

The Disintegration of the Soviet Union

by
Daniel Gros

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Table of Contents

Abstract	1
Introduction	2
1. The Starting Point	2
1.1 The Centre Vanishes	3
1.2 Economic Relations among the Soviet Republics	6
2. Trade Patterns	9
2.1 Explaining Past Inter-Republican Trade Patterns	9
2.2 Estimating the Shift in Trade	12
3. Should the FSU or the CIS Form an Economic and Monetary Union?	16
3.1 A "Soviet Customs Union"?	16
3.2 The Former Soviet Union as an Optimal Currency Area?	18
i. Trade Links	18
ii. Asymmetric Shocks	18
iii. Price Stability	19
iv. Financing Budget Deficits	19
4. The "Worst Monetary Constitution One Can Imagine"?	20
4.1 The Rouble Zone in 1992-93: A Recipe for Inflation or a Disciplinary Device?	24
4.2 The Use of the Rouble as a Currency Board Arrangement	26
4.3 The Evidence	29
4.4 Implications	31
5. An Opportunity Missed: The Interstate Bank	31
5.1 The Gains from Multilateralism	32
5.2 The Interstate Bank	37
6. Concluding Remarks	38
Figures	40
References	44
Endnotes	48

Table of Contents, cont.

Tables

1.	Soviet Republics: Trade with the Union and the Rest of the World in 1988	7
2.	Soviet Republics: Inter-Republican Trade Account in 1988	8
3.	Comparative Estimates of Inter-Republican Trade	11
4.	The Importance of Transport and Communications	12
5.	International Trade of USSR and Russia	15

Boxes

1.	The Gravity Model	10
2.	Predicting Future Trade Flows	13
3.	From Soviet to Russian Bank Notes	21
4.	Chronology of the Dissolution of the Rouble Zone	22
5.	Cash versus Non-Cash	27
6.	Quantifying the Losses from Bilateralism	32
7.	Intra-CIS Trade and the Causes of Decline	34
8.	The Interstate Bank	37

Figures

1.	Money Supply in the CIS	40
2.	Wages and Inflation in the CIS	41
3.	Currencies of Belarus, Ukraine, and Moldavië	42
4.	Currencies of Central Asiatic Republics of the FSU	43

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Daniel Gros ·

Abstract

The one absolute certain way of bringing this nation to ruin, of preventing all possibility of its continuing to be a nation at all, would be to permit it to become a tangle of squabbling nationalities.

Theodore Roosevelt (1915)

The former Soviet Union (FSU) constituted a unified, tightly integrated economic space with one currency and one authority responsible for regulating all aspects of the economy. By January 1992, this space was divided between 15 independent states which initially retained the same currency but which all had widely different economic-policy programmes. Two years later, the unified currency had been replaced by 15 separate national currencies, and customs barriers had been erected along the formerly internal frontiers.

Was this result desirable and/or inevitable and what were the economic consequences of the dissolution of the FSU?

Some have argued that the "monetary" separation should have been faster because the ill-defined rouble zone that existed in 1992-93 was inflationary and that the collapse of intra-FSU trade was desirable because that trade had not been driven by the market. Others have argued that because of the high degree of integration of the economies of the former Soviet republics, the FSU should have been maintained at least as an economic and monetary union.

This paper argues that both of these extreme positions are wrong: the separation was desirable and inevitable; attempts to maintain an economic and monetary union were doomed from the start. The way in which the rouble zone was maintained in limbo for almost two years was not satisfactory. Nevertheless, the ill-defined rouble zone of 1992-93 cannot really be held responsible for inflation in Russia or elsewhere in the Commonwealth of Independent States (CIS). Moreover, the speed with which the existing trade links were disrupted made the process of separation very costly for all participants.

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Introduction

The purpose of this paper is to analyse the economic aspects of the disintegration of the former Soviet Union (FSU). Opinions about the process tend to one of two extremes. One maintains that the economic links between the former Soviet republics were artificially created by central planners. The intensity of inter-republican trade should therefore not be of consideration for policy-makers in the newly independent states who should have introduced national currencies immediately in 1992. The opposite extreme (and one that was prevalent among Western official institutions until 1991-92), argued that the former Soviet republics were so tightly integrated that they should have stayed together in the economic sphere even after they became politically independent.

