manufactures	machinery and equipment	consumer goods	machinery and equipment for international technical co- operation
I Northwestern Region	1.6	6.1	4.2	5.8	4.2	14.7
St. Petersburg City + Oblast	1.4	5.6	4.1	5.4	2.0	14.2
II Northern Region	15.2	7.2	13.1	0.6	1.0	1.2
Arkhangel'sk Oblast	7.2	1.6	4.5	0.1	0.0	0.0
Murmansk Oblast	5.2	1.0	3.1	0.0	0.0	0.0
Karelian ASSR	1.0	1.5	1.8	0.3	0.5	0.9
III Central Region	7.7	14.1	5.4	19.3	49.0	23.4
Moscow City	2.5	4.5	0.6	7.9	23.1	4.0
Moscow Oblast	0.9	2.5	0.5	3.5	8.0	11.8
Riazan' Oblast	1.4	0.8	1.1	0.8	0.5	0.3
IV Volga-Viatka Region	2.0	4.3	2.1	8.8	5.6	3.9
Kirov Oblast	1.1	0.9	0.6	0.7	4.4	1.3
Gorky Oblast	0.7	2.7	1.4	5.8	0.7	1.7
V Central Chernozem Region	1.7	3.7	3.4	2.5	2.1	3.7
VI Volga Region	13.1	13.8	8.1	38.7	7.7	10.4
Samara Oblast	9.4	7.3	4.0	27.2	0.6	3.8
Tatar ASSR	2.2	2.4	1.8	4.5	2.5	1.8
VII Northern Caucasus Region	1.2	5.2	2.6	8.1	6.6	7.6
VIII Ural Region	9.8	10.9	10.4	8.8	10.4	24.3
Orenburg Oblast	3.1	1.3	2.2	0.4	1.1	2.7
Perm' Oblast	1.3	2.0	2.1	1.0	1.5	1.8
Sverdlovsk Oblast	1.6	2.5	2.0	1.3	2.5	9.9
Bashkir ASSR	3.3	2.1	2.4	2.7	2.4	2.7
IX Western Siberian Region	34.1	23.6	35.6	5.5	3.9	6.8
Tiumen' Oblast	32.1	18.0	31.3	0.2	0.0	0.1
X Eastern Siberian Region	7.6	7.5	9.8	1.5	3.4	2.8
Krasnoyarsk Krai	5.2	3.5	5.0	1.0	3.0	0.3
Irkutsk Oblast	1.9	3.7	4.4	0.4	0.0	1.9
XI Far Eastern Region	4.4	3.3	5.0	0.3	0.4	1.1
Yakut ASSR	3.7	0.1	1.6	0.0	0.0	0.0
Kaliningrad Oblast	1.7	0.5	0.4	0.3	5.8	0.2
Total (Mill. Rubles)	7019.0	18713.0	17949.44	4651.9	2199.6	929.1

^aThe definition of economic regions corresponds to Goskomstat RSFSR (1989). - Kaliningrad Oblast, although part of the Russian Federation belongs to the Baltic economic region. - Individual ASSRs, kraya and oblasti are listed only if they accounted for at least 1 per cent of convertible currency exports or 2 per cent of total exports in 1989. - The transcription of geographic names corresponds to Great Soviet Encyclopedia, 1979, Vol. 22, p. 392.

able "outlier" in relation to this pattern, that is the exports originating from Samara Oblast (formerly Kuybyshev). This Oblast hosts the bulk of the Russian car industry [Sagers, 1991] which has been exporting to former CMEA as well as to Western European countries. In terms of exports both in convertible and non-convertible currency, Samara has kept the second rank among individual entities, next to the oil-exporting oblast of Tiumen.

Secondly, what holds for Moscow in exporting consumer goods, holds for St. Petersburg in producing so-called machinery and equipment for international technical cooperation. In this category St. Petersburg Oblast kept an important position until 1990. Presumably, this category contains former large-scale turnkey projects in heavy industries and energy supply as suggested by the predominant participation of two related ministries (Appendix Table A2). Compared to the three other product categories, however, this segment of exports has remained relatively unimportant in absolute amounts.

Thirdly, export earnings in convertible currency have rested on the shoulders of fewer regional entities than earnings in non-convertible currency. While the three leading regional entities in contributing to convertible currency exports (Tiumen, Samara, and Arkhangel'sk Oblasti), accounted for 48.7 per cent of Russian exports in convertible currency, the two former oblasti plus St. Petersburg comprised only 30.9 of Russian exports in non-convertible currency. Such high concentration in convertible currency exports is expected to lead to intra-Russian distributional conflicts when exports in non-convertible currency lose their markets. This is very likely to occur, first because of a general lack of competitiveness of Russian manufactures, and secondly because of the collapse of the former CMEA which was the major outlet for Russian non-convertible currency exports.

Fourthly, of the fifteen ASSRs listed in the Appendix Table A1⁵ only three contributed significantly to Russian hard currency exports, that is the Yakut ASSR (3.7 per cent of 1989 Russian hard currency earnings), the Bashkir ASSR (3.3 per cent) and the Tatar ASSR (2.2 per cent). These three autonomous republics accounted for almost 90 per cent of all

ASSRs hard currency exports in 1989. Thus, it does not come as a surprise that they are all at the forefront of striving for a maximum of economic autonomy. By contrast, a secession of the remaining autonomous republics from the Russian Federation would therefore have only a very limited impact on the export capacity of the Federation as a whole.

Fifthly, the Russian enclave in the Baltics, Kaliningrad Oblast, seems to suffer from the same mortgage as the urban centres, that is hosting consumer industries which were formerly engaged in exports to non-convertible currency area and which are therefore likely to bear a major part of the burden of adjustment.

In interpreting these data it should be borne in mind that they reflect the peculiarities of the socialist accounting system as well as additional methodological problems. All figures are in internal prices, which substantially undervalue raw materials relative to final goods [see, for example, the comparison of Russian and world market prices for selected industrial products in *Ekonomika i Zhizn*, No. 44, 1991, also quoted in Sigmund, 1992, p. 141]. Exports of consumer services like tourism are disregarded. Furthermore, the source neglects indirect exports, e.g. through components supplied to exporting enterprises or through the provision of business services like transport, port services, fairs, insurance etc. Such services are likely to be supplied by the urban centers. While the undervaluation of raw materials tends to understate the concentration of convertible currency exports (which include some industrial goods) across individual areas, the neglect of indirect exports leads to an underestimation of the contribution of urban areas to Russian exports. Due to the non-availability of data on both indirect exports and exports of services the net effect of these distortions cannot be assessed.

