

The Disintegration of the Soviet Union

by
Daniel Gros

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The Disintegration of the Soviet Union

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 Two years later, the unified currency had been replaced by 15 separate national currencies, and customs barriers had been erected along the formerly internal frontiers.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 :

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

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(GDPj) | 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: | | 0.08 (0.9) | | |
| Linder effect | 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

certainly dominate any customs union and has already switched to a restrictive policy on hard-currency imports as the rouble has strengthened. The smaller CIS countries are much more likely to keep a liberal trade policy stance on their own because in most cases they do not have domestic products to protect. The other CIS members would therefore be better off conducting their own liberal commercial policy: inside a CIS customs union, they would import more high-cost products from the other republics (so-called trade diversion).

- ii) The size of the customs union is also an important factor because the larger the customs union, the more likely it is that it contains the lowest-cost producers of most goods. Therefore this aspect does not favour a potential CIS because, in economic terms, the former Soviet Union is quite small. As mentioned above, the value of the output produced by all 15 former republics is less than one-fifth that of the EU.
- iii) The most fundamental reason for believing that the FSU is not an attractive trading block is that in the long run inter-republican trade will drastically decline in importance as documented above. It does not make sense to create a customs union with a group of countries that do not trade intensively with each other.

In a sense, a CIS customs union would be similar to the number of customs unions (and other preferential trading areas) between the poorer countries of Latin America. These regional agreements have never really worked for the same reason: trade among their members is usually only a small fraction of overall trade. In the case of the CIS, one has to add some practical problems that have impeded the implementation of the numerous treaties and agreements to create a customs union in the CIS that have been concluded over the last years. A first issue that was never really resolved centred around the decision-making mechanism for setting the tariffs for the union. Russia was not really ready to subordinate its own tariff structure to majority voting in some sort of customs council and the other CIS states were not willing to abdicate the determination of their external tariff policy entirely to Russia. Ensuring a proper redistribution of the tariff proceeds also turned out to be difficult to organise.

Finally, Russia insisted, until 1994, that any free trade or customs union agreement in the CIS should exclude *export* tariffs. The background to this curious demand for asymmetry was that Russia wanted to keep domestic energy prices low through export tariffs on oil and gas, but was not willing to (let Russian oil producers) supply the other CIS countries with large amounts of oil and gas at a fraction of the world market price.

These political difficulties came on top of the fact that sectoral interests were determining trade policy more and more in Russia and pushing it into a direction that was significantly different from that of the other CIS countries. This is why a customs union was not created, despite a treaty to this effect that had been signed and ratified in due form.

3.2. The Former Soviet Union as an Optimal Currency Area?

Would the CIS countries benefit⁹ economically from having a common currency? The "optimal currency area" literature¹⁰ says that countries should form a monetary union if i) they trade intensively among themselves, ii) asymmetric shocks will be minor, iii) the monetary union will deliver price stability and iv) a national fiscal policy cannot threaten the common monetary policy stance. These points are discussed in a medium-run perspective to put the specific problems that dominated the events of 1992-93 into a broader framework.

i. Trade Links

The first criterion in deciding whether or not a country should be part of a monetary union is the importance of trade within the potential currency area. It was shown above that in the past, trade links were very intense, but that the future should bring a completely different trade pattern. The likely re-orientation of trade illustrated above is thus a first argument against a Soviet Monetary Union.

One might argue that the Baltic states (and some other smaller CIS countries) are too small to be viable currency areas on their own. What should they do? Section 2 above already showed that there should be a redirection of trade. For the Baltics, one can be more specific. Once they are integrated into the world economy, their geographical trade patterns are likely to resemble that of Finland today. In that case they would gain more from joining the emerging European Economic and Monetary Union (EMU) than from remaining in the rouble area. Estonia has already effectively done this through the currency board arrangement that links its currency to the DM.

For the larger republics, inter-republican trade was less important in relation to output (see Table 1 above; for Ukraine it was under 30%, comparable to the ratio for France, which has approximately the same population) so that the economic argument against a separate national currency is weaker. The larger republics may therefore represent viable currency areas of their own.

ii. Asymmetric Shocks

The main advantage of a separate currency is that exchange-rate changes can facilitate the adjustment to nationally-differentiated shocks. The classic argument goes like this: imagine a country that is hit by an adverse shock to its balance of payments and that would need a real depreciation in order to restore external balance. If the country is part of a monetary union, the only way this real depreciation can be achieved is by a fall in domestic wages and prices (relative to those in the rest of the currency area). In the face of an external shock, the exchange rate is a useful adjustment tool because a fall in wages and prices is often difficult to achieve and always takes some time, whereas the exchange rate can be moved instantaneously.

In the case of the former Soviet Union, this argument is particularly relevant for several reasons. In the short run, the reform process in itself already provides a source for large regionally-differentiated shocks because price reform (especially energy price reform) leads to large changes in relative prices and therefore an important redistribution of income given the high degree of specialisation of many republics and regions. For example, wages in Ukraine fell to less than one-third of the Russian level in real terms even after Ukraine achieved the same level of stabilisation as Russia in 1994. Given that Ukraine imports most of its energy, the direction of movement in relative wages was not surprising, but the extraordinary size would have been difficult to predict given that under the Soviet regime wages were about at the same level. Belarus experienced a similar real depreciation. Figure 2 in Section 4 provides more evidence on the evolution of relative wages in the CIS. Moreover, the overall reform process proceeded at different speeds in the different former republics.

In the longer run, one large source of asymmetric shocks will remain. Because the value of the Russian rouble will be determined by world market prices for oil and gas, the rouble will become essentially a "petro currency". Given that Russia (together with Kazakhstan and Azerbaijan) accounts for most energy exports of the former Soviet Union, changes in the world market prices for oil would thus constitute a major source of asymmetric shocks.

iii. Price Stability

The most important consideration concerning a monetary union is that a common currency also implies a common inflation rate. This could be achieved through maintaining the rouble as a common currency or through an EMS type of fixed exchange-rate system with the rouble providing the anchor like the DM in the EMS. Can a link to the rouble assure price stability in either case? This has clearly not been the case so far and it is not likely that in the future the rouble will be a very stable currency. However, there is also little reason to believe that national currencies will be more (or less) stable than the Russian rouble, so that this argument seems to cut both ways (except for the Baltics and Kirgistan, all of the former republics adopted even more inflationary policies than did Russia when they were forced to introduce their own currencies). Again, one has to consider all the options. For the former Western republics, an alternative that could provide some price stability would be a link to the ecu. In the short run, this was too tight a policy constraint for most former republics, but in the long run, the ecu, which by then would be the single currency of the enlarged Community, should provide a stable anchor.

iv. Financing Budget Deficits

The decisive factor that destroyed all attempts to maintain the rouble as the common currency, however, was different from the optimal-currency-area type considerations discussed so far. In these economies in transition, the government can finance deficits only by printing money, since in the early years of the reform process, markets for public-debt instruments simply did not exist. A common currency implies therefore also a common

fiscal policy, at least during the transition period. There were enormous differences in the degree to which different governments were willing and able to withstand the multiple pressures for social-safety nets and subsidies to uncompetitive industries. At one extreme, one finds Estonia where a balanced budget was seen as crucial for the survival of the country and at the other, would be Ukraine where a weak government tried to spend its way out of the structural problems.

The sharp difference between the short and the long run that has come up repeatedly in this section suggests one conclusion. Even under the best of circumstances, most of the former republics would sooner or later have found that it in their interest to establish a national currency (and perhaps link it to the ecu). The real question therefore is how the disintegration of the rouble zone should have been organised. The optimal solution would have been a stable and convertible rouble to serve for some time as a common currency. As soon as the banking systems in the other CIS member countries had developed enough to allow for normal international banking relationships, these countries should have introduced their own national currencies one by one. Currencies that would also have been convertible and stable. This did not happen, however. The rouble was semi-stabilised only after two years, and in the meantime, trade among CIS countries collapsed as the normal payment channels were disrupted. The following section analyses what actually happened and why it did not conform to this prescription.

4. The "Worst Monetary Constitution One Can Imagine"?

The seeds for the dissolution of the (Soviet) rouble zone were already sown some time before the dissolution of the Soviet Union. The rouble zone started to crumble once the Central Bank of the Soviet Union (called Gosbank) started to lose control over its head offices located in the 15 republics.

The Gosbank of the Union was organised, like all institutions of the Soviet Union, formally along federal lines. There were thus head offices in all 15 republics. As long as the party controlled everything, this did not really matter, but things changed when, gradually during 1991, the Union Gosbank lost control over its republican branches. When the different republics declared their sovereignty, the head offices of the Gosbank became "central" banks on their own, that were supposed to be free of control from the Union.

There were thus 15 "independent" central banks,¹¹ with the self-declared authority to create money in one currency area. This situation was not tenable because each "national central" bank had an incentive to give its clientele (state-owned enterprises, republican governments) as much credit as possible. The consequences in terms of greater inflationary pressures would be borne by the entire Union. There was thus a clear free-rider problem, which was most acute in the case of the smaller republics. For example, if the central bank of a republic that initially accounts for 5% of the total credit supply (and 5% of the total income of the FSU) doubles the credit of its own government, the total Union credit increases only by 5%. A small republic could thus assume that even huge rates of domestic credit expansion would have virtually no inflationary consequences for itself. This is why it was

often said that in 1991 the Soviet Union had "the worst monetary constitution one can imagine".¹² As will be shown below, however, the Union authorities could have controlled the situation as long as they controlled the printing presses.