The analysis of this paper suggests that both extremes were wrong and that serious policy mistakes were made during the transition. If the transition had been managed carefully, i.e. taking into account both the trade structures inherited and their likely future evolution, the economic costs of the collapse of the FSU could have been mitigated. The virtual breakdown of intra-CIS trade could have been avoided and Russia's output decline could even have been less severe.

Section 1 opens with a brief description of the starting point, namely the high degree of integration and the massive transfers from Russia that were implicit in the old pricing system. However, a closer look at inter-republican trade within the FSU provided by Section 2 leads to two apparently conflicting conclusions: If one accepts the limited degree of openness of the FSU to the rest of the world, inter-republican trade had a structure similar to that of trade among market economies. However, the level of inter-republican trade was clearly much above what one would expect if trade with the rest of the world were to be opened. This suggests that while inter-republican trade had its own logic under the old system, it was condemned to become marginal in the long run.

Section 3 shows that, once reforms had started, it did not make sense to keep the former Soviet republics together in an economic and monetary union as was often suggested in 1991-92. Section 4 then turns to the monetary aspects and asks whether the FSU really had during its last years of its existence "the worst monetary constitution one can imagine"? It also shows that the strange rouble zone that survived until late 1993 cannot be considered a cause of inflation as has often been argued. Section 5 turns to a missed opportunity, namely that of the multilateral clearing system that had been agreed to among ten CIS states, but was never implemented. Section 6 presents conclusions.

1. The Starting Point

This section sets the stage for the subsequent discussion by providing a brief analysis of the last years of the Soviet Union and some basic facts about the former Soviet republics and their economic relations. The reader who is already familiar with this background is invited to go directly to Section 2.

1.1. The Centre Vanishes

The former Soviet Union was a centralised state in which all power came from one structure, namely the Communist Party. Formally speaking, however, the Union was a federal structure based on the 15 constituent republics. The populations that lived in the different republics maintained a separate identity in terms of language and culture throughout the Soviet period.

We are concerned here with the economic aspects of the process of disintegration. Most of this paper is devoted to an analysis of the events that followed the dissolution of the Soviet Union. In this section, we discuss in particular the interplay between disintegration and economic reform during the years that preceded the onset of serious reforms in Russia at the beginning of 1992.

The formal dissolution of the Soviet Union in late 1991 was only the final act of a gradual process that had started much earlier and that evolved differently from one republic to another. One common feature, however, was that the republican structures, which had hitherto been practically irrelevant, were suddenly filled with life through the initiatives of the local population and political elites. This process first occurred in the Baltic and Caucasus states where there still existed the memory of a separate statehood. Subsequently, however, it spread to most other republics, including Russia.

As the policy of Glasnost advanced, the republican structures thus became more active, and starting in 1989-90, they felt strong enough to also deal with economic reform, which constituted after all the central issue of that period. The two processes of disintegration and economic reform thus became intertwined.

Even a brief look at the history of attempted reforms in the former Soviet Union shows there was no shortage of plans. In 1990 alone, no less than four major reform programmes were discussed at the highest political level. Despite some differences in emphasis, they all agreed on three goals: a market economy, stabilisation of the economy and the need to maintain an economic and monetary union for the territory of the Soviet Union.

However, none of these programmes could be implemented because of the "war of laws" that was being waged at the same time. One republic after the other passed a declaration of sovereignty stating that its laws took precedence over Union laws whereas the Union government insisted that Union law took precedence. Since at that stage the Union government under Gorbachev did not want, or perhaps rather dared, to use force, the reforms could be implemented only after agreement on a new Union Treaty had been reached that would define the respective powers of the republics and the Union. An agreement was reached in May 1991, but when it was about to be put in force the attempted August putsch set in motion a chain of events that led within four months to the demise of the Soviet Union.

The increasing regional disintegration was thus the main reason why the reform plans of 1990 and 1991 were not implemented. Moreover, the loss of control of the Union

government over the budgets of the republics was an important factor for the large public-sector deficit that destabilised the Soviet economy. Many Western observers and the Union government argued therefore that a disintegration of the Soviet Union into a number of independent economic units that competed against each other should have been avoided even in the face of the demands for total independence advanced by some republics already in 1990.

The paralysis of economic policy because of the war of laws was certainly damaging for the reform process. This is not intended to imply, however, that a centralised approach to economic reform would necessarily have been superior to competition in reform. (See Gros and Steinherr, 1991, for details.)