⁵ There is no information on export earnings of the Tuva ASSR located south of Krasnoiarsk at the Mongolian-Russian border.

III. A Cluster Analysis of Russian Exports

In this section the contribution of individual areas (autonomous republics, kraya, oblasti) to the various categories of exports is analysed in a more formal fashion. The focus is on a cluster analysis that aggregates these areas into ten groups on the basis of their exports to the convertible and non-convertible currency areas, exports of final goods, exports of raw materials and semi-manufactures, total population, and the share of urban population. This clustering is intended to provide evidence on how export incomes of individual areas would be affected by greater regionalization in the context of a price structure more responsive to market signals.

In order to highlight the interrelationships between the various indicators of export performance, Table 2 reports descriptive statistics for the variables used in the cluster analysis. As in the preceding section, the final goods category is subdivided into machinery and equipment, consumer goods, and machinery and equipment for international technical cooperation.

The correlation coefficients reveal that areas with large exports of raw materials and semi-manufactures had relatively large exports earnings in both convertible and non-convertible currency (correlation coefficients of .96 and .92, respectively). By contrast, the correlation between exports of final goods and convertible currency receipts was much weaker than in the case of export earnings in non-convertible currency. This observation reflects the fact that exports of final goods went predominantly to former CMEA countries [IMF, 1992, Table 13]. The one exception to that rule - exports of Lada cars to Western Europe - shows up in the low but significant coefficient (.20) for exports of machinery and equipment (XM) and convertible currency earnings.

Not surprisingly, the correlation coefficients for the two population variables demonstrate that exports of final goods tended to come from more populated and more urban areas than exports of raw materials and semi-manufactures. Accordingly, export earnings in non-convertible currency were more strongly correlated with both population and the share of urban population than receipts in convertible currency.

Table 2: Descriptive Statistics of Export Categories by Area of Origin, Russia 1989

	By currency area		By commodity category			
	convertible currency	non- convertible currency	raw material and semi- manufactures	machinery and equipment	consumer goods	machinery and equipment for international technical co- operation
	(XV)	(XNV)	(XRM)	(XM)	(XC)	(XMC)
	Correlation Coefficients (N=71)					
XV	-					
XNV	.90***	-				
XRM	.96***	.92***	-			
XM	.20**	.38***	.06*	-		
XC	.00	.15*	.07*	.22**	-	
XMC	.00	.29***	.04*	.36***	.31***	-
Population	.17*	.47***	.19*	.44***	.64***	.74***
Share of urban population	.18*	.34***	.19**	.26**	.36***	.36***
	Summary Statistics					
Mean	98.9	263.6	252.8	65.5	31.0	13.1
Standard Deviation	282.7	445.6	675.4	161.7	66.7	23.7
Gini-Hirschmann-Index (GH) ^a	.36	.23	.34	.32	.28	.25
Theil's Entropy Index (E) ^b	4.16	5.12	4.49	4.44	4.61	4.78

*** (**; *) Significantly different from 0 at the 1 per cent (5 per cent; 10 per cent) level of confidence (1-tailed sign).

^a $GH = (\sum_1 (\sigma_i)^2)^{.5}$, where σ_i is the share of area i in Russian exports of a given category [Koekkoek, 1992].

^b $E = \sum_1 (\sigma_i \cdot \log(1/\sigma_i))$

Among the summary statistics listed in Table 2, the Gini-Hirschman and Theil's Entropy indexes yield estimates of the degree of concentration of the various export categories across individual areas.⁶ According to both measures, export earnings in convertible currency were rather more concentrated than those in non-convertible currency. By contrast, differences in concentration among the four commodity categories were less pronounced. This discrepancy reflects the fact that hard currency exports were predominantly raw materials and semi-manufactures, whereas receipts in non-convertible currency stemmed more equally from exports of all commodity categories. The high degree of concentration of hard currency earnings (cf. Table 1) suggests that regionalization - especially greater control over natural resources at the regional level - would leave only few areas better off. Most regions - especially the centers of population - stand to lose from any arrangement that leaves resource rents (and, by implication, hard currency exports revenues) increasingly in the hands of regional governments of sparsely populated areas.

The cluster analysis reported in Table 3 provides a more structured view of regional disparities in the various categories of exports. The number of clusters (10) has been chosen on the basis of the change in the distance measure used in the clustering procedure, as well as for convenience of interpretation.⁷ Of the 10 clusters, 4 consist of only one area each, while the largest in terms of population contains 49 areas.

Tiumen Oblast (9) is the single most important cluster considering both convertible and non-convertible currency earnings (32.1 per cent and 18.0 per cent of the Russian total, respectively). As mentioned above, its exports consist almost exclusively of raw materials (oil). The same applies to clusters (2) and (3), which, jointly with Tiumen Oblast, accounted for almost half the Russian export earnings in convertible currency. These areas could expect to benefit considerably from regionalization.

⁶ The indexes are described and their statistical properties discussed in more detail in Koekkoek [1992, pp. 377 ff.].

⁷ Increasing the number of clusters to 12 would result in Moscow Oblast as well as Sverdlovsk (now Yekaterinburg), Cheliabinsk, Kemerovo, and Irkutsk Oblasti forming independent clusters. Limiting the number to 9 would lead to Krasnodar, Stavropol, and Altai Kraia being integrated with the Kalmyk, Dagestan, and Chechen-Ingush ASSRs [cf. Table 3].