At the end of 1991, the Soviet Union ceased to exist.¹³ But all the national central banks that emerged from the republican head offices of the Gosbank continued to give credit in roubles (implicitly Soviet republics). But, despite a very serious cash shortage, they dared not print additional "Soviet" roubles, and all printing presses were located in Russia. (See Box 3 for the story of bank note designs in Russia.) The Baltic republics and Ukraine announced immediately that they would introduce their own currency as quickly as possible. In fact this did not happen right away: Estonia started the process in late June 1992 and Ukraine followed only in November. However, these countries started right away to print substitute roubles (so-called coupons).

Box 3. From Soviet to Russian Bank Notes

Soviet bank notes carried inscriptions in all the 14 official languages of the FSU. In the course of 1992, the Russian mint began to substitute the old Soviet designs on bank notes. In a first step the translation of the face value (1, 3, 5, etc., roubles) in all 14 official languages of the FSU was suppressed, and the only language used on bank notes was Russian. But until mid-1992, these bank notes still carried the heading the State Bank of the USSR and conserved the old Soviet symbols. The next step came with rouble notes without Soviet symbols (i.e. without Lenin's face and the hammer and sickle) that bore the mark "issued by the Central Bank of Russia". These bank notes circulated for some time in the 11 former Soviet republics that did not introduce a national currency until end-1993, despite the fact that they are clearly Russian and not Soviet or CIS. The old Soviet cash was gradually taken out of circulation in 1992-93 as the old, lower-denomination bank notes became useless because of inflation. The final step came when the CBR announced, in July of 1993, that all the pre-1992 bank notes would no longer be accepted in Russia after September and that Russia would no longer deliver any cash to the other republics unless they sign a treaty to subordinate their monetary and fiscal policies to that of Russia. This completed the creation of the Russian rouble (see next box).

End of Box

In the meantime, most of the former Soviet republics were thus in the strange situation that they still used the Soviet rouble and their central banks continued to grant credit in roubles. Thus, the free-rider problem continued in 1992. The main change with respect to 1991 was that after price liberalisation, excessive credit expansion could (and did) show up quickly in higher prices. In a sense, the free-rider problem became even more acute than before since the states that intended to introduce their own currency anyway had no concern at all for a stable purchasing power of the rouble.

The situation was different for Russia. Since Russia considered itself to be the successor

state to the dissolved USSR, it wanted to keep the rouble. Gaidar's government pledged to stabilise the economy with a tight monetary and fiscal policy in Russia. It recognised quickly, however, that it could never succeed if the central banks of the other countries from the FSU could continue to issue credit in roubles. One solution would have been monetary reform, i.e. simply to officially introduce a Russian rouble. This path was not used, however, for political reasons.

The problem for Russian policy-makers was therefore how to isolate Russia from the perceived inflationary impact of rouble credits originating from other countries in the CIS. (Below we show that in reality there was no threat.) The solution adopted was to impose controls on cross-border movements of bank accounts.¹⁴ The Central Bank of Russia (CBR) decreed that all bank transfers to and from other former Soviet republics would have to pass through special correspondent accounts held by its headquarters in Moscow. The idea underlying this move was simple: if the CBR could ensure that there were no *net* movements of funds between Russia and the other former Soviet republics, credit emission in these countries could no longer affect the money supply in Russia. In this way Russia would be able to stabilise the rouble. In effect this measure was equivalent to the introduction of a Russian non-cash rouble.

The correspondent account system was imposed by the Central Bank of Russia over the space of 6 months (January-July 1992). Transfers to and from the Baltics were immediately controlled starting in January 1992. But for the rest of the FSU, the system really started working after 1 July 1992. Before that date, all payments from CIS countries were automatically credited in the Russian banking system and the CBR was informed only *ex-post* of the balance of outgoing and incoming payments. Box 4 provides a chronology of the evolution of the correspondent system and the dissolution of the rouble zone.

Box 4. Chronology of the Dissolution of the Rouble Zone

1992

| | |
|---------|---|
| January | All former republics still use the (Soviet) rouble; correspondent account system created, but, except for Baltics, all payments from other former republics are automatically credited in Russia. |
| June | Estonia is the first former republic to introduce national currency (Kroon) and agrees to return old Soviet roubles to Russia. |
| May | Agreement on the creation of a joint Central Bank council for the CIS (never implemented). |
| July | Limits on balance on correspondent accounts introduced by Russia after a surplus of 5% of Russian GDP has been accumulated and Ukraine announces a huge credit emission. To facilitate introduction of the new system, overdrafts in the form of technical credits are given to most. |

| | |
|-----------|--|
| September | Agreement on the creation of a Interstate Bank at Bishkek (Kyrgystan). Negotiations on details start. |
| Aug-Nov | Technical credits exhausted, the Central Bank of Russia (CBR) blocks correspondent accounts and processes payments from other former republics on a selective basis. |
| November | Ukraine formally delinks coupons from rouble. |

1993

| | |
|----------|---|
| January | Agreement on Interstate Bank bank signed (not implemented). |
| Jan-June | Credits on the correspondent accounts in principle no longer available from the CBR. Other countries can run a deficit only if the Russian government provides explicit government-to-government credits. Existing credit balances are transformed into official debt and indexed on the dollar. |
| July | The CBR decides suddenly to withdraw all old Soviet (i.e. pre-1992) bank notes from circulation by September and announces that it will deliver new bank notes only to those former republics that subordinate their monetary and fiscal policy totally to that of Russia by signing an agreement on a monetary union. Many CIS countries initially declare their intention to join the monetary union. |
| Sept-Nov | End of rouble zone. When the other CIS members see the fine print on the monetary union proposal, all of them decide to introduce a national currency. |

End of Box

The correspondent account system worked as follows: imagine that an enterprise in Ukraine wished to pay an enterprise in Russia for a delivery of oil. It would send a payment order to its local bank which in turn transmitted the corresponding transfer order to the National Bank of Ukraine. In Kiev, all transfer orders towards Russia (i.e. requests to transfer funds to pay for imports from Russia) are collected and sent periodically in large sacks to the international computing centre in Moscow. This organisation, part of the CBR, also collects all the payment orders coming from Russian enterprises that want to pay for Russian imports. All payments from Ukraine (i.e. Ukrainian imports from Russia) are booked on the liability side of the correspondent account of Ukraine, and Russian imports from Ukraine are entered on the asset side. The net was supposed to be balanced over time.

In theory, the nature of the correspondent accounts system changed radically in July 1992, when the Central Bank of Russia decreed that the correspondent account would have to be balanced. However, the Central Bank of Russia gave each CIS country, including Ukraine, a line of credit at the start of the new system (1 July 1992) to allow them time to adjust.

In principle, each republic thus knew the maximum amount of debt it could accumulate and should thus have taken measures to reduce its deficit when it came close to its limit. The limits were not taken seriously, however, because the other CIS states hoped that they could obtain additional credits once the initial one had been exhausted. They counted on the pressure of Russian exporters that would ask the CBR to pay (sometimes for deliveries already made). In some cases, policy-makers did not comprehend why the Russians should be allowed to block a payment order that had been properly completed and sent to Moscow. This explains why the initial credit lines were used up rather quickly. Ukraine had from the beginning a negative balance (or deficit) so that its debt towards Russia was growing all the time. Within two or three months, many former Soviet republics had already reached their limit. At that point the CBR started to get rough. For each republic that had exhausted the credit line, it processed each day only an amount of payments for imports of that republic equal to the amount of payment orders received for exports coming from the republic concerned.

There is considerable anecdotal evidence to suggest that the deficits of Ukraine, for example, did not reflect an excess of Ukrainian imports over its exports to Russia, but rather a flight of capital from Ukraine where interest rates were even lower than in Russia despite even stronger inflationary pressures. This surmise, however, cannot be verified in the absence of reliable customs data for trade between Russia and Ukraine for this period.

4.1 The Rouble Zone in 1992-93: A Recipe for Inflation or a Disciplinary Device?

There were nine CIS countries that kept the rouble (a "generic" rouble as opposed to a well-defined national rouble or the Russian rouble) as their currency during 1992 and most of 1993. However, this rouble zone was not a unified currency area. Households in these countries used Russian bank notes,¹⁵ but domestic transactions in non-cash form were denominated in roubles (without any specification), and transfers through bank accounts to and from Russia were subject to a variety of regulations and delays. All official non-cash payments between Russia and the other CIS countries had to go through the correspondent accounts between the CBR and the other national central banks, as explained above.

Since the official correspondent accounts were often blocked (see below), it was very difficult for enterprises outside Russia to pay their Russian suppliers even if they were in principle ready to pay a premium. This was one of the reasons why commercial banks were again allowed in 1992-93 to gradually have direct correspondent accounts with commercial banks in other countries. These only semi-regulated transactions between commercial banks developed into an informal market for "national" roubles, i.e. roubles on bank accounts in any one of these countries. The roubles outside Russia were usually worth less than the Russian rouble, i.e. on a bank account in Russia. In this sense, the CIS countries that used the rouble in 1992-93 had already quasi-national currencies.

This ill-defined situation satisfied neither the Russian government nor the other CIS states.

The Russian political system was itself divided. Some political forces, notably in the conservative Parliament, wanted to save at least part of the former empire. In that view, the preservation of a unified rouble zone was an indispensable part of their strategy. The more reformist elements of the government, however, preferred a clean solution. They demanded that the other CIS countries either introduce their own currencies or give up all their monetary independence.

The other CIS countries were constantly torn between two considerations: on the one hand, they wanted to have an independent monetary policy; but, on the other, they also wanted to reap the advantages of staying in the rouble zone. These advantages were important because as a part of the rouble zone they could in principle have a slice of the cheap credit distributed by the Central Bank of Russia. Moreover, at least in 1992-93, the Russian government linked the price of oil to the currency issue. Countries within the rouble zone were charged a price in roubles that was close to the domestic Russian price. Other countries had, in principle, to pay the world market price, which was about 2 to 5 times higher. Given that imports of oil accounted for a very large proportion¹⁶ of their national income, the second point was the crucial one.