In economic terms, the fundamental point is that any sub-unit that is part of a larger area with distorted prices can gain by implementing reforms on its own and allow its inhabitants to trade freely at true market prices. It was often alleged in 1990-91 that price reform had to be implemented at the Union level because otherwise differences in prices would lead consumers to buy where the goods are cheapest.

For example, if any republic had implemented a complete (a partial reform might not be beneficial because of second-best considerations) price reform (i.e. abolishing all subsidies and taxes), its price structure would have been different from that of the rest of the Union. Residents of other republics would then certainly have come to plunder shops for those goods that had become cheaper in that particular republic. Nevertheless, this plundering would have been desirable since all these goods would have been sold at their marginal cost of production, and an increase in demand can only lead to an increase in the surplus of domestic producers. Given the Soviet habit of taxing many consumer goods viewed as luxury items, in practice the producers of a large range of consumer goods would have benefited. And vice versa, consumers in the Republic that initiated a reform in isolation would have gained by buying goods in the rest of the Union at the old subsidised prices, e.g. bread and other staple commodities.

However, all this "arbitrage" is the essence of a market economy and should thus not have been viewed as a cost, but a gain in efficiency. Moreover, price reform would also have acted on the supply side. Entrepreneurs in a republic that was the first to implement fundamental reforms would therefore gain by being able to satisfy a pent-up demand for diversified products coming from the entire Union area. While a reaction in supply is not immediate (as the subsequent experience of the reform process showed), any supply response would have only increased the benefits from reform.

In an uncoordinated reform process, those republics that are slow to reform lose because residents of the republic that initiates reforms on its own then buy more Union goods that are priced below cost elsewhere. This has the advantage that it is an incentive to implement reforms in the remainder of the Union as well.

Competition in reform would thus have had advantages. The real problem with an uncoordinated reform process would have been a political one. The response to unilateral

price reform in some republics turned out to be border controls to suppress commodity arbitrage. These border controls contributed to the collapse of intra-FSU trade and were in themselves costly. However, the task of an enlightened Union government would have been to maintain open borders and thus allow competitive pressures to act at least within the borders of the Union.

The reaction to the price reform undertaken unilaterally by Russia in January of 1992 shows that the economic mechanism was very powerful. The other smaller republics could not seriously contemplate closing their borders to Russia and following its lead. This sort of competition in reform should have been allowed early on. China offers an example of regional structures that compete in reforms in which each province emulates the most successful, and usually most open, provinces to improve the standard of living of the local population. (See also Quian and Gérard, 1994.)

In the area of macroeconomics, however, competition can be dangerous because negative externalities can arise quite easily. This is apparent in the monetary sphere: it is not possible to have one currency and several competing central banks. Each central bank has an incentive to create as much money as possible because the inflationary consequences are borne by everyone whereas the benefits remain with the home country.

This was the central problem during the Soviet Union's last year of existence. It is discussed at some length below (Section 4), since it was at the root of the developments in 1992-93. In the monetary sphere, it is thus clear that competition within one currency area is dangerous.

In the fiscal area, a similar danger existed. Indeed, a central aspect of the power struggle between the Union and the republics concerned the distribution of expenditure and taxes. Despite the formal federal structure of the FSU, there was no organised fiscal decentralisation. Only the Union was empowered to levy taxes, but in practice the source of public-sector revenues (enterprises and wage taxes) fell increasingly under the control of the republican authorities. The latter were obviously tempted to keep the revenues for themselves while holding the Union government responsible for the payment of subsidies and the provision of public goods. The result was a growing deficit of the Union government whereas the republican budgets remained balanced until 1991, when all controls were lifted. The deficit of the Union government was, of course, not unavoidable. If the Union government had given priority to achieving macroeconomic stabilisation, it could have slashed subsidies and balanced the budget. Gorbachev, however, either did not realise this or felt that he was politically too weak to do this. Quian and Roland (1994) show that a well organised fiscal decentralisation can actually be beneficial as long as there is a clear will at the centre to stabilise.

We therefore conclude that competition in economic reform would have been beneficial, but that a poorly defined macroeconomic system in which different levels of power compete can lead to a disaster. The Soviet Union was in the worst of all worlds during its last years of existence: no competition in reform, but experiencing macroeconomic destabilisation.