Table 3: Cluster Analysis of Russian Exports by Area of Origin, 1989

Cluster no.	Cluster members	Descriptive Statistics of Independent Variables					Population (1000)	Share of rural population	
		Export earnings		Exports of		Population (1000)			Share of rural population
		in convertible currency	in non-convertible currency	final goods ^a	raw materials				
(1)	St. Petersburg City + Oblast Moscow Oblast	Mean	79.5	765.0	436.0	408.5	6683	0.86	
		StdDev	23.3	411.5	15.6	450.4	5	0.09	
		per cent	2.3	8.2	11.2	4.6	9.1	-	
(2)	Arkhangel'sk Oblast	Mean	437.0	475.0	60.0	852.0	2583	0.73	
		StdDev	99.0	244.7	80.6	65.1	1432	0.00	
		per cent	12.5	5.1	1.5	9.5	3.5	-	
(3)	Murmansk Oblast		362.0	195.0	0.0	557.0	1146	0.92	
		per cent	5.2	1.0	0.0	3.1	0.8	-	
(4)	Moscow City		175.0	838.0	913.0	100.0	8967	1.00	
		per cent	2.5	4.5	11.7	0.6	6.1	-	
(5)	Gorky Oblast	Mean	94.8	466.8	202.8	358.8	3745	0.78	
	Tatar ASSR	StdDev	75.8	98.8	113.2	207.0	597	0.08	
	Rostov Oblast	per cent	10.8	20.0	20.8	16.0	20.4	-	
	Sverdlovsk Oblast								
	Cheliabinsk Oblast								
	Bashkir ASSR								
	Kemerovo Oblast								
	Irkutsk Oblast								
(6)	Samara Oblast	Mean	658.0	1371.0	1315.0	714.0	3266	0.81	
		per cent	9.4	7.3	16.9	4.0	2.2	-	
(7)	Kalmyk ASSR	Mean	2.8	37.9	5.0	35.6	1130	0.44	
	Dagestan ASSR	StdDev	3.0	48.1	4.6	47.0	746	0.02	
	Chechen-Ingush ASSR	per cent	0.1	0.6	0.2	0.6	2.3	-	
(8)	Krasnodar Krai	Mean	25.0	226.7	137.0	114.7	3597	0.55	
	Stavropol Krai	StdDev	10.4	69.3	89.4	45.4	1314	0.01	
	Altai Krai	per cent	1.1	3.6	5.3	1.9	7.3	-	
(9)	Tiumen' Oblast		2251.0	3376.0	11.3	5615.7	3083	0.76	
		per cent	32.1	18.0	0.1	31.3	2.1	-	
(10)	All others (49 areas)	Mean	34.7	120.9	51.1	104.5	1387	0.59	
		StdDev	51.5	98.2	44.2	116.0	617	0.08	
		per cent	24.2	31.7	32.2	28.5	46.2	-	
	All areas	Mean	98.9	263.6	109.6	252.8	2071.5	0.70	
		StdDev	284.7	448.8	200.6	680.2	1507.1	0.11	

Cluster analysis uses Average Linkage Between Groups method based on the squared Euclidean distance measure. All independent variables are included in standardised form.

(a) Total exports minus raw materials and semi-manufactures.

The special position of Samara Oblast (6) stems from fairly large exports of final goods (namely Lada cars) to both the convertible and the non-convertible currency areas. This is in contrast to the remaining clusters with above-average exports of final goods ((1), (4), and (5)). Their position in Russia's export earnings in non-convertible currency was rather more prominent than in convertible currency receipts. The latter three clusters include the major centres of population with substantial exports of final goods, as well as areas with large exports of raw materials and semi-manufactures. The effect of regionalization in these areas depends, on the one hand, on a successful adjustment of their final goods supply to world market conditions. On the other hand, raw materials and semi-manufactures formerly exported to CMEA or developing countries under barter arrangements could conceivably be re-directed towards the world market, provided that the necessary transport infrastructure exists or traditional customers change their payments to convertible currency.

At any rate, these areas would probably fare better under regionalization than the remaining groupings listed in Table 3. Cluster (8) is distinguished from the group of "All others" (10) by large exports of final goods, mainly to the non-convertible currency area. Cluster (7) consists of three autonomous republics with particularly low exports of all categories, and a low share of urban population. The 49 areas subsumed in cluster (10) accounted for almost half the Russian population, but less than one third of non-convertible currency export earnings and less than one quarter of convertible currency receipts. All these regions are likely to find their access to foreign exchange eroded in a context of greater regional economic autonomy.

IV. Identifying the Major Product Groups: A Breakdown by Branch Ministries

The data source also provides a breakdown of Russian exports, denominated in internal prices, according to branch ministries and other institutions involved. This information is reported here because it allows to better identify the commodity composition of Russian exports than other data so far available [e.g. IMF, 1992, Tables 13 and 14]. Table A2

presents the full data set, and Table 4 contains a summary for the year 1990. This year has been selected because data for important ministries are not available for 1988 and 1989. In Table 4, institutions are only listed if they accounted for more than 1 per cent of convertible currency exports or more than 2 per cent of total exports in 1990.

As expected, institutions related to raw materials and basic manufactures⁸ accounted for a large share of both convertible and non-convertible export earnings (69.2 per cent and 53.9 per cent, respectively). The remainder consisted largely of engineering products, especially agricultural vehicles (with passenger cars also coming under this ministry) and heavy machinery.

The totals for all institutions correspond fairly closely to the totals for the Russian Federation on the basis of the data for individual areas (cf. Table A1). This observation suggests that at least for the year 1990 the coverage of the data source is more or less complete. It is unlikely, therefore, that the conclusions drawn from the data are distorted by a deficient data-base.⁹

V. Conclusions

This paper has analysed the contribution of 71 areas within the Russian Federation to extra-Soviet Union exports in order to highlight the implications of greater regional economic autonomy within the Russian Federation. Such autonomy is a likely outcome of the political transformation that the former centralized state is presently undergoing.

⁸ Oil, gas, coal, chemicals and petrochemicals, metallurgy, forestry, fishery.

⁹ Total exports as calculated from the present data source are somewhat smaller than other sources indicate [cf. IMF, 1992, Table 12; Goskomstat RSFSR, 1989]. It has been impossible to ascertain the source of this discrepancy. One likely cause lies in different systems of valuation (e.g. inclusion or exclusion of excise taxes), although all sources state that figures are in internal prices.