During the first semester of 1992, international efforts to help Russia concentrated on a rouble stabilisation fund of potentially \$6 billion. It was widely perceived, however, that it would not be possible to stabilise the rouble unless a clear arrangement for the rouble zone was found. In early 1992, the other CIS countries were not willing to introduce national currencies for the reasons mentioned above. Under pressure from the IMF¹⁷ and the Russian government, most CIS countries thus signed in May 1992, an agreement on a joint central bank council that would determine credit expansion for the entire area and take decisions on all relevant monetary policy instruments (interest rates, minimum reserves, foreign exchange interventions, etc.). That agreement, however, was never implemented. That there was never any intention to do so becomes clear from the fact that one article stipulated that the decisions of the joint central bank council would be binding only on those members that agreed to be bound.

The key issue that made an agreement on a joint central bank impossible was the voting power to be attributed to each state in the decision-making instance of the common central bank. Russia insisted for obvious reasons on a formula that linked voting power to size or economic strength. The CIS states were not willing to give up even a small part of their sovereignty, so recently acquired, and insisted on the principle "one state, one vote".

The failure of the joint central bank project was one of the reasons for the introduction of the limits on the correspondent accounts between central banks in July 1992. Since Russia continued to deliver oil at below world market prices and to extend credit to the rouble-zone states during 1992, and early 1993, however, the CIS states in Central Asia and Belarus succeeded for a while in having their cake and eating it too.

Let us now return to the question of whether the existence of a quasi-rouble zone made it impossible to stabilise the (Russian) rouble. As mentioned above, the IMF and the Russian government argued that the introduction of a real national currency in other members of the

CIS was a pre-condition for an effective stabilisation programme for the (Russian) rouble.

In contrast, we argue that the use of the rouble by other countries cannot really have been an obstacle for the stabilisation of the Russian rouble. On the contrary, the rouble zone was rather a disciplinary device for the other CIS countries, forcing them to subordinate their national monetary policies to that of the CBR, because the other CIS countries were constrained by the Russian monopoly on rouble bank notes and by the fact that since July 1992, interstate credit had been limited.

The proposition that control over the printing press allowed Russia to guarantee price stability follows, if one accepts the view that the price level can be controlled as long as there is a well defined demand for cash in real terms (see Fama, 1990). This argument simply says that if the government determines the nominal quantity of any good for which there is a well defined demand in real terms, it also determines indirectly the price level.

Nevertheless, one can also make the argument in terms of the more conventional premise that the price level is determined by the supply of money. The latter is usually defined as the sum of cash and deposits with the *domestic* banking system. Through the usual system of requested reserves, the central bank can ensure that the domestic banking system can expand its deposit base (if and) only if the central bank increases the monetary base. Control over the monetary base thus implies control over inflation. This is the standard framework used in macroeconomic textbooks.¹⁸

In arguing that the rouble zone cannot have been a major source of inflation in Russia, one can also show that it was comparable to a currency board. However, it was a special currency arrangement because of the separation between the cash and the non-cash circuits. These two aspects are now discussed in turn.

4.2. The Use of the Rouble as a Currency Board Arrangement

In most respects the relationship between the rouble zone countries and Russia was not much different from that of Estonia¹⁹ vis-à-vis Germany. Estonia opted for a currency board arrangement when it introduced a national currency. Estonian Kroons could from the start be exchanged with DM at a rate of 8:1. Belarus was a good example of a rouble zone country. It issued bank notes, the so-called hares, that were perfect substitutes for Russian roubles at the rate of 10:1.²⁰

The Central Banks of Estonia and Belarus were in principle free to grant as much credit to their national economic agents (government or private sector) as they wanted. These credits could have been denominated in roubles, Kroon or theoretically even DM. The argument that rouble credits granted by the Central Bank of Belarus created inflation in Russia must ultimately rest on the idea that rouble credits originating from the Central Bank of Belarus led to an increase in the monetary base in Russia. The same should hold true for DM credits issued by the Central Bank of Estonia. No one would seriously maintain, however, that when the Central Bank of Estonia issued credits, German monetary policy or, more

precisely, the assets and liabilities of the Bundesbank would be affected. The following step-by-step analysis shows why this is the case.

Imagine that the Central Bank of Estonia gives credits in DM (the equivalent of the Central Bank of Belarus issuing credits in roubles). As long as these credits are given only to Estonian enterprises and banks, there will obviously be no impact on money supply (and demand) in Germany. But Estonian economic agents might use the credit they thus obtained to buy goods and services in Germany. The German exporter, however, probably wants to be paid with something that can be used to pay for the costs in Germany. The Estonian importer cannot pay in cash; he can only give the German exporter a claim in DM on the Estonian Central Bank. The German exporter will then ask the Estonian Central Bank to provide him with DM funds on a bank account in Germany. The Estonian Central Bank can do this only if it has foreign exchange reserves. In this case the Estonian Central Bank can thus extend credit only to the extent that it has foreign exchange reserves, i.e. if it follows the rules of the currency board.²¹

This line of argument neglects one important aspect, namely the distinction between cash and non-cash that remained throughout 1992-93. In market economies, cash can be transformed into bank accounts ("non-cash" in Soviet terminology) immediately on a one to one basis. In most CIS countries, this was not the case. The importance of this aspect, which makes it much more difficult to judge monetary developments, is discussed separately in Box 5 below.

Box 5. Cash versus Non-Cash

Up to this point, we have shown that operations of other CIS countries should have no impact on the money supply in Russia. This is indeed the case for fully-fledged market economies in which all agents can exchange unlimited amounts of cash into non-cash on a 1:1 basis, as in Estonia after the introduction of the Kroon. However, this was not the case in the CIS in 1992-93. This separation of the cash and non-cash circuits played a central role in giving national central banks outside Russia some room for manoeuvre. The dual standard of cash and non-cash should, in principle, have been eliminated with the radical reforms undertaken by the Russian government in early 1992. However, in contrast to other reforming countries in Central Europe, this did not happen in Russia.

As mentioned above, non-cash payments between Russian and the other CIS countries had to go through correspondent accounts between the CBR and other national central banks.²² However, since July 1992 the CBR had blocked payments through these accounts whenever the partner country in question had a deficit that exceeded certain limits. The currency-board-type mechanism described in the previous section, which relies entirely on bank transfers, therefore does not work in the CIS. Would cash transactions be a substitute?

In most CIS countries until 1994, it was difficult to convert non-cash into cash. This was crucial for interstate transactions as well. If it had been possible to exchange unlimited

amounts of local non-cash into cash, enterprises (and households) could just have converted their local bank accounts into cash and have sent the cash by plane to Moscow (or somewhere else in Russia) to pay their Russian suppliers.²³ In this case, "excess" credit creation by other CIS countries would have had to be covered by reserves of (Russian) cash. However, these countries did not have substantial reserves of (Russian) cash since most of them received only enough cash from Russia to keep their local economies supplied with enough transactions medium.

The separation of the cash and non-cash circuits outside Russia was thus necessary to safeguard some independence for the national central banks. As shown above, any national central bank that guaranteed to exchange its liabilities at 1:1 into (Russian) roubles (*in the form of bank notes*) would de facto become a mere currency board. But how much autonomy did the separation between cash and non-cash give national central banks in Central Asia and the Caucasus?

The crucial point here is that the separation of the two monetary circuits was (and even more now is) not perfect.²⁴ The explicit and implicit restrictions on the conversion of non-cash into cash varied from country to country so that it is difficult to make generalisations. However, there were some restrictions in all countries and cash traded at a premium over non-cash most of the time.

How can this premium arise? Imagine that a local central bank issues too much credit (by definition in non-cash form). If this credit is given to enterprises to pay wages, the central bank cannot really refuse to hand out the same amount in cash almost immediately since in most CIS countries enterprises have the "right" to demand cash to pay their workers. The local central bank will thus not be able to engineer a local credit expansion to pay wages if it does not have enough Russian cash. In this respect it has either to behave like a currency board or it will not be able to provide enterprises with enough cash to pay wages and cash will then become more valuable than non-cash.

Of course, it is possible that the credit from the local central bank is given to enterprises for payment to other enterprises, so that the local central bank does not have to hand out any cash right away. However, either the credit ends up being used to pay wages or to pay for imports. In the latter case, the national central bank will be asked to provide either dollars (for hard currency imports) or, if the additional imports come from Russia, more payment orders will be sent to the Central Bank of Russia (CBR) which, once a certain limit has been attained, will not accept them. Once the bilateral correspondent account with the CBR is blocked, the local authorities will have to ration imports.²⁵ This implies that within the country where the credit expansion took place, the (perhaps implicit) premium of cash over non-cash will increase because enterprises will demand more cash to make payments with Russia.

The premium of cash over non-cash should thus be an indicator of the degree to which credit expansion outside Russia has been larger than in Russia. Anecdotal evidence suggests that this premium has rarely exceeded 30 to 50%. The exchange rate for cash roubles on which more systematic data is available has never deviated more than about 10-

15% from the rate in Moscow. This partial evidence suggests that in 1992-93, the national central banks in other former Soviet republics did not really try to have an independent monetary policy. The common cash rouble has thus probably imposed some discipline on the non-Russian rouble-zone countries during this period.

End of Box

The analogy between the currency board of Estonia (using the DM) and that of Belarus (using the rouble in 1992-93) is not perfect because the Estonians knew that they would never obtain any credit from the Bundesbank if they were to run a deficit on their external accounts. Belarus did receive substantial credits from Russia and was thus able to cover its large deficits. This policy was not inherent in the rouble-zone arrangement, but it constituted a deliberate policy choice of the Russian government. If the Russian government (and the CBR) had simply refused to give any credits to the other CIS countries (for example in the context of a tough rouble-stabilisation programme), there could have been no inflationary impact coming from the other rouble zone countries. In reality the Russian government chose to extend large credits, domestically and towards some CIS countries, but this does not imply that the rouble-zone arrangement per se was inflationary.