Was this situation unavoidable? If Gorbachev had wanted to create a market economy, he should have allowed the republics much greater freedom early on in structural reforms (elimination of price controls, privatisation, etc.), in exchange for stricter controls on the macroeconomic side. As this fundamental choice was not made, the reform process never got off the ground in 1990-91, and the macroeconomic destabilisation that had occurred in the meantime made the structural reforms that started in the newly independent states in early 1992 much more difficult.

1.2. Economic Relations among the Soviet Republics

As long as the FSU was one country, it was only natural that the constituent parts of this economic space were tightly integrated. The high degree of integration became important only when the local population, acting through the republican structures, asked first for more autonomy and finally total independence. The desire for independence was in most cases politically motivated, especially in the case of the Baltics, but this conflict between political aspirations for full independence contrasted initially with the existence of a common economic space.

Just how tightly the 15 republics were integrated is shown in Table 1. For the smaller ones, trade with other republics accounted for one-half of output and even for Russia, inter-republican trade was more than twice as important as international trade. Moreover, as most trade had gone through Moscow, the smaller republics often traded four and sometimes six times as intensively with the rest of the FSU than with the outside world. This extraordinary degree of integration was the reason why it was often argued that the republics could not survive on their own.

Table 1
Soviet Republics: Trade with the Union and Rest of the World in 1988

	Trade as a % of GNP*			Population (millions)	
	Total	Domestic	Foreign		
USSR Total	30	21	8	284.5	
Russia	22	13	9	146.5	
Ukraine	34	27	7	51.4	
Belorussia	52	45	7	10.1	
Uzbekistan	40	34	5	19.6	
Kazakhstan	34	29	4	16.5	
Kirghizia	46	40	5	4.2	
Tadzhikistan	44	38	6	5.0	
Turkmenistan		42	38	4	3.5
Armenia	54	48	5	3.5	
Georgia	44	38	5	5.3	
Azerbaijan	41	35	5	6.9	
Lithuania	55	47	7	3.7	
Moldova	52	46	6	4.2	
Latvia	54	47	7	2.7	
Estonia	59	50	8	1.6	

Note: Table uses 1988 data.

* Assuming the same GNP/NMP ratio as for the USSR as a whole.

Source: Statistical Year Book of the Soviet Union, 1990.

Another reason why it was often argued that most republics had an interest in staying in the Soviet Union was that the Soviet pricing system implied very large transfers from the producers of underpriced raw materials (mainly Russia) to the producers of overpriced manufactured goods. Table 2 shows therefore the actual trade balance of individual republics and the trade balance they would have had if energy had been priced at world market levels. This table shows that the smaller industrialised republics received an implicit subsidy of about 10 to 20% of the value of their production (NMP). For the central Asian states, this implicit subsidy came on top of direct transfers from the Union budget.

Table 2
Soviet Republics: Inter-Republican Trade Account in 1988

	Trade Account as a % of NMP	
	At world prices ^a	Only energy at world prices ^b
Russia	6.5	3.5
Ukraine	-3.5	-3.7
Belorussia	1.9	7.3
Uzbekistan	-24.2	-20.7
Kazakhstan	-23.2	-22.3
Kirghizia	-18.4	-14.1
Tadzhikistan	-31.8	-26.9
Turkmenistan	-3.7	8.4
Armenia	-3.2	6.0
Georgia	-16.1	2.1
Azerbaijan	10.2	20.8
Lithuania	-35.4	-19.5
Moldova	-20.1	4.0
Latvia	-24.1	-8.9
Estonia	-28.2	-9.7

^a Trade account adjusted for total world import prices means that trade was evaluated at world market prices. In practice, this means that the values of trade of all branches were adjusted by a conversion factor equal to world import price/inter-republican price.

^b Trade account with only energy evaluated at world prices.

Source: Bofinger and Gros (1992), p. 29.

It was already clear, even before the Soviet Union was dissolved, that the old pattern of inter-republican trade, and subsidies, within the former Soviet Union could not be sustained in the emerging new environment of 15 independent states with market-based economies, and 15 different currencies. It was also clear then that most republics would in the long run dramatically increase their trade with the rest of the world.

The following section quantifies the shift towards world trade that can be expected in the long run and estimates to what extent the inter-republican trade pattern under the old system was similar to what one would expect from the experience of market economies.