Table 4: Exports of Russia by Institution and Commodity Category, 1990 (internal prices; per cent)

	By currency area		By commodity category			
	convertible currency	non- convertible currency	raw materials and semi- manufactures	machinery and equipment	consumer goods	machinery and equipment for international technical co- operation
USSR Min. for the Oil and Gas Industry	12.4	12.3	17.9	0.1	0.0	0.3
Gasprom Trust	13.3	10.2	16.3	0.1	0.0	0.2
USSR Min. for the Coal Industry	3.6	1.3	2.9	0.1	0.0	0.1
Agrochim Association	1.4	3.6	3.9	0.0	2.7	0.0
USSR Min. for the Chemical and Petrochemical Industry	10.9	9.6	14.4	0.2	0.0	2.4
USSR Min. for the Metal Industry	6.1	11.4	13.6	0.4	0.6	6.4
USSR Ass. for Gold and Gems	3.7	0.4	0.4	0.0	17.6	0.0
Intersectoral Ass. 'Technochim'	1.2	0.2	0.8	0.0	0.0	0.0
USSR Min. for Electrotechnical Apparatus	1.0	2.0	0.2	4.6	3.3	9.3
USSR Min. for the Machine Tool Industry	1.2	1.1	0.3	3.9	0.0	2.6
USSR Min. for Agricultural Vehicles	11.1	8.9	0.1	44.4	0.2	4.9
USSR Min. for Defence	1.4	1.6	0.1	5.0	4.4	2.7
USSR Min. for Forestry	17.5	7.6	15.4	0.1	2.3	1.0
USSR Min. for Fishery	5.4	1.5	3.3	0.0	7.6	0.0
Min. for Heavy Mechanical Engineering	1.0	5.3	0.1	10.8	0.1	44.2
RSFSR Min. for Services	2.9	3.4	4.5	0.7	0.0	0.0
RSFSR Min. for Textile Industry	1.9	1.7	0.8	0.0	18.2	0.2
RSFSR Min. for Building of Water Pipes and Sewers	0.0	4.9	0.0	16.0	0.0	0.0
All other institutions	4.1	13.0	5.1	13.4	43.0	25.6
Total (Mill. Rubles)	7816.2	16543.2	16695.7	5124.4	1652.3	888.7

Source: See Table 1: own calculations.

The relevance of the available export data to the issue of changing relative income positions is two-fold. First, the regional breakdown of exports of natural resources and semi-manufactures probably reflects closely the regional composition of production. Therefore, areas with relatively large exports of these goods are likely to benefit most from increased regional control over the extraction of natural resources and distribution of resource rents. To our knowledge, similarly comprehensive data are not available for the extraction of natural resources or production of semi-manufactures after 1990. Although the volume of production or exports may have declined since 1990, there is no reason to assume that the specialization profiles of the individual entities have changed over a short period.

Secondly, the transformation of the economic system in Russia into a market economy is bound to take considerable time. In particular, the adjustment of relative prices (e.g. of energy products) to reflect genuine scarcities will make the physical capital stock widely obsolete and, as a result, will face substantial obstacles' such as social constraints, bureaucratic inertia, and, last but not least, political resistance of vested interests. Access to the international capital market will be restricted due to the general uncertainty of the situation, both for the country as a whole and for individual regions or enterprises. In this environment, export earnings which can be gained by utilizing the existing capital stock become a very valuable asset. Control over such export earnings in convertible currency on the part of regional governments will substantially affect the relative income positions of individual areas.

This second argument raises the question of whether the historic (1989/90) export data correctly reflect current export capacity. The analysis has demonstrated that exports of raw materials and semi-manufactures went to both the convertible and non-convertible currency areas. To the extent to which the latter exports cannot be redirected at convertible currency markets (or traditional customers cannot be made to pay in convertible currency), only those areas would benefit that already had substantial hard currency earnings under the "ancient regime". By contrast, areas that have traditionally exported final goods will find it very difficult to maintain their exports since formerly

protected or even guaranteed (i.e. non-convertible currency) markets in Eastern Europe and certain developing countries no longer exist. Even if such exports could, in principle, be redirected at hard currency markets, the setting up of marketing channels would necessarily take considerable time. In the short to medium term, therefore, historic export data can be assumed to approximate current export capacity reasonably well.

Our analysis has demonstrated that only a very small number of areas with extensive exports of natural resources would clearly benefit from greater regional economic autonomy (Tiumen, Arkhangel'sk, and Murmansk Oblasti). The prospects for most industrial centers with exports mainly of final goods and, to a lesser extent, raw materials and semi-manufactures depend crucially on whether these exports can be maintained under world market conditions. The remaining areas, which account for more than half the Russian population, have only rather small direct exports and therefore stand to lose from any arrangement that gives individual regions greater control over export earnings.

The policy implications of these findings are two-fold. First, given the overwhelming importance of export revenues for Russian economic development, the distribution of resource rents between the federal and regional governments has far-reaching consequences. Some arrangement will have to be found that leaves the federal government with enough resources to finance the reconstruction of the social and physical infrastructure that is a precondition for maintaining present exports, as well as for economic growth in the medium to long term.

Secondly, the speedy introduction of a price structure responsive to market signals, including a currency fully convertible at a market-determined exchange rate, would eliminate many of the windfall gains associated with regional control over export earnings. In particular, incomes derived from indirect exports of goods or non-factor services would be correctly accounted for. Clearly the introduction of prices reflecting genuine scarcities would face many political and institutional obstacles. Given that a certain amount of decentralization and regionalization now appears inevitable, however, to maintain the present, highly distorted price structure would result in considerable allocative inefficiency as well as avoidable interregional distributional conflicts.

Table A1: Exports of Russia by Area of Origin^a and Commodity Category, 1988-1990 (in internal prices; mill. of rubles)