4.3. The Evidence

The view that the use of a common rouble in a number of CIS states was inflationary and destabilised monetary policy in Russia must imply that monetary policy in the other CIS states was even more expansionary than in Russia. This can be checked by looking at the monetary aggregates in the CIS relative to those for Russia. The only aggregate for which one can obtain a comparable series is M3. Figure 1 therefore shows the ratio CIS/Russia for M3. Since Ukraine left the rouble zone earlier than the others and since Ukraine had a parallel currency in the form of the coupons already in 1992, Figure 1 shows two lines: one is the ratio of Ukrainian M3 to Russian M3, the other is the ratio of the sum of the M3s of all the other CIS states that used the rouble to Russian M3. Even a superficial look at the data suggests that the policies in the rest of the CIS (excluding Ukraine) cannot have been more expansionary than in Russia since the ratio actually declines somewhat in 1992. Only in late 1993, when the rouble zone was dissolved, did most CIS states embark on a really inflationary policy. Ukraine is different since in this case the inflationary path starts already by the end of 1992, but even in this case, there is no evidence that in early 1992 Ukrainian monetary policy was clearly worse than that of Russia.

Another way to test the hypothesis that the other CIS states had a highly inflationary policy on the back of the common rouble is to look at the behaviour of wages. If policies in the rest of the CIS had been too expansionary, wages should have risen relative to those in Russia. However, this was also clearly not the case as shown in Figure 2 which shows again two lines. One shows wages in Ukraine as a percentage of those in Russia and the other shows the (unweighted) average wage in the rest of the CIS, again as a percentage

of wages in Russia. Since wages in the rest of the CIS were already lower than in Russia before the reforms started, one should compare the 1992 and 1993 data to the data from the end of 1991. However, even on this basis, one cannot see a tendency of wages in the CIS to increase relative to those of Russia. By end-1991, wages in the CIS (without Ukraine) were about two-thirds of Russian wages. By mid-1993, they had fallen to about one-half. It is interesting to note that the process of wage dispersion had started already much earlier. In 1985, wages in the 8 Soviet republics considered here (ARM, AZ, BELRUS, KAS, KYR, MOL, TAD, UZ) stood at 93% of the Russian level; by 1990, they were at 84%; and by the last quarter of 1991, they had fallen to 70%. This development might have been one additional reason for the increasing dissatisfaction with the Union during that period.

The Ukrainian data show some slight increase in 1992 relative to the baseline end-1991, but it is so small, about 10%, that it cannot have had a strong impact. The really inflationary policies in Ukraine come much later. But the fact that Ukrainian wages (in Karbovanetz) reached 200% of the Russian level is completely irrelevant for Russian monetary policy since it came one year after the formal break with the rouble in the third quarter of 1992.

The data on money supplies and wages are, of course, the outcome of a general equilibrium game under the rules explained above. However, the argument made here is that this game should lead to the result found here: a roughly similar rate of monetary expansion because of the currency-board-like nature of the rouble zone. Given that the linkages were not perfect one would expect monetary expansion to be somewhat *higher* outside Russia if these countries had been more inflationary. However, the opposite is true: monetary expansion was somewhat *lower* outside Russia.

There is thus no compelling evidence that the other CIS states that used the common rouble pursued a more inflationary policy than in Russia and thus created additional inflation there. The badly defined rouble zone that existed in 1992-93 cannot be held responsible for inflation in Russia during that period.

However, the rouble zone, as long as it lasted, certainly exerted a disciplinary effect on the peripheral countries. This can be seen from Figures 3 and 4 which show the evolution of six of the new national currencies against the rouble during 1993-94. Figure 3 shows the rouble exchange rate of the three Western former Soviet republics: Belarus (rubel), Ukraine (karbovanets) and Moldova (lei). It is apparent that all three of these currencies started to depreciate against the rouble (itself not a very hard currency even during the temporary stabilisation of 1993) as soon as they were created. The (Belorussian) ruble started out at 1:1, but reached over 25 to the (Russian) rouble late in 1994; the Ukrainian karbovanet also started off at 1:1 and fell to over 10. These two currencies thus depreciated by 2,500 and 1,000%, respectively, (always vis-à-vis the Russian rouble). The Moldovan lei did marginally better with a depreciation over this period of "only" about 500%.

The exchange rates of the three Central Asian currencies depicted in Figure 4 are also instructive because they show three completely different approaches. The straight line corresponds to the Turkmenian manat that was officially pegged to the Russian rouble, but

had to be devalued by 500% in one step in March 1994, because domestic inflationary pressures were too great. The continuing straight line after the depreciation does not indicate a radical stabilisation programme, but shows the lack of reforms in that country, which in principle should be very rich given its huge reserves of natural gas. The official exchange rate of the manat is about as important as the official exchange rates of the Soviet rouble under the old regime. The almost stable line at the bottom of the picture shows the market-determined exchange rate of the Kyrgyz som which could be stabilised because the government embarked on a radical reform and stabilisation programme. The Kyrgyz stabilisation programme succeeded, not only because of strong support from the IMF, but also because the authorities were really determined to stabilise the economy. In contrast, the Kasach stabilisation programme did not succeed despite the fact that this large country possesses enormous reserves of natural resources. Continuing large fiscal deficits could only be financed by printing money, which explains why the Kasach currency depreciated initially by over 700%.

The theoretical argument that the rouble zone was really more a currency board for the other CIS countries applies *a fortiori* also to the situation that existed during the last days of the Soviet Union. The only difference was that the Union government controlled, at least until early 1991, the printing presses and was thus in a similar position as Russia in 1992-93. It was often thought then that the Union government could not stabilise the Soviet rouble since it could not control the republican branches of the Gosbank that had declared themselves to be independent central banks. However, this is also contradicted by the facts. The main cause of destabilisation during the last years of the FSU was the deficit of the Union, not the deficits of the republics. It is true that part of the fiscal problems of the Union government was caused by the republics that withheld revenues. But the larger part of the deficit of the Union came from an *increase* in expenditure, not a fall in tax revenues. Moreover, a Union government determined to stabilise the economy could have slashed expenditure whenever the republics (including Russia) used their increasing political powers to obtain a larger slice of the tax cake. The root cause of increasing inflationary pressures in the last days of the Soviet Union was thus not the "worst monetary constitution one can imagine", but a lack of resolve by the government to balance its budget.

4.4. Implications

The foregoing analysis showed that the existence of an ill-defined rouble zone cannot have been one of the major causes of inflation in Russia. This implies that, contrary to what was argued all throughout 1992 by the IMF and others (e.g. Jeff Sachs, 1994b), the creation of true national currencies in all CIS countries was not a pre-condition for stabilisation in Russia and should thus not have been regarded as a pre-condition for granting the rouble-stabilisation fund that was much discussed in 1992-93, but never disbursed.

Another implication of this analysis is that even in 1991, the Union government under Gorbachev could have stabilised the (Soviet) rouble if it had maintained strict control over the printing presses, which would have been possible if it had balanced the Union budget.

We now turn to the missed opportunity of 1992-93, namely the failed attempt to create a multilateral clearing system to offset the bilateralism of the correspondent accounts.

5. An Opportunity Missed: The Interstate Bank

The system of bilateral correspondent accounts incited each participant to aim for a bilateral balance since it was not possible to offset a surplus with one country against a deficit with another country. This section describes the damage done by the bilateralism and the attempt to overcome it through the creation of a multilateral payments mechanism incorporated in the Interstate Bank.

5.1. The Gains from Multilateralism

How important was the absence of multilateral clearing in the CIS? This is a difficult question to answer because one has to compare two hypothetical situations: full multilateralism versus strict bilateral balancing as implicit in the correspondent account system.

It is not possible to say what level of trade would have taken place in 1992-93 if all payment relations had been on a multilateral basis. However, a indication of the orders of magnitude can be obtained from the data on inter-republican trade flows in the FSU.²⁶ For example, the correlation coefficient between the balances calculated on the 1987 data and the actual outcome during the first quarter of 1993 is 0.8, if one values the 1987 trade flows at world market prices.

One way to assess the impact of bilateralism is to assume that all CIS countries want to achieve a precise balance in all their bilateral relationships and that the supply of exports is given in the short run. Under this hypothesis, the amount of trade is determined mechanically by the lower value of either exports or imports. A second approach, used in Kaplan and Schleiminger (1989) to assess the European Payment Union (EPU), simply compares the sum of the absolute value of the bilateral balances to the sum of the overall, i.e. multilateral balances. Both approaches are pursued in Box 6.

Box 6. Quantifying the Losses from Bilateralism

a. The Effects of Strict Bilateral Balancing

If one imposes a strict bilateral-balancing requirement, one also eliminates the structural deficit of the rest of the CIS vis-à-vis Russia. This deficit, however, was not sustainable in any event. Its elimination should thus not be regarded as a consequence of bilateral balancing, but rather an unavoidable adjustment process.

One way to eliminate the influence of the structural surplus of Russia is just to eliminate Russia from the trade matrix. If this is done, strict bilateral balancing implies that trade (among the 10 remaining CIS countries) goes down by about 30%. This is still about 4% of the combined NMP of this group of 10 states. This result is interesting since it shows that the potential gain from a multilateral payments mechanism that does not involve Russia would still be substantial. But in this case the benefits for Russia are, by definition, equal to zero.