2. Trade Patterns: Past and Future

2.1. Explaining Past Inter-Republican Trade Patterns

All of the former republics, with the possible exception of Russia, are rather open economies. It is therefore vital for them to have an idea of how their foreign trade will evolve in the future. Most Western economists and most of the new policy-makers agree that in the long run there has to be a radical re-orientation in trade, away from inter-republican trade and towards more trade with the West.

As shown in Table 1, under the old regime, inter-republican trade was several times larger than international trade (i.e. trade with the former COMECON area and the West together). It was clear even before the FSU collapsed that this situation had to change. It never has been, however, and to some extent it still is not, a straightforward exercise to determine the size and the speed of the change. The main purpose of this section of the paper is thus to quantify the extent to which trade with the West (and in particular with the European Community) can be expected to grow relative to inter-republican trade.

The approach used here is the standard so-called gravity equation which starts from the idea that the amount of bilateral trade between two countries is determined by their size and the distance between them. The larger the two countries, in terms of income and population, the more trade there should be between them. The greater the distance, the less trade one should observe. Box 1 provides a more detailed description of the gravity approach.

The existing estimates of this gravity approach show that it explains trade patterns among market economies well. The three variables mentioned so far (income, population and distance) together with dummy variables for other factors (such as whether or not the two countries have a common frontier, participate in a preferential trade agreement or share a common language) explain usually well over one-half of the overall variance of the geographical distribution of trade. A typical finding is also that the elasticity of trade with respect to income exceeds one.

Gros and Dautrebande (1992b) follow this approach using data about the matrix of bilateral trade between all the 15 former republics. They explain the amount of bilateral trade (of all possible 210 combinations) as a function of the NMP of the two partners, the distance between them (and their areas as a further proxy for distance). These variables explain over 90% of the variability in the geographical distribution of inter-republican trade. Moreover, the parameter estimates for the elasticities of trade with respect to income and distance are quite similar to the ones found in other studies of the gravity approach which always used data from market economies. This is surprising since it implies that the Soviet planning system led to a geographical distribution of trade that is similar to the one typical for market economies.

Box 1. The Gravity Model

The gravity model explains the geographical distribution of the bilateral trade of a given country (or region) with its different trading partners. It is usually estimated on cross-section data referring to a single year or average of several years.

The gravity model describes the trade flow, say exports, from a particular country *i* to another country *j*. Exports from country *i* are assumed to depend on national income in *i* (to proxy for the supply of exportables) and national income in *j* (to proxy for the demand for *i*'s exportables in country *j*).

Per capita output is sometimes also used to take into account the idea that, as income increases the share of tradables, overall income should increase; i.e. for a given overall income, a country with a higher income per capita should trade more intensively (have more exports and imports) than a poorer country.

Similar arguments apply if one estimates the distribution of imports: national income of the home country represents demand, and national income of the foreign country represents supply.

Most of the other variables used in the estimation of the gravity approach reflect transportation costs and other obstacles to trade. The most obvious factor here is distance, which should have a negative effect of trade. The area of the importing or exporting country should also have a negative effect because it proxies the transportation cost from the hinterland to the economic centre. A related variable is adjacency, i.e. the presence (or absence) of a common border which should affect trade positively.

The equation estimated here is therefore :

$$\begin{aligned} \text{Ln (exports from } i \text{ to } j) = & a * \text{ln (distance between } i \text{ and } j) \\ & +b * \text{(Adjacency: dummy)} \\ & +c * \text{ln (NMP of } i) \\ & +d * \text{ln (NMP of } j) \\ & +e * \text{ln (per capita NMP of } i) \\ & +f * \text{ln (per capita NMP of } j) \\ & +g * \text{ln (area of } i) \\ & +h * \text{ln (area of } j) \end{aligned}$$

The same equation was estimated for imports of country *i* from country *j*. Data for the complete 15*15 matrix of inter-republican trade for 1987 (the most recent year available) was then used to estimate this type of equation. See Gros and Dautrebande (1992b) for details.