Administrative unit	Region	Total exports			In convertible currency			Commodity Categories											
		1988	1989	1990	1988	1989	1990	Machinery and equipment			Raw materials and other manufactures						Machinery and equipment for international technical co-operation		
								1988	1989	1990	Total			of which: consumer goods			1988	1989	1990
St. Petersburg City and Oblast	I	1168.0	1152.0	985.0	158.0	96.0	128.0				224.0	249.0	228.0	784.0	771.0	611.0			
Novgorod Oblast	I	69.0	72.0	73.0	12.0	14.0	12.0	18.0	11.0	16.0	49.0	60.0	56.0	NA	43.0	40.0	2.2	0.7	0.5
Pskov Oblast	I	17.0	19.0	18.0	1.8	0.6	2.4	5.7	7.8	6.3	8.4	7.2	8.9	NA	5.0	6.0	3.1	3.7	2.8
Arkhangel'sk Oblast	II	605.0	809.0	635.0	338.0	507.0	402.0	2.9	2.8	0.8	602.0	806.0	633.0	0.0	0.0	0.0	0.7	0.4	0.9
Vologda Oblast	II	373.0	419.0	419.0	0.0	58.0	132.0	2.7	11.0	12.0	364.0	405.0	403.0	NA	11.0	10.0	5.6	2.9	3.7
Murmansk Oblast	II	468.0	557.0	520.0	259.0	362.0	408.0	0.0	0.0	0.2	468.0	557.0	520.0	0.0	0.0	0.0	0.0	0.0	0.0
Karelian ASSR	II	259.0	349.0	398.0	72.0	73.0	191.0	7.0	13.0	23.0	246.0	328.0	351.0	NA	11.0	12.0	6.0	8.0	14.0
Komi ASSR	II	242.0	280.0	228.0	0.0	65.0	82.0	0.5	0.6	0.2	241.0	279.0	228.0	0.0	0.0	0.0	0.0	0.0	0.0
Briansk Oblast	III	70.0	113.0	91.0	6.0	3.0	17.0	41.0	73.0	45.0	28.0	34.0	42.0	NA	31.0	38.0	1.5	5.6	4.5
Vladimir Oblast	III	166.0	152.0	111.0	12.0	12.0	20.0	117.0	98.0	64.0	47.0	51.0	42.0	NA	31.0	26.0	1.9	2.7	5.0
Ivanovo Oblast	III	138.0	166.0	147.0	26.0	29.0	27.0	20.0	19.0	0.0	113.0	145.0	144.0	NA	130.0	129.0	4.9	2.2	3.2
Kaluga Oblast	III	18.0	38.0	39.0	0.0	0.2	1.9	15.0	20.0	18.0	2.3	4.4	6.0	NA	3.0	4.0	1.1	13.0	15.0
Kostroma Oblast	III	94.0	109.0	101.0	20.0	39.0	38.0	15.0	22.0	17.0	76.0	84.0	80.0	NA	34.0	32.0	2.9	2.7	4.3
Moscow City	III	1060.0	1013.0	1002.0	89.0	175.0	238.0	326.0	368.0	455.0	714.0	608.0	522.0	NA	508.0	436.0	20.0	37.0	25.0
Moscow Oblast	III	611.0	537.0	453.0	59.0	63.0	82.0	213.0	161.0	178.0	353.0	266.0	175.0	NA	176.0	116.0	45.0	110.0	100.0
Orel Oblast	III	71.0	69.0	62.0	1.5	1.9	1.3	26.0	26.0	17.0	40.0	37.0	40.0	NA	7.0	8.0	5.0	5.7	4.8
Riazan' Oblast	III	151.0	240.0	182.0	62.0	98.0	75.0	36.0	38.0	34.0	112.0	199.0	144.0	NA	10.0	7.0	3.3	3.0	4.0
Smolensk Oblast	III	112.0	103.0	141.0	74.0	66.0	111.0	5.0	3.3	2.9	103.0	96.0	136.0	74.0	90.0	128.0	3.9	3.8	1.7
Kalinin Oblast	III	80.0	80.0	58.0	11.0	13.0	3.0	15.0	18.0	12.0	60.0	56.0	41.0	NA	21.0	15.0	5.1	6.0	4.5
Tula Oblast	III	271.0	248.0	302.0	5.0	17.0	19.0	20.0	23.0	21.0	237.0	204.0	257.0	NA	16.0	20.0	14.0	21.0	24.0
Yaroslavl Oblast	III	299.0	304.0	242.0	19.0	22.0	25.0	30.0	29.0	36.0	262.0	270.0	200.0	NA	21.0	16.0	7.0	5.0	6.3
Kirov Oblast	IV	220.0	247.0	204.0	41.0	79.0	89.0	14.0	34.0	17.0	161.0	201.0	178.0	NA	97.0	86.0	45.0	12.0	9.0
Gorky Oblast	IV	905.0	554.0	591.0	44.0	46.0	84.0	254.0	272.0	232.0	634.0	266.0	345.0	NA	15.0	20.0	17.0	16.0	14.0
Mari ASSR	IV	10.3	11.0	11.0	1.0	1.7	1.4	7.7	7.9	6.4	2.5	2.7	4.4	NA	2.0	3.0	0.1	0.4	0.2
Mordovian ASSR	IV	33.0	30.0	29.0	3.0	7.1	7.9	20.0	19.0	19.0	10.0	7.7	6.7	NA	3.0	3.0	3.0	3.5	3.2
Chuvash ASSR	IV	88.0	108.0	125.0	12.0	8.0	25.0	55.0	76.0	96.0	30.0	28.0	25.0	NA	7.0	6.0	3.4	3.9	3.6

continued ...