Another way to eliminate the influence of the Russian structural surplus is to assume that Russia has an overall balance with the other 10 countries and that this balance is achieved through a reduction in Russian exports that is the same in proportional terms for all surpluses. One can then compare the hypothetical strict bilateral balancing to this other hypothetical situation which requires only overall balancing (for Russia). This yields the result that strict bilateral balancing reduces trade by about 20 billion roubles, about 3.3% of the overall NMP of the CIS. However, the gains are very unevenly distributed: for Russia the gain is only 1.5% of NMP, for the other 10 CIS countries the gain is, on average, 6.5% of NMP.

b. Overall Imbalances versus Bilateral Imbalances

This approach just looks at the sum of the (absolute value of the) imbalances in trade. Under bilateralism, the bilateral imbalances "matter" while under multilateralism, only the overall (or multilateral balance) "matters". "Matters" in this context means that deficits have to be financed so that the imbalances determine the need for reserves. If one uses this approach, there is no further problem with the Russian surplus, since one looks only at the difference between the two sums which does not imply anything for the overall Russian position. Using the same data source as above, this yields the following result: the sum of the absolute value of the bilateral imbalances was 83.6 billion roubles while the sum of the multilateral imbalances was 65.9 billion roubles. The ratio of these two numbers is about 1.3 and the difference is equivalent to about 3% of the combined NMP of the CIS. In this case, one cannot distribute the gains between Russia and the rest of the CIS.

End of Box

The two approaches pursued in Box 4 suggest that the Interstate Bank (IB) would have made it much easier to sustain a volume of trade that is worth 4% of the NMP of the "peripheral" CIS members and about 3% on average for the entire CIS, i.e. including Russia, using the second approach. Russia would have gained much less in relative terms; about 1.5% of GDP using the first approach. In relative terms, this result is not surprising since Russia has a surplus with most CIS countries. Of course, these numbers just indicate an order of magnitude. In 1992-93, both the nominator (trade) and the denominator (NMP) had contracted strongly in real terms for other reasons. It is thus difficult to know what would have been the situation if an efficient multilateral clearing system had existed then.

Are these potential "gains" large? Under ordinary circumstances, a gain of several percentage points of GDP would be considered very large. For example, the gains expected from the internal market programme of the EC are of a similar order of magnitude. However, the CIS countries are not in ordinary circumstances. The transition process and policy errors have already caused output to drop by more than 20%. The bilateral nature of the system that emerged in 1992-93 can thus not have been responsible for most of the output decline that actually occurred and the creation of a multilateral system would not be sufficient to reverse the decline. Nevertheless, the elimination of one-quarter or one-fifth of the overall decline would already be a substantial contribution.

Another way to measure the potential importance of a multilateral mechanism for the CIS, relative to the European experience, is to look at the experience of the EPU that was created after World War II in Europe. The EPU is the standard by which all plans to create a payments union for Eastern Europe have been measured (see Eichengreen, 1993 and Gros, 1993). Most analyses of the EPU emphasise also one important difference which is that the EPU covered a large proportion of world trade since all European countries (plus their overseas dependencies) participated in the system. It is thus in a certain sense unfair to use the EPU as a yardstick. Nevertheless, the result is still interesting. For the first year of its operations, 1950-51, the clearing under the EPU, i.e. the difference between the sum of the bilateral and the multilateral imbalances, was equivalent to about 1% of the GDP of EPU member countries at that time — representing much less than the potential for the CIS identified so far. The reduction in trade that would come with strict bilateral balancing (relative to unrestricted multilateral trade) would be about 20%, the same as for the CIS.

The estimates of the gain from multilateralism presented here are based on past intra-FSU trade data. As shown above, this trade will diminish sharply in the long run. The results based on 1987 data thus overstate the importance of intra-FSU trade in the long run, and some adjustment towards the long run has already taken place by now. The real question is, however, whether this adjustment takes place gradually within an environment in which firms choose to shift their exports in response to market forces, or whether entire markets are suddenly cut off by the lack of a multilateral payment system. Even if one assumes that the shift away from the old trade patterns would anyway have led "naturally" to a reduction of intra-FSU trade by 50% (within one year!), the potential contribution of a multilateral clearing system would still have been significant. In terms of the percentage of GDP, this could have been even more important than the EPU.

Box 7. Intra-CIS Trade and the Causes of Decline

What were the main factors behind the large decline in (recorded) output? It has often been argued that it was due first of all to the fall in military procurement and the overall investment rate. The one factor that should determine whether in a given sector output should decline is the rate of profitability at world prices.

Input-output data from Russia (on a sectorally disaggregated basis) was used to determine

the sectoral impact of these factors. The dependent variable used was the index of output in 1992 as a fraction of the output of 1990 for 54 "branches" for which a representative product was available. In other tests, somewhat different proxies for the output decline were used: e.g. the ratio 1992/91, S293/S292, etc., for the same panel of industries/products. All the results were broadly similar.

The mean of the dependent variable was 0.747, which implies that the average output decline was about 25% over this period (1992-90). The standard deviation was rather high, 0.125. This implies that one can just barely reject the hypothesis that the average was just due to chance.

The values of the independent variables were calculated using the 1987 input/output (I-0) table of the Soviet Union. The variables tested in a first run were:

- (1) The share of direct and indirect oil inputs in a unit of output of each branch.
- (2) The share of output of each branch going directly or indirectly to military ends.
- (3) The share of output of each branch going directly or indirectly to investment needs.
- (4) The share of value added in gross output, both indicators calculated in world 1988 prices, for each branch.
- (5) The share of imported inputs.
- (6) The share of gross output going directly and indirectly to other republics.

The basic statistics (average and standard deviation across sectors) for these variables were the following (in 1991):

| | (1) | (2) | (3) | (4) | (5) | (6) |
|----------|------|------|------|------|------|------|
| Aver. | 0.19 | 0.04 | 0.31 | 0.13 | 0.06 | 0.18 |
| Std.dev. | 0.22 | 0.05 | 0.29 | 0.63 | 0.15 | 0.12 |

With all the 6 variables used as explanatory factors, the results from an ordinary cross-section regression were: $\text{adj. } R^2 = 0.209$ and the point estimates were as follows:

| Variable | Coefficient | Standard Error | t |
|----------|-------------|----------------|----|
| Constant | 0.760 | 0.120 | |
| (1) | 0.156 | 0.094 | |
| (2) | 0.665 | 0.371 | |
| (3) | -0.037 | 0.063 | |
| (4) | 0.080 | 0.035 | >2 |
| (5) | 0.018 | 0.118 | |
| (6) | -0.395 | 0.154 | >2 |

The constant, i.e. the "unexplained" average decline of output, is equal to 24% (compared to the actual average decline of 25%).

The overall explanatory power of the 6 variables used here is rather low as evidenced by the low R^2 . This already implies that these 6 variables account for only about one-fifth of the overall variability of the output decline across sectors.

The only significant coefficients are for variables (4) (share of value added at world prices) and (6) (inter-republican trade). Different tests with a subset of independent variables confirm this result.

Since the average starting level of variable (6) was 0.18, the coefficient of 3.6 implies that a drop of inter-republican trade of 50% should lead to a fall in output of about 3% ($0.18 \times 0.5 \times 0.36$). Inter-republican trade thus contributed significantly to the overall decline in output in Russia.

En passant one might note that one of the strongest priors of most economists is that the increase in profitability should be a major determinant of output. Again this does not come out at all. If one regresses the output decline only on the increase in value added (comparing the value added at domestic prices to the value added at world market prices), one obtains an R^2 of 0.014 (and, of course, a coefficient with a t statistic below 1). Combining the increase in value added with the other two important variables that emerge from the results shown above does not change anything: the inter-republican trade is still significant with the same coefficient as shown above and the increase in value added has a t statistic below 1.

End of Box

There is, however, some evidence based on recent data that suggests that the estimates based on 1987 data perhaps underestimate the economic costs of the breakdown of intra-CIS trade. This evidence starts from an analysis of the causes of the output decline. There is still great controversy about this topic, but a simple analysis of the output decline across a number of Russian industries suggests that the decline in intra-FSU trade had a significant impact on the output decline. As shown in Box 7, Duchêne and Gros (1994) regress the

output decline in a number of products/sectors of the Russian economy against a number of sectoral indicators, such as the share of oil input, the share of output going to the military, and the increase in profitability resulting from a switch to world market prices, to name just the most important. Most of these indicators are not significantly correlated with the decline in output in 1990-92. There is one indicator, however, that shows a robust and significant relationship: the share of gross output going to other republics. The estimated coefficient is about 0.35 to 0.39. Since in 1990, on average 18% of output went to the rest of the FSU, it implies that a reduction in intra-FSU trade of 50% could explain a fall in output in Russia of about 3%. The actual decline in intra-FSU trade was probably much larger, but this is impossible to document. While this is only a fraction of the overall drop in output in Russia, it is still a substantial cost that might have been avoided or mitigated. For the other FSU countries, the cost must have been much higher since their economies depended much more on intra-FSU trade. Not all of this decline was due to bilateralism, but since the Interstate Bank described below would also have improved the intra-CIS payments system in general, it should have helped to avoid a considerable part of this decline in trade.

Box 8. The Interstate Bank

The bilateralism of the official correspondent-account system was the background to the negotiations for the creation of a multilateral clearing system that was initiated by the Bishkek CIS summit of October 1992.

At the Minsk CIS summit of 22 January 1993, the heads of state and governments signed an agreement on the creation of the Interstate Bank (IB). The main function of this bank was planned to be the management of a multilateral clearing and settlement system for the 10 (possibly 11) founding member states.

The multilateral clearing system foreseen by the Minsk Agreement would have used the (Russian) rouble as the unit of account. The actual clearing would have been done daily on the basis of the international payment orders transmitted to the IB by the central bank of the importing country. The IB would then have established (on the basis of a summary document sent by the participating central banks) each day the net deficit or surplus of each country vis-à-vis the entire system. On the basis of this daily balance (a flow), a "cumulative position" was to be calculated as the sum of the past daily balances (plus interest on past cumulative positions).