End of Box

A comparison with the results for market economies is even more revealing of the good fit of the gravity approach for intra-FSU trade. This is done in Table 3 below which compares our results for inter-republican exports to three other widely known estimates: Aitken (1973), Havrylyshyn and Pritchett (1991), henceforth H&P, and Wang and Winters (1991), henceforth W&W.¹

Table 3
Comparative Estimates of Inter-Republican Trade

Explanatory Variables	Inter-Republican Trade	H&P, 21 Middle-Income LDCs	W&W, 76 Market Economies	Aitken, 12 European countries
constant	-10.48 (-7.9)	-9.54 (-5.7)	-12.49 (34.2)	1.07
ln(dist ij)	-0.39 (-6.3)	-1.56 (-16.4)	-0.75 (22.3)	-0.35 (2.74)
border	0.59 (3.1)	1.15 (4.0)	0.78 (3.3)	0.89 (4.41)
ln(GDPi)	1.01 (19.1)	0.86 (13.7)	0.79	0.72
ln(GDP/pop _i)	0.32 (2.7)	1.05 (5.5)	0.38	0.33
ln(areai)	-0.11 (-3.0)	-0.01 (-0.2)		
ln(GDP _j)	0.69 (13.2)	0.93 (23.3)	0.80	0.54
ln(GDP/pop _j)	-0.06 (-0.5)	0.22 (3.3)	0.22	0.15
ln(areaj)	0.16 (4.4)	-0.18 (-6.5)		
Other variables				
trade integration dummies:				
Linder effect		0.08 (0.9)		
	0.92		0.7	0.87
R ²	0.47	1.67		0.22
S.E.	210	420	4320	132
Observations				

The basic message of this table is that the intra-FSU trade is explained remarkably well by the gravity approach. First of all, the fit of the inter-republican equation is better than that of the two recent estimates, H&P and W&W. Only the estimate for Europe in the 1960s has a better standard error, but its adjusted R² is still lower. While one should not put too much emphasis on these indicators of the overall fit, it is clear that the economic variables used here explain the distribution of inter-republican trade remarkably well.

A comparison of the point estimates of the different coefficients for the main explanatory variables also reveals more similarities than differences,² which suggests that the distribution of inter-republican trade was governed by similar considerations.³

Given that the gravity equation performs so well for inter-republican trade (in some respect better than for trade among market economies), the size of the parameter that shows the relationship between trade and distance becomes the key to the argument that intra-FSU trade was not driven by the market and should hence disappear as soon as possible. The implicit argument has often been that the planners set up enterprises in remote areas without any regard for transaction costs.

Table 3 shows for inter-republican trade an elasticity of trade with respect to distance of around 0.4, which is close to those found for European market economies⁴ (i.e. Aitken, 1973, who finds 0.35), but this does not necessarily indicate that Soviet planners took transportation costs adequately into account. Given the logarithmic formulation, this question cannot really be answered on the basis of the coefficients of the gravity equations.⁵ If transport costs were on average twice as high in the FSU than in Europe, this would just show up in the constant.

Another very simple piece of evidence, however, suggests that transportation costs were not excessive: in the FSU about 6% of national income (NMP) was devoted to the transport and communications sector. This is almost exactly equal to the share of this sector in the European economy (measured by gross value added). Since one could argue that given the distorted pricing system in the Soviet system, NMP shares cannot really be compared to shares in value added at market prices in the West, one can compare shares of employment. However, the shares of total employment in this sector in the FSU was also similar to that of the EU as shown in Table 4.⁶

Table 4
The Importance of Transport and Communications

Share of transport and communications in:	FSU (1985)	European Union (1987)
NMP (Gross value added)	6.1	6.5
Employment	7.2	6.2

Source: IMF et al. (1991), Lipton and Sachs (1992) and Eurostat (*National Accounts, Detailed Tables by Branches*).

2.2. Estimating the Shift in Trade

Turning to the future, the approach used here is again quite simple. It starts by using parameter estimates from the studies on the geographical distribution of international trade

of market economies already mentioned above. The results from the estimations of the old intra-Soviet Union trade are *not* used here, because one might object that this would perpetuate Soviet trade patterns. This objection would in fact be without basis because the parameter estimates are similar. Hence it does not really matter which set of parameter estimates one uses.

A prediction of the future distribution of trade of a given former Soviet republic, say Ukraine, can then be obtained by multiplying these parameter estimates with the actual values of the income and the population of Ukraine (and those of all its potential trading partners) and the distances between Ukraine and its trading partners. (See Box 2 for details.)

This exercise yields estimates of the shift in the direction of trade that the former Soviet republics will experience in the long run. The same method is also used in Baldwin (1994), Wang and Winters (1991) and Havrylyshyn and Pritchett (1991) to predict the future trade patterns of the Central European countries.