Administrative Unit	Region	Total exports						In convertible currency												
								Commodity Categories												
								Machinery and equipment			Raw materials and other manufactures						Machinery and equipment for international technical co-operation			
									Total			of which: consumer goods								
		1988	1989	1990	1988	1989	1990	1988	1989	1990	1988	1989	1990	1988	1989	1990	1988	1989	1990	
Belgorod Oblast	V	62.0	120.0	126.0	31.0	65.0	56.0	14.0	9.0	11.0	45.0	99.0	95.0	NA	5.0	5.0	3.0	12.0	20.0	
Voronezh Oblast	V	145.0	174.0	152.0	11.0	28.0	29.0	52.0	67.0	60.0	85.0	95.0	89.0	NA	3.0	3.0	8.0	12.0	3.5	
Kursk Oblast	V	201.0	226.0	209.0	28.0	11.0	9.0	11.0	17.0	16.0	186.0	202.0	188.0	NA	32.0	30.0	4.5	6.8	4.7	
Lipetsk Oblast	V	188.0	265.0	241.0	5.0	10.0	10.0	13.0	18.0	20.0	173.0	244.0	218.0	NA	5.0	4.0	1.6	2.8	3.0	
Tambov Oblast	V	23.0	18.0	31.0	1.8	4.7	6.7	13.0	5.7	3.1	8.0	11.0	27.0	NA	1.0	2.0	1.6	0.6	0.5	
Astrakhan Oblast	VI	16.0	59.0	44.0	0.3	0.1	6.4	2.0	28.0	22.0	14.0	30.0	22.0	NA	19.0	14.0	0.0	0.4	0.1	
Volgograd Oblast	VI	318.0	253.0	286.0	30.0	23.0	40.0	132.0	85.0	64.0	165.0	154.0	206.0	NA	7.0	9.0	21.0	14.0	16.0	
Riubyshev Oblast	VI	2172.0	2029.0	1785.0	728.0	658.0	812.0	1254.0	1267.0	1285.0	898.0	727.0	472.0	NA	13.0	8.0	20.0	35.0	28.0	
Penza Oblast	VI	118.0	137.0	94.0	27.0	27.0	23.0	38.0	49.0	35.0	74.0	69.0	48.0	NA	56.0	39.0	6.0	19.0	11.0	
Saratov Oblast	VI	296.0	303.0	317.0	26.0	27.0	29.0	34.0	59.0	63.0	253.0	237.0	245.0	NA	18.0	19.0	9.1	7.7	9.1	
Ul'ianovsk Oblast	VI	137.0	120.0	118.0	39.0	33.0	41.0	87.0	101.0	111.0	46.0	15.0	5.0	NA	0.5	0.3	3.6	3.5	1.9	
Kalmyk ASSR	VI	0.1	0.0	47.0	0.0	0.0	0.0	0.1	0.0	47.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Tatar ASSR	VI	1397.0	610.0	552.0	349.0	152.0	138.0	377.0	211.0	136.0	1003.0	382.0	405.0	NA	55.0	27.0	17.0	17.0	11.0	
Krasnodar Krai	VII	363.0	302.0	350.0	16.0	13.0	50.0	38.0	43.0	50.0	310.0	238.0	291.0	NA	105.0	131.0	15.0	21.0	9.0	
Stavropol Krai	VII	206.0	184.0	193.0	34.0	32.0	41.0	13.0	14.0	19.0	187.0	164.0	168.0	NA	16.0	16.0	6.3	6.3	6.3	
Rostov Oblast	VII	352.0	400.0	422.0	14.0	32.0	19.0	195.0	296.0	215.0	133.0	73.0	121.0	NA	22.0	36.0	24.0	31.0	86.0	
Dagestan ASSR	VII	21.0	24.0	40.0	0.0	2.4	23.0	5.4	5.2	8.0	15.0	18.0	32.0	0.0	0.0	0.0	0.5	1.2	0.1	
Kabarda-Balkar ASSR	VII	10.0	17.0	21.0	0.3	0.4	0.1	2.4	8.0	4.8	2.9	2.0	11.0	NA	1.0	5.0	4.7	7.3	4.9	
Severnaia Osetiia ASSR	VII	12.0	25.0	14.5	0.1	0.1	5.0	4.2	3.3	1.1	7.6	22.0	13.0	NA	0.4	0.6	0.1	0.3	0.1	
Chechen-Ingush ASSR	VII	83.0	98.0	81.0	0.1	6.0	5.0	6.4	5.8	3.8	74.0	89.0	74.0	0.0	0.1	0.0	3.0	3.2	2.6	
Kurgan Oblast	VIII	28.0	34.0	37.0	2.2	2.8	0.7	10.0	7.0	11.0	18.0	27.0	26.0	NA	26.0	25.0	0.0	0.0	0.1	
Orenburg Oblast	VIII	489.0	464.0	439.0	230.0	218.0	206.0	32.0	20.0	19.0	455.0	419.0	400.0	NA	24.0	23.0	2.0	25.0	20.0	
Perm' Oblast	VIII	817.0	472.0	543.0	59.0	91.0	113.0	19.0	48.0	57.0	793.0	407.0	472.0	NA	34.0	36.0	5.0	17.0	14.0	
Sverdlovsk Oblast	VIII	565.0	568.0	554.0	76.0	109.0	132.0	55.0	62.0	70.0	423.0	414.0	424.0	NA	54.0	55.0	87.0	92.0	60.0	
Cheliabinsk Oblast	VIII	545.0	470.0	476.0	32.0	14.0	34.0	128.0	118.0	82.0	338.0	292.0	339.0	NA	15.0	17.0	79.0	60.0	55.0	
Bashkir ASSR	VIII	539.0	629.0	644.0	199.0	233.0	241.0	113.0	124.0	58.0	405.0	480.0	568.0	NA	53.0	63.0	21.0	25.0	18.0	
Udmurt ASSR	VIII	125.0	96.0	127.0	15.0	23.0	60.0	17.0	29.0	51.0	101.0	60.0	69.0	NA	22.0	25.0	7.3	7.0	7.1	

... Table A1 continued

Administrative Unit	Region	Total exports						In convertible currency						Commodity Categories															
		1988			1989			1990			1988			1989			1990			Machinery and equipment			Raw materials and other manufactures			Machinery and equipment for international technical co-operation			
		1988	1989	1990	1988	1989	1990	1988	1989	1990	1988	1989	1990	1988	1989	1990	1988	1989	1990	1988	1989	1990	1988	1989	1990	1988	1989	1990	
Altai Krai	IX	205.0	269.0	272.0	7.0	30.0	55.0	75.0	153.0	131.0	94.0	77.0	96.0	NA	14.0	17.0	36.0	39.0	45.0										
Kemerovo Oblast	IX	478.0	442.0	450.0	62.0	38.0	93.0	5.0	11.0	10.0	452.0	417.0	431.0	NA	23.0	22.0	21.0	14.0	9.0										
Novosibirsk Oblast	IX	126.0	168.0	115.0	0.4	2.0	4.7	43.0	52.0	77.0	78.0	111.0	34.0	NA	40.0	12.0	5.1	5.4	4.3										
Omsk Oblast	IX	124.0	141.0	127.0	20.0	30.0	27.0	22.0	18.0	9.0	101.0	120.0	116.0	NA	7.0	7.0	1.0	2.8	1.8										
Tomsk Oblast	IX	107.0	152.0	145.0	5.0	40.0	71.0	9.0	10.0	12.0	97.0	141.0	131.0	NA	1.3	9.0	0.5	0.9	1.5										
Tiumen' Oblast	IX	4704.0	5627.0	4807.0	1882.0	2251.0	1951.0	11.0	10.0	8.0	4692.0	5616.0	4799.0	NA	0.3	0.3	0.9	1.1	0.4										
Krasnoyarsk Krai	X	745.0	1015.0	1167.0	53.0	367.0	783.0	27.0	47.0	37.0	716.0	965.0	1126.0	NA	67.0	78.0	2.5	2.7	4.1										
Irkutsk Oblast	X	890.0	819.0	718.0	181.0	134.0	274.0	18.0	18.0	9.0	856.0	783.0	681.0	0.0	0.0	0.0	16.0	18.0	28.0										
Chita Oblast	X	19.0	22.0	31.0	0.0	1.3	1.4	4.9	4.0	3.3	12.0	14.0	26.0	0.0	0.0	0.0	2.4	4.0	2.2										
Buriat ASSR	X	35.0	70.0	52.0	0.2	29.0	25.0	1.3	2.3	1.7	33.0	67.0	49.0	NA	8.0	6.0	0.7	1.1	1.1										
Primor'e Krai	XI	225.0	279.0	445.0	0.0	0.0	160.0	0.3	0.6	1.4	224.0	278.0	443.0	0.0	0.0	0.0	0.9	0.3	0.7										
Khabarovsk Krai	XI	112.0	85.0	338.0	0.8	1.5	8.0	10.0	11.0	7.0	95.0	65.0	326.0	NA	9.0	45.0	7.0	9.0	5.0										
Amur Oblast	XI	71.0	84.0	113.0	1.5	18.0	35.0	1.7	1.6	3.9	68.0	82.0	108.0	0.0	0.0	0.0	0.7	0.9	0.8										
Kamchatka Oblast	XI	70.0	97.0	67.0	0.0	31.0	43.0	0.0	0.0	0.0	70.0	97.0	67.0	0.0	0.0	0.0	0.0	0.0	0.0										
Magadan Oblast	XI	30.0	22.0	12.0	0.0	0.0	5.0	0.0	0.0	0.0	30.0	22.0	12.0	0.0	0.0	0.0	0.0	0.0	0.0										
Sakhalin Oblast	XI	97.0	77.0	68.0	0.1	0.2	46.0	0.0	0.0	0.0	97.0	77.0	68.0	0.0	0.0	0.0	0.0	0.0	0.0										
Yakut ASSR	XI	265.0	280.0	245.0	260.0	258.0	244.0	0.0	0.0	0.0	265.0	280.0	245.0	0.0	0.0	0.0	0.0	0.0	0.0										
Kaliningrad Oblast		203.0	207.0	191.0	94.0	116.0	113.0	13.0	12.0	11.0	187.0	194.0	179.0	NA	127.0	117.0	3.4	1.6	1.0										
Total		25332.4	25732.0	24463.5	5847.1	7019.0	8291.9	4397.2	4651.9	4400.9	20126.7	20149.0	19164.0	NA	2199.6	2102.2	810.2	929.1	897.1										