An important aspect of the system was that there was a limit on the cumulative deficit, or debtor position, that a country could accumulate. The limit for the cumulative (debtor) position was set equal to one month of export receipts (i.e. the imports from the country concerned that are declared to the IB by the other member countries). Settlement of the cumulative balances should have occurred every second week. Debtor countries could at first use their credit line (up to one month of export receipts) to settle. Once they had exhausted their credit line, they had to find Russian roubles or offer the creditor payment in hard currency.

The highest decision-making body of the Interstate Bank was to be a board with one representative from each founding member state. Decisions were to be taken with a 75% majority with weighted voting. Russia had 50% of all votes, and the weights of the other CIS states was to be proportional to their intra-FSU trade in 1990.

End of Box

5.2. The Interstate Bank

The treaty that created the Interstate Bank was signed in January 1993. This institution was intended to run a multilateral payments system for the CIS (see Box 5 for details). It would thus have overcome the bilateralism of the correspondent accounts with the positive effects mentioned above.

The IB, however, never commenced operations.²⁷ What were the reasons for this failure to implement an agreement that promised sizeable economic gain? There are two main reasons that should be kept in mind because they have implications for future efforts to arrange cooperation between CIS states.

The first symptomatic reason for the failure of the IB project was a typical collective-action problem: No particular CIS state had an incentive to take the initiative and incur possibly some political costs to push for the creation of the IB because most of the benefits would anyway accrue to all the other states. The (narrowly defined) self-interest of Russia was anyway not served by the creation of a multilateral system because the power of Russia could be brought to bear much more effectively on a bilateral basis.

The second symptomatic reason for the failure of the IB project lies in the nature of the public service in Russia and elsewhere in the CIS. Lower and middle level officials do not always carry out decisions at the top, especially if these decisions run counter to their own interests. This lack of discipline, coupled with a pervasive corruption, was actually the main reason for the overall failure of stabilisation in Russia. The creation of the IB would have severely limited the discretionary power of some officials at the CBR to decide which transfers to other CIS states should go through. This is the main reason why the CBR in particular showed little interest in setting up the IB.

Finally there was, and still is, a deep-seated tendency in many CIS countries to wait for Russia to take the initiative. However, Russia never took the necessary steps to set up the Interstate Bank because the political motive was also not very strong since Russian leaders felt, correctly, that Russia did not need such an institution since it ran a surplus with all CIS countries. Finally, there was considerable opposition from some of the radical reformers²⁸ in the Russian government against any official payments mechanism. The basic reason for this opposition was that the IB would lead to more pressure on Russia to extend cheap credit. This was basically a political judgement since the charter of the IB excluded explicitly any further credit. The overall argument was that convertibility is the first best and attainable immediately so that there was no need to discuss anything else.

An additional reason why the IB was not created is that it has proven extremely difficult to create any type of public institution in Russia. Given that the gain for Russia would have been small, a weak opposition was sufficient to stop all the practical steps that were needed to set up the IB.

6. Concluding Remarks

In some ways, the story of the dissolution of the FSU is one of missed opportunities. When the Soviet Union still existed, the adoption of strict macroeconomic policies at the Union level combined with a substantial devolution of powers to the republics to foster competition in economic reforms would have allowed the reforms to start much earlier and would have diminished the transitional costs.

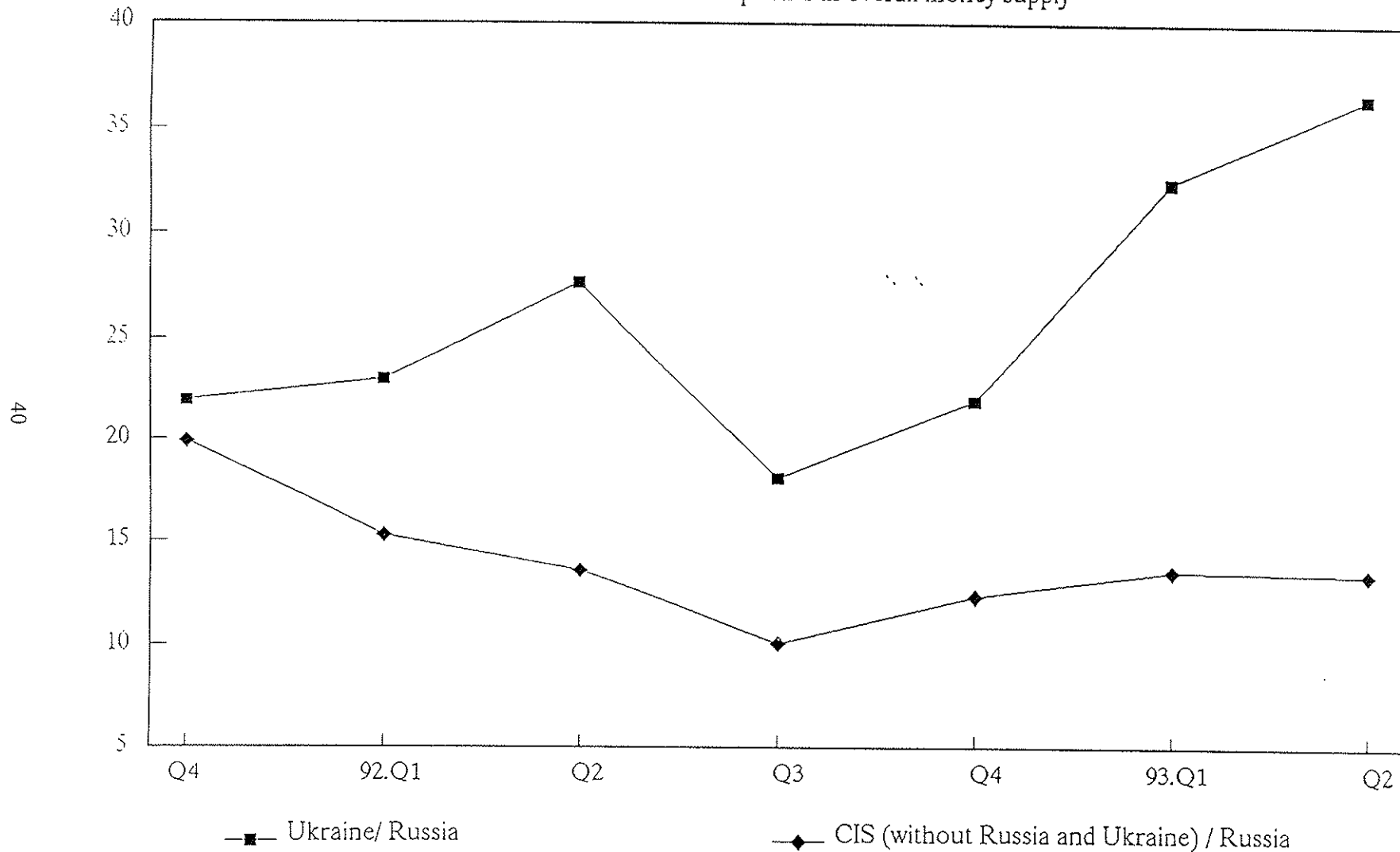
The main reason why these opportunities were missed is that extreme and simplistic positions determined the debate about economic relations among the FSU states. On the one side, it was argued that the currency separation should have been faster because the ill-defined rouble zone that existed in 1992-93 was inflationary and that the collapse of intra-FSU trade was desirable because that trade had not been driven by the market. On the other, it was argued that because of the high degree of integration of the economies of the former Soviet republics, a common currency should be maintained to preserve the existing trade links.

These two extreme positions do not stand up to close analysis. While the level of inter-republican trade was clearly excessive it did have its own logic. It is therefore not surprising that the collapse of this trade contributed to the decline of production even in Russia. The problems of the disorganised rouble zone of 1992-93 came mainly from inconsistencies in Russia's policies. One cannot argue that expansionary policies in the other CIS states undermined Russia's attempt to stabilise when wages and rates of monetary expansion were lower outside Russia.

The economic analysis thus reveals that the separation was inevitable; attempts to maintain an economic and monetary union were doomed from the start. However, the speed with which the existing trade links were disrupted made the process of separation very costly for all the countries that were once Soviet republics.