To apply this approach to the former republics thus only requires data about income, population and distances. The latter two variables can be measured easily; but to guess the income per capita of the former republics in the long run is more difficult. We assumed that Russia has a per capita income of \$2,500. This is somewhat above the actual value for 1993-94 and given the continuing decline in production, should not be far from the actual value for the end of this decade. The results would not be affected even if Russia were to grow by 30% more than assumed here because this would still leave Russia's GDP below one-tenth that of the EU. See Box 2 for more details.

Table 4 summarises the outcome of this exercise. The main result is that most of the international trade of the former republics will be with the West and not with other former republics. The reason for this is that in gravity equations the most important determinant of the distribution of trade is income. The income of the entire former Soviet Union (all the former republics together) is less than one-fifth that of the European Community or the US. This size effect is not offset by a strong distance effect for the western former republics for which trade with the EC (or the EEA of the EC and EFTA combined) will thus become several times as important as trade with the other former republics.

Given its large market size and relative proximity, the EC emerges thus as the dominant trading partner of all former republics. The US is further away than the EC and its market is slightly smaller; it is therefore not surprising that it trades much less with the former republics.⁷

Box 2. Predicting Future Trade Flows

We use here the parameter estimates of three estimates of the gravity model for market economies. Two represent recent work with data from the 1980s and the third is a classic study referring to Europe in the 1960s. As will be shown below, however, all three sets of parameter estimates yield to quite similar predictions for the future trade pattern of the former republics. The three studies used are the same ones already used above as

comparators for the analysis of the past inter-republican trade pattern: Wang and Winters (1991), Havrylyshyn and Pritchett (1991) and Aitken (1973). See Table 3 above for the parameter estimates obtained by these studies and for a description of their coverage and approach.

To form predictions about the future trade patterns of the former republics, we now need to combine the parameter estimates with the independent variables which are distance, population and some economic data. The former do not change a lot over time. The only economic input needed to calculate the future trade of the former republics is national income (GDP). Estimates of the income of the former Soviet Union were always unreliable and the experience with Central Europe has shown that most Western estimates (especially those made by the CIA) were on the high side. We therefore use a low estimate of \$2,500 for the entire Soviet Union, which should be a reasonable minimum as argued in Gros and Steinherr (1991). This figure is also close to, but still above, the GDP per capita of Russia in 1994, the third full year with a market economy. Since the per capita income in Russia is, according to official Soviet figures for 1987, approximately equal to the average for the entire old Soviet Union, we assumed that Russia has a GDP per capita of \$2,500. GDP per capita for all the other former republics was then calculated by multiplying the \$2,500 with the ratio NMP per capita of the republic concerned over NMP per capita of Russia. Multiplying the per capita figures by population then yields the total GDP for each republic.

As before, the distance between two regions is calculated as the straight line distance between the two economic centres (usually the capital) of the regions. The adjacency dummy equals 2 if the two countries share a common border; otherwise, it equals 1.

In the case of Russia, it is difficult to maintain the assumption that the capital is the main economic centre for trade. In other words, the distance between Alma Ata and Moscow might not be the relevant factor to use to predict trade between Russia and Kazakhstan since Kazakhstan would naturally trade more with western Siberia than with the Moscow region. Moreover, for the trade between Japan and Russia, the distance between Vladivostok-Tokyo should be more relevant than the distance Moscow-Tokyo. Russia was therefore divided into six regions with the following centres: former Leningrad, Moscow, Volgograd, former Sverdlovsk, Novosibirsk and Vladivostok. Each region was assigned a total income equal to its share in the total population of Russia.

Using the parameter estimates of Table 3 above, we then calculate the potential exports of the former Soviet republics (14 countries plus the 6 regions of Russia) to the other republics and to 8 other countries or regions: the EC, Scandinavia, Japan, Germany, United States, Central Europe (Czechoslovakia, Hungary, Poland, Romania, Bulgaria, Yugoslavia), China and India. These countries and regions accounted for 89% of Soviet exports in 1989.