a "Commodity composition of supplies for export of enterprises and organisations of (regional entity N.M.: autonomous republic, krai, oblast)".

Source: See Table 1.

Table A2: Exports of Russia by Institution and Commodity Category, 1988-1990 (in internal prices; mill. of rubles)

Institution	Total exports			In convertible currency			Commodity Categories											
	1988	1989	1990	1988	1989	1990	Machinery and equipment			Raw materials and other manufactures			Machinery and equipment for international technical co-operation					
							1988	1989	1990	Total			of which: consumer goods					
1988	1989	1990	1988	1989	1990	1988				1989	1990	1988	1989	1990	1988	1989	1990	
USSR Min. for Energy	110.0	121.0	129.0	87.0	0.5	0.0	5.0	6.0	3.7	93.0	102.0	99.6	0.0	0.0	0.0	12.0	13.0	25.7
USSR Min. for the Oil and Gas Industry	NA	3449.0	2959.0	NA	NA	966.0	NA	0.1	5.2	NA	3448.0	2991.0	0.0	0.0	0.0	NA	1.0	2.7
Concern Trust "Gasprom"	0.0	2844.0	2724.0	0.0	0.0	1037.0	0.0	0.0	6.7	0.0	2844.0	2716.0	0.0	0.0	0.0	0.0	0.0	1.8
USSR Min. for Coal Industry	413.0	436.0	487.0	283.0	245.0	280.0	6.0	6.0	5.2	404.0	427.0	481.0	NA	0.0	0.0	3.0	3.0	0.9
Association "Agrochim"	0.0	591.0	699.0	0.0	45.0	106.0	0.0	0.0	0.0	0.0	589.0	699.0	0.0	38.0	45.0	0.0	2.0	0.2
USSR Min. for Chemical and Petrochemical Industry	NA	NA	2438.0	NA	NA	853.0	NA	NA	11.2	NA	NA	2406.0	NA	NA	0.0	NA	NA	21.2
USSR Min. for Metal Industry	NA	2494.0	2357.0	NA	388.0	477.0	NA	16.0	22.2	NA	2430.0	2278.0	NA	11.0	10.0	NA	48.0	57.3
USSR Ass. for Gold and Gem	162.0	198.0	355.0	72.0	163.0	292.0	0.0	0.0	0.0	162.0	198.0	355.0	0.0	162.0	290.0	0.0	0.0	0.0
Intersectoral Ass. "Technochim"	72.0	120.0	128.0	24.0	34.0	90.6	0.0	1.0	0.2	72.0	119.0	127.5	0.0	0.0	0.0	0.0	0.3	0.3
Intersectoral Ass. "Radiopribor" for Radios	0.0	11.0	1.1	0.0	0.0	0.0	0.0	9.0	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	0.2
Intersectoral Ass. for Refrigerators	0.0	8.0	8.5	0.0	0.0	0.0	0.0	8.0	7.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.6
USSR Min. for Electrotechnical Apparatus	0.0	495.0	409.4	0.0	79.0	79.5	0.0	229.0	237.7	0.0	154.0	89.2	0.0	94.0	54.0	0.0	112.0	82.5
Intersectoral National Ass. for Clock Industry	0.0	62.0	78.0	0.0	38.0	40.0	0.0	13.0	0.0	0.0	49.0	78.0	0.0	41.0	67.0	0.0	0.3	0.1
USSR Min. for Machine Tool Industry	235.0	245.0	271.0	52.0	70.0	94.0	211.0	208.0	202.0	10.0	11.0	46.0	NA	0.1	0.4	14.0	26.0	23.0
USSR Min. for Agricultural Vehicles	0.0	2388.0	2332.0	0.0	711.0	867.0	0.0	2303.0	2275.0	0.0	37.0	13.5	0.0	11.0	4.0	0.0	48.0	43.5
Intersectoral Ass. for Building Machines	0.0	22.0	10.6	0.0	0.5	0.6	0.0	17.0	8.6	0.0	0.1	0.0	0.0	0.0	0.0	0.0	5.0	2.0
USSR Min. for Aeroplane Industry	274.0	334.0	382.0	9.0	14.0	40.7	96.0	155.0	227.6	131.0	144.0	147.6	0.0	90.0	92.0	47.0	35.0	6.6
USSR Min. for Ship-Building Industry	0.0	71.0	64.6	0.0	0.1	0.2	0.0	55.0	54.7	0.0	4.0	5.8	0.0	0.2	0.3	0.0	12.0	4.1
Intersectoral National Ass. "Energomaschi"	196.0	185.0	217.0	6.0	15.0	28.0	68.0	100.0	92.2	7.0	10.0	0.0	0.0	0.0	0.0	121.0	75.0	124.7
Min. for Broadcasting Industry	116.0	191.0	156.0	2.0	3.0	6.1	47.0	112.0	33.0	69.0	74.0	118.5	NA	69.0	111.0	1.0	5.0	4.5
USSR Min. for Electronics	NA	219.0	195.0	NA	17.0	23.3	NA	114.0	155.7	NA	99.0	33.0	NA	26.0	9.0	NA	6.0	6.3
USSR Min. for Defence	NA	471.0	377.0	NA	75.0	112.0	NA	229.0	256.6	NA	203.0	96.4	NA	154.0	73.0	NA	39.0	24.0
USSR Min. for Mechanical Engineering	NA	31.0	60.6	NA	0.3	40.0	NA	10.0	12.6	NA	8.0	46.3	NA	4.0	23.0	NA	3.0	1.7
USSR Min. for Forestry Industry	2109.0	2903.0	2624.0	714.0	1153.0	1364.5	NA	1.0	3.4	2103.0	2892.0	2611.6	NA	42.0	38.0	6.0	10.0	9.0