Figure 1 : Money supply in the CIS

relative shares of the republics in overall money supply



Note : The expansion of Ukrainian money supply starts with the approval of karbovanets as sole legal tender on 12/11/92
 Source : own calculations based on IFS, Supplement on the countries of the FSU, Supplement series no.16,

Figure 2 : Wages and inflation

A comparison of nominal wages in the CIS

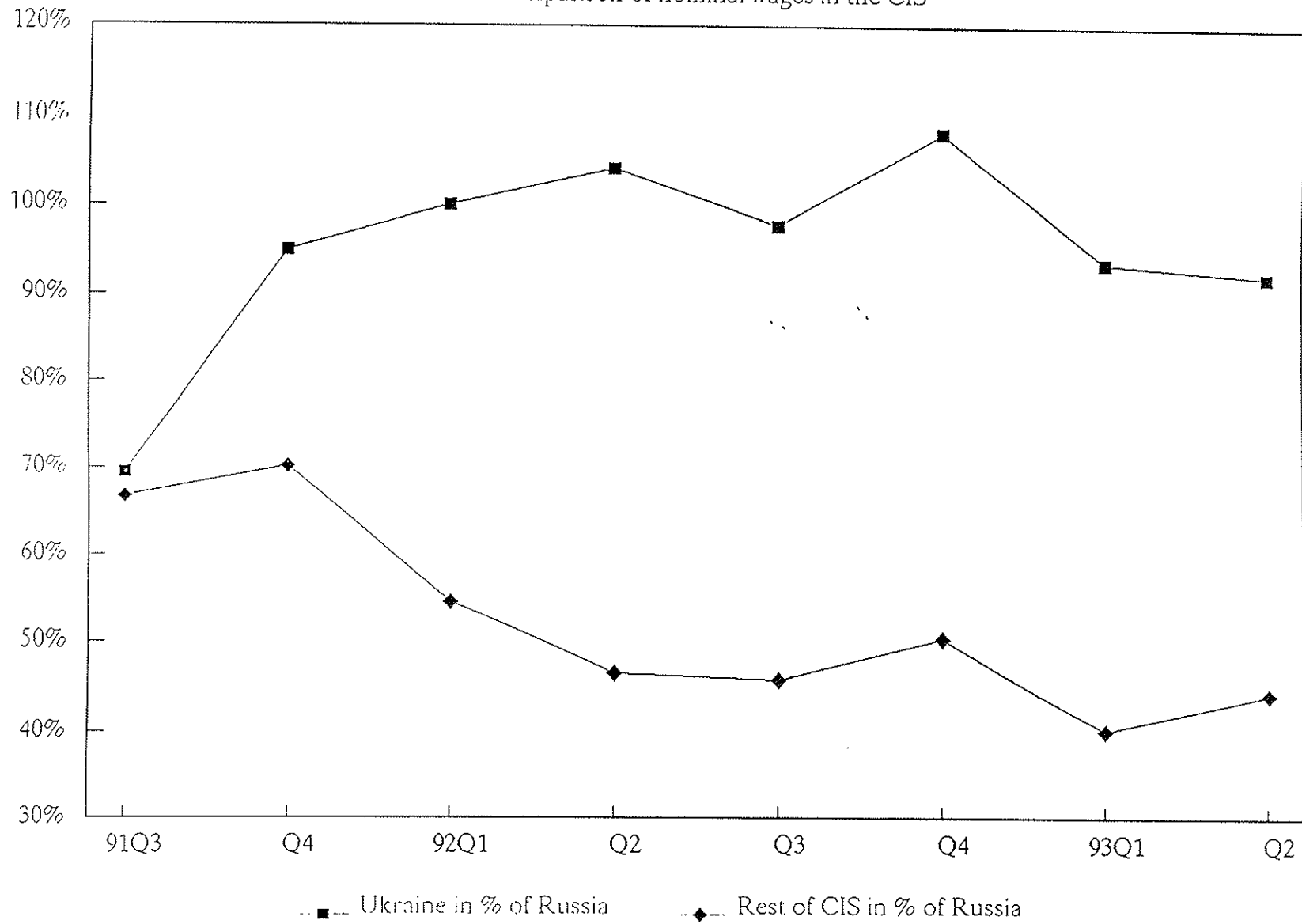
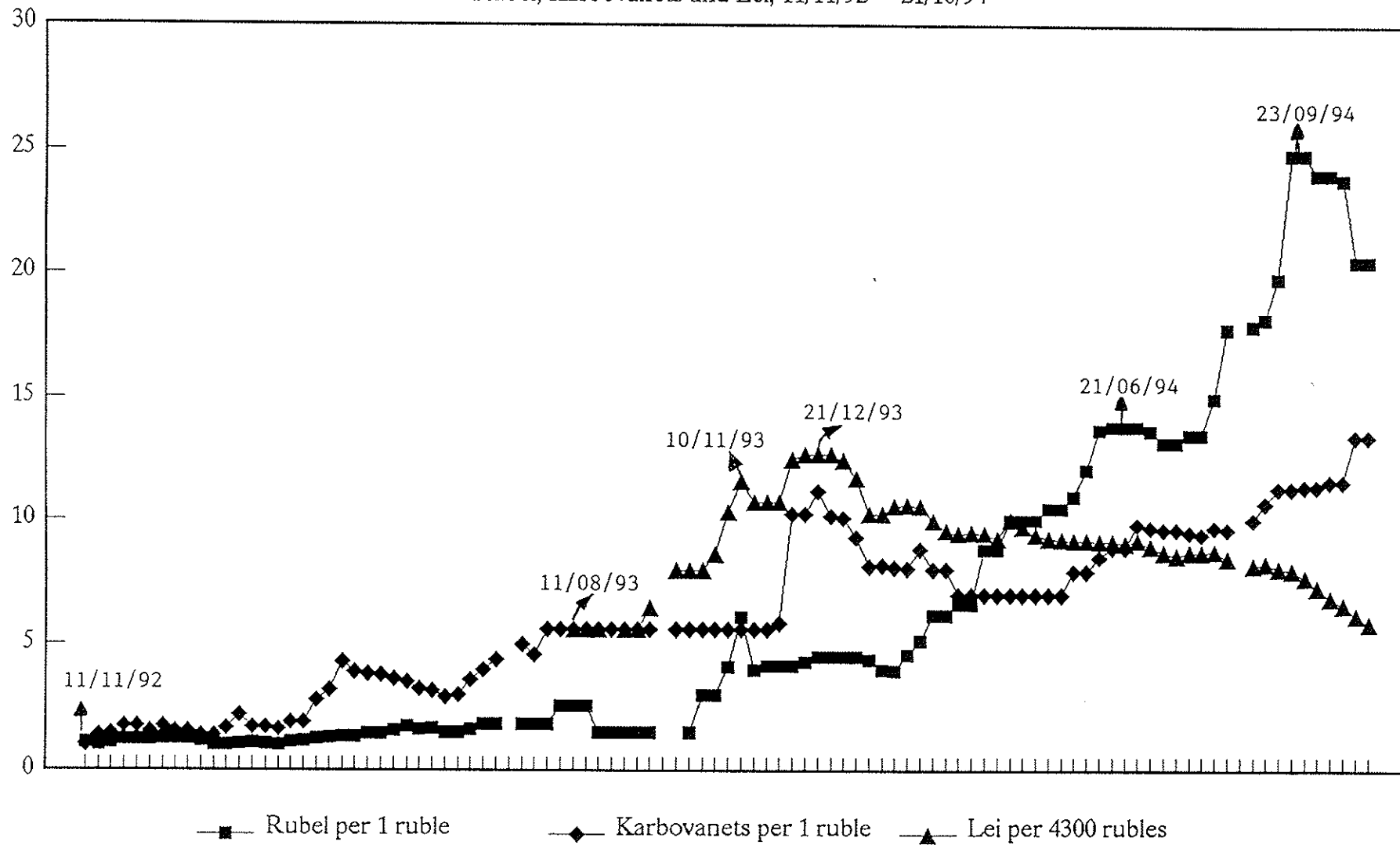


Figure 3 : Currencies of Belarus, Ukraine and Moldavië

Rubel, Karbovanets and Lei, 11/11/92 – 21/10/94

Daniel Gros

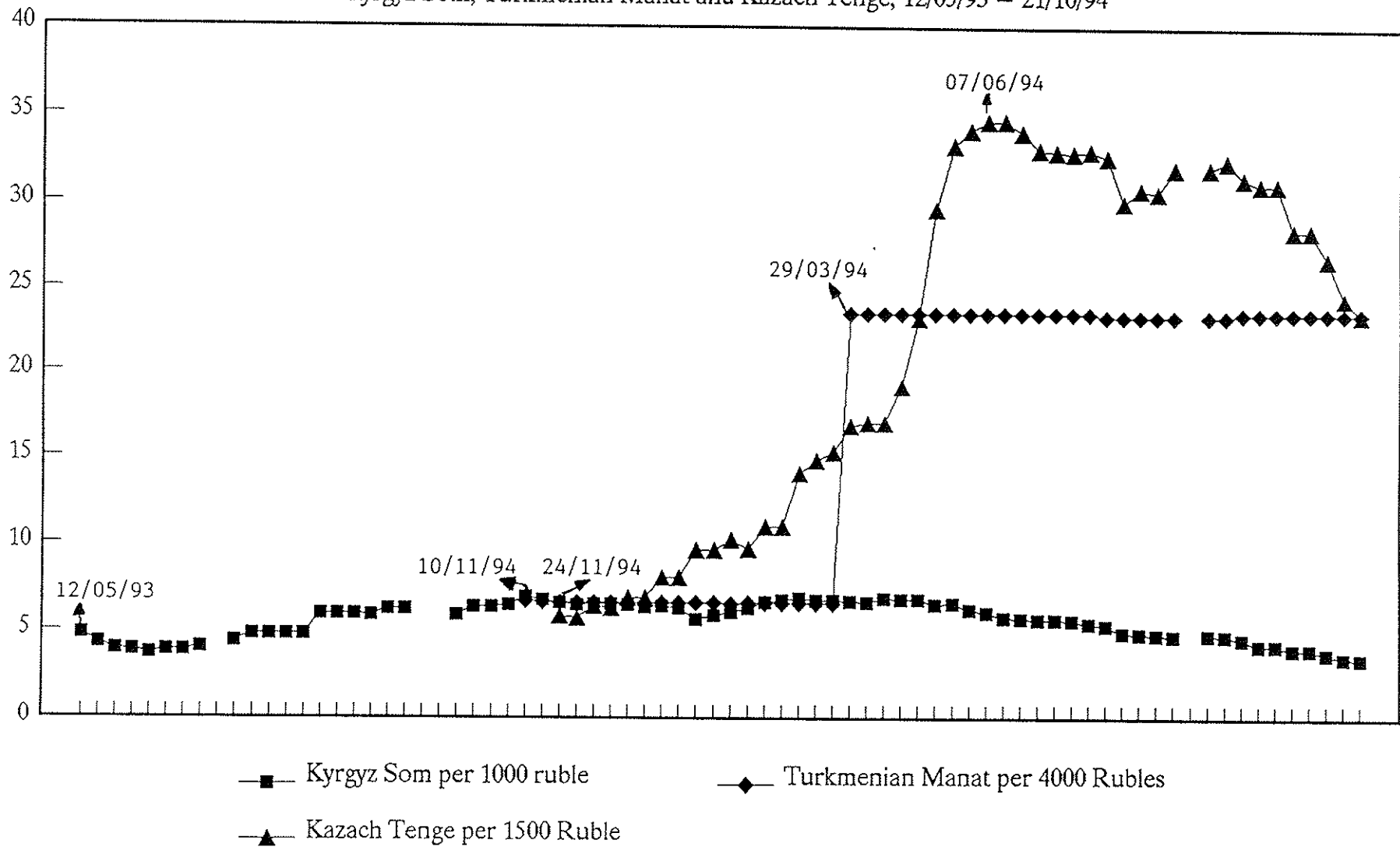


Source : own calculations based on Finansovye Izvestia

Figure 4 : Currencies of Central–Asiatic Republics of the FSU

Kyrgyz Som, Turkmenian Manat and Kazach Tenge, 12/05/93 – 21/10/94

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Source : own calculations based on Finansovye Izvestia