A number of authors have used the gravity equation to predict not only trade shares, but also the actual level of trade (e.g. in billions of US\$). However, it has not been recognised that the figures for the predicted exports are strongly influenced by the constant in the estimation of the three studies used here. This constant represents the joint effect of all the factors that affect trade (exports) proportionally and does not affect distribution. This

constant is usually not precisely estimated. In Havrylyshyn and Pritchett, the standard error surrounding the point estimate of the constant exceeds 1.5; this implies that even a one standard error band of confidence around the predictions for the absolute values is plus or minus 3. Since this is in logarithmic terms, this implies that the upperbound is 20 times as large as the lower bound. The predictions for the trade flows in absolute dollar terms are therefore not reliable.

We therefore concentrate here on the *relative distribution* of the predicted exports in percentage terms over the main economic regions taken into account.

End of Box

Table 5 presents the predicted percentage distribution of the overall international trade for the average of all former republics, indicated by the FSU, and Russia separately, using the mean of the prediction that one obtains based on the parameter estimates of the three studies mentioned above. Gros and Dautrebande (1992b) show that the predictions one obtains from each of these three different studies are very similar.⁸

Table 5
Predicted Trade Patterns of Former Republics

% of Total Trade with:	EC+Scan	Japan	US	FSU	Cent. EU	Russia
USSR	45.6	17.4	12.2	15.3	7.4	7.3
Russia	45.9	24.9	13.7	7.5	5.4	

This table shows that the gravity model predicts that the share of trade with the other former republics will have to drop dramatically. In the past, the ratio international trade to inter-republican trade was 1:4. Table 3 suggests that in the future this ratio might be the other way round, i.e. closer to 4:1. The mean of the three predictions is that the (average) former republic will conduct only 15.3% of its trade with the other former republics, this corresponds actually to a ratio of inter-republican trade to trade with the rest of the world of 5:1. Since the average former republic will only conduct 7.3% of its trade with Russia, it is unlikely that in the long run Russia will continue to be able to dominate its neighbours in economic terms as it does at present.

The share of the EC (plus Scandinavia) is always estimated at around 50% and that of the six countries of Central Europe considered here is between 6 and 8% for the average of all former republics and between 4 and 7.5% for Russia. The collapse of trade with Central

Europe that has already taken place is thus unlikely to be reversed in the future, and the EC emerges as the dominant trading partner for Russia and most of the other former republics.

Overall these results confirm the widely accepted notion that "gravity" will reorient trade of the former republics radically towards the West. A large part of the adjustment has already taken place in the most reformist countries. In Estonia, for example, where the most radical reforms were implemented, trade with the EU plus Scandinavia now accounts for two-thirds of all trade, compared to 1987, when all non-FSU trade accounted for only 16% of the total as shown in Table 1. In the case of Russia, the ratio of trade with the EU to trade with FSU is now about 2:1, whereas it used to be 1:2 in 1987. It needs hardly to be emphasised that this reorientation of trade does not call for any specific policy actions, but it should lead policy-makers in the CIS to pay more attention to their trade relations with the EU.

3. Should the FSU or the CIS Form an Economic and Monetary Union?

Economic integration can bring large economic benefits. For the European Community, economic arguments have been one of the main motors of the integration process (see European Commission, 1988 and 1990). Do the same arguments apply to the former Soviet Union and justify the attempts to preserve or create a "Soviet" economic space encompassing the CIS? We discuss this issue separately for monetary and trade matters.

3.1. A Soviet Customs Union?

Exports and imports within the CIS are now subject to a variety of restrictions. In 1992-93, most of them were in the form of quantitative limitations instead of tariffs since many of the peripheral CIS countries were much slower in their reform effort than Russia. This has now (1994-95) changed; trade is now subject "only" to ordinary tariffs, contradictory VAT rules and, this is the most serious part, the whim of customs officials. All barriers to trade have economic costs and these trade restrictions certainly contributed to the decline in inter-republican trade that has intensified the disruption of production. A policy of free trade pursued by all former republics unilaterally represents the optimal scenario from a general point of view. While this was politically impossible, an acceptable second-best alternative might have been to keep the CIS together in a customs union. Should the CIS countries form a customs union now?

The standard analysis of customs unions shows that the benefits from joining a customs union are primarily a function of i) the degree of protectionism practised by the union, ii) the size of the union, and iii) the regional distribution of trade.

- i) If the external trade policy of a potential CIS customs union were close to free trade, all member states should participate since they would then have virtually free trade with the entire world. However, this is not a likely outcome because Russia would