continued ...

... Table A2 continued

Institution	Total exports						In convertible currency						Commodity Categories					
							Machinery and equipment			Raw materials and other manufactures			Machinery and equipment for international technical co-operation					
	1988	1989	1990	1988	1989	1990	1988	1989	1990	Total	1988	1989	1990	1988	1989	1990	1988	1989
Ass. for Building Materials "Sojusstrojmaterialyi"	0.0	64.0	114.6	0.0	3.0	12.4	0.0	4.0	2.3	0.0	54.0	98.7	0.0	0.0	0.0	0.0	6.0	13.6
USSR Min. for Fishery	607.0	717.0	679.7	414.0	449.0	424.0	1.0	1.0	1.0	606.0	716.0	678.7	NA	132.0	125.0	0.0	0.0	0.0
Min. for Medical Industry	116.0	104.0	99.0	17.0	22.0	16.7	0.0	0.0	0.5	116.0	104.0	98.5	NA	76.0	72.0	0.0	0.0	0.0
Min. for Railway	45.0	41.0	37.0	0.4	0.3	0.2	36.0	35.0	30.5	8.0	5.0	6.4	0.0	0.0	0.0	1.0	1.0	0.1
USSR Min. for Civil Aviation	22.0	24.0	21.5	3.0	6.0	4.6	21.0	24.0	4.0	0.0	0.0	17.5	0.0	0.0	0.0	1.0	0.0	0.0
USSR Min. for Post	NA	119.0	48.0	NA	0.4	1.4	NA	25.0	36.6	NA	89.0	7.8	NA	82.0	5.0	NA	5.0	3.6
USSR Min. for Transport Infrastructure	6.4	7.0	6.2	1.0	0.1	0.4	5.0	3.0	4.5	0.8	2.0	0.9	0.0	0.0	0.0	0.6	2.0	0.8
USSR Min. for Special Construction	15.0	23.0	29.7	0.0	0.1	0.4	1.0	2.0	0.4	1.0	5.0	7.4	NA	2.0	3.0	13.0	16.0	21.9
USSR Min. for Geology	1.4	3.2	6.0	0.0	0.4	0.4	0.0	2.3	2.4	0.6	0.5	3.5	NA	0.2	1.6	0.8	0.4	0.1
USSR National Procurement	5.0	13.0	6.3	2.0	2.0	0.5	0.0	0.3	0.0	5.0	13.0	6.3	0.0	0.0	0.0	0.0	0.1	0.0
USSR National Committee for Printing	0.0	41.0	16.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	41.0	16.0	0.0	19.0	7.0	0.0	0.0	0.0
Min. for Heavy Mechanical Engineering	592.0	1130.0	960.4	34.0	88.0	81.0	445.0	744.0	552.4	4.0	4.0	15.3	NA	0.3	1.0	143.0	382.0	392.7
Min. for Agriculture and Food Production	359.0	499.0	473.0	36.0	58.0	59.0	2.0	1.0	1.9	356.0	498.0	469.0	0.0	198.0	187.0	1.0	0.2	2.1
RSFSR Locally Managed Industry	30.0	24.0	21.3	4.0	6.0	7.6	1.4	2.0	1.4	28.0	22.0	19.8	NA	14.0	13.0	0.3	0.0	0.1
RSFSR Car Repairs	5.4	7.0	7.8	0.5	0.3	0.1	3.7	4.7	6.4	0.0	0.3	0.2	0.0	0.0	0.0	1.7	2.0	1.2
RSFSR Services	180.0	295.0	797.0	0.0	0.0	228.0	0.3	104.0	38.4	165.0	147.0	759.0	0.0	0.0	0.0	15.0	44.0	0.0
RSFSR Min. for Bread and Cakes	16.0	19.0	40.3	0.0	0.0	0.0	0.0	0.0	0.1	16.0	19.0	40.3	NA	6.0	13.0	0.0	0.0	0.0
RSFSR Combustible Industry	9.0	6.0	6.8	0.8	2.0	1.3	0.0	0.0	0.0	9.0	6.0	6.8	0.0	0.0	0.0	0.0	0.0	0.0
RSFSR Light Industry	176.0	518.0	209.0	49.0	362.0	23.7	0.0	0.0	0.0	173.0	515.0	203.0	NA	237.0	99.0	3.0	3.0	6.3
RSFSR Building Materials	66.0	100.0	28.0	9.0	18.0	10.0	1.0	2.0	0.7	58.0	96.0	26.2	NA	28.0	8.0	7.0	2.0	1.1
RSFSR Textile Industry	498.0	563.0	431.0	89.0	117.0	147.0	36.0	1.0	0.6	458.0	560.0	428.0	NA	394.0	301.0	4.0	2.0	2.1
RSFSR Building of Water Pipes and Sewers	684.0	1141.0	818.0	0.0	0.0	0.0	549.0	600.0	818.0	135.0	149.0	0.0	0.0	0.0	0.0	0.0	392.0	0.0
Total	7120.0	23337.0	24359.4	1909.0	4187.0	7816.2	1535.0	5147.0	5124.4	5190.0	16888.0	18348.0	0.0	1931.0	1652.3	395.0	1304.0	888.7

Source: See Table 1.

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