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Endnotes

1. Aitken (1973) uses annual data for a sample of 7 EFTA and the five original EC countries (Belgium and Luxembourg count as one for this purpose). His results do not vary from year to year; we compare ours with his 1967 results. H&P have two different samples with the data averaged over the period 1980-82. We use their results for a group of 21 countries for the comparison below. W&W have the largest sample, 76 countries, and also average their data (over the period 1984-86).

These comparators used roughly the same explanatory variables. In some cases, however, income and population were only used separately, not in the combination of income and income per capita (i.e. income/population). We decided therefore to rearrange the coefficients to make them comparable. Whenever we did this, we did not report the t-statistics as they are no longer applicable. The overall fit of the equation and the coefficient estimates of the other variables are obviously not affected by this procedure.

2. An anomaly appears in the coefficients of area, which should have a negative sign because it represents transportation costs within the country. For the home country, i , our coefficient is consistent with this prior (and the findings of the comparators), but for the partner region, j , we find a significant negative sign. This is puzzling.

3. The most important explanatory variable is always income. For the elasticity of trade with respect to the income of the home country (country i), our coefficients are similar to those obtained for market economies.

Nevertheless, the coefficients regarding the influence of per capita output reveal some important differences. While we have a similar result as W&W (around 0.3), H&P find a value of 1, for the home country, i . For the partner country j , the comparators find a significant coefficient, equal to 0.22 in H&P and W&W and 0.15 in Aitken, whereas we find a negative sign; but our coefficient is not significant.

4. The other two studies find a much higher elasticity. H&P find (1.56) and W&W find (0.75). The difference between our results and the two recent estimates could be due to the fact that the latter include a number of maritime distances. This is not the case in inter-republican trade; and in the sample of European countries used by Aitken, most trade is also via land (or river).

5. It would have been interesting to estimate not only the elasticity but also the absolute impact of distance on trade. With the logarithmic formulation, however, this is not possible. Estimates using the raw data (not their natural logarithms) did not work well, and it is therefore preferable to stick with the logarithmic formulation, despite this drawback. See Gros and Dautrebande (1992b) for details.

An anomaly appears in the estimated influence of area. The results suggest that trade decreases with the area of the home country, i , but increases with the area of the partner country, j . The same remark applies to the adjacency dummy where our estimates are

lower than in the comparators 1.15 in H&P; 0.78 in W&W; and 0.89 in Aitken; but 0.59 in our estimation. The difference here, however, is not very large in relative terms.

6. In 1987, the sum of the value-added of inland transport services, maritime and direct transport services, auxiliary transport services plus communication services was 201.9 billion ecu, compared to a total value-added (GDP) of 3,320 Kroon. These same sectors employed 6,353 million workers out of a total European workforce of 106.5 million people.

7. It is worth emphasising that this approach deals only with the *geographical distribution of the volume* of trade. It has nothing to say about the product composition of trade, nor about bilateral (or even overall) balances.

8. The main difference between the predictions based on different sets of parameters comes in the distribution among the Western countries, i.e. mainly the EC and the US (and to some extent Japan). This is a consequence of the large difference in the estimates for the impact of distance on trade which is three times stronger in H&P than in Aitken. This is why the share of the US in the exports of Russia is only 4.3% if one uses the parameter estimates of H&P; but 20.2% if one uses the parameter estimates of Aitken. The parameter estimates of H&P put such a premium on distance that Japan, which is close to one part of Russia, is predicted to take a share of Russia's exports (34.8%) that is 8 times that of the US. These discrepancies concerning the role of the US and Japan in the foreign trade of the former republics, however, do not change the fundamental results that the main OECD economies will be the decisive export markets for all former republics. Moreover, Wang and Winters (1992) and Havrylyshyn and Pritchett (1991) arrive at similar results for the trade of the entire Soviet Union.

9. See Emerson et al. (1990) for a survey.

10. See Emerson et al. (1990) for a survey.

11. Initially these so-called central banks consisted of little more than a president with a secretary. Even in Ukraine, the largest republic after Russia, the headquarters of the NBU numbered only a dozen employees in February 1992.

12. This dictum is commonly attributed to Stanley Fischer.

13. After the attempted August 1991 coup, a treaty on an economic and monetary union to be composed of 12 former republics was concluded and signed by some at Alma Ata. This treaty was never implemented, however, and became irrelevant when the CIS was created in December 1991. The economist Gregory Yavlinsky, who had been nominated Prime Minister of the Union after the failed putsch, was then succeeded as Prime Minister of Russia by a proponent of the "Russia-first" approach, Egor Gaidar.

14. Controls on the movements of bank accounts (i.e. non-cash in Soviet terminology) are in principle not sufficient, since the other CIS countries could print substitute roubles (in the form of coupons, etc.). The problem was not that rouble bank notes could come back to Russia, but this effect, nevertheless, had to be limited. Once all rouble notes had

concentrated on Russia, there could be no further inflationary effect for Russia from the printing of coupons and other rouble substitutes in other countries of the FSU. Since the cash that was held outside Russia at the beginning of 1992 accounted probably for more than 50% of the total "Soviet cash", substitute roubles could be responsible for, at most, a doubling of the cash component of the monetary base in Russia. Viewed against the almost ten-fold increase of cash (in Russia) during 1992, this effect could never have been the main cause of inflation. Moreover, later events showed that Soviet roubles were held in considerable quantities outside Russia.

15. Or local substitutes, e.g. Manats in Azerbaijan, both set at a fixed rate of 10:1.

16. For many CIS countries, the value of the oil imported from Russia would have been larger than their entire GDP if world market prices had been applied.

17. Representatives of the IMF have repeatedly denied that they put any pressure on the other CIS countries. They maintain that the IMF had only asked them to choose between a common central bank and a national currency. From the point of view of the Central Asian countries, however, it was out of the question to introduce a national currency in 1992. This is why the position of the IMF was perceived as being pressure to sign an agreement on a joint central bank.

18. See e.g. Dornbusch and Fischer (1981).

19. I abstract here from certain peculiarities of the Estonian arrangement that imply that it does not really represent a full-fledged currency board.

20. The fact that the rate is 8:1 in Estonia (instead of 10, or 1:1) is irrelevant here. The analysis would also not be affected if the Estonians were to print "Deutsche Mark" instead of kroons on their Estonian banknotes. The Central Bank of Belarus cannot print any Russian rouble bank notes, nor can the Central Bank of Estonia print any DM bank notes.

21. In case the German exporter does not insist on being paid immediately (or if a German bank is willing to provide an export credit), Germany exports capital. In this case, however, the fact that the Estonian Central Bank issues credits in DM (as opposed to kroons) is irrelevant. German economic agents will extend this credit anyway, only if they expect that they will be repaid in the future. An inflationary impact in Germany could arise only if the Bundesbank provided an implicit bail-out guarantee for German banks that lend to foreigners in DM, so that the German monetary base increases automatically when there is a default by foreign borrowers. Of course, if German banks extended credits at highly negative real interest rates, the German authorities would intervene and try to stop these gifts to foreigners. Nevertheless, this is a different question which has nothing to do with the control of inflation in Germany.

22. The system of correspondent accounts also introduced a new problem since it worked on a bilateral basis.

23. Straight cash deals between enterprises are forbidden in Russia, but the cash could have been deposited into a Russian bank account first.
24. The picture is complicated by the fact that even inside Russia, cash and non-cash could not be exchanged freely at 1:1 in 1992.
25. Usually this rationing did not use market prices. Only Belarus created an auction market for the right to have access to the Russian banking system, and the rate initially fluctuated around 1.2 to 1.4 local units for one Russian rouble.
26. Gros (1993) shows that the only data available, which dates from 1987, probably still provide a useful guide for 1992-93.
27. The reason for the initial delays was that the fate of the Interstate Bank (IB) was linked to that of the rouble zone. Although the clearing mechanism of the Interstate Bank had been designed carefully so that it could work as well with separate national currencies as under a rouble zone, some people argued that as long as the reconstitution of a (possibly smaller) rouble zone remained on the agenda, the IB should not be set up. This argument was no longer tenable after Russia had introduced its own separate bank notes in August 1993 and after the rouble zone was effectively removed from the political agenda, because the offer to create a "new-type rouble zone" had been rejected by all countries (except Belarus and Tadjikistan). The IB could then be envisaged to solve part of the problems created by the disappearance of the rouble zone coupled with the limited convertibility of the new currencies and the lack of an efficient payments system.
28. And one of their Western advisors. Most of the middle-level opponents of the IB remained when the "flagship" reformers abandoned all government duties in early 1994.

