The First Stage of the Transition in the Economies of the Former USSR: Asymmetric Shocks, Macroeconomic Imbalances and Seigniorage

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1. Introduction

Among the new independent republics of the former USSR, the transition from a planned to a decentralized market economy has often witnessed harsh political competition to obtain the responsibility for implementing the institutional reforms which are urgently required. The heterogeneous regions of this vast territory must adapt their economies to completely new models of development; in comparison to the preceding, highly integrated system, this is being achieved in a spontaneous and mostly uncontrolled manner.

The economies in transition are losing their previous monolithic structure and are assuming more diversified features, both in the sphere of production and in the monetary field. The components of this transformation (microeconomic reforms, privatization patterns, availability of stabilization policies) assume a different timing and gain characteristic features across the 15 new independent states born from the former Union; for a better understanding of their evolution it is thus necessary to ascertain the relative importance of the initial conditions (economic structure, access to foreign markets, vulner-

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ability to terms of trade movements) in order to evaluate the likely impact of the policies adopted (and more often suffered).

Accordingly, the paper pursues two objectives. It presents a brief overview of the impulses which have rapidly affected the area; the focus is on inter-state differences, centered not on Russia, but on the smaller economies on her border. Moreover, this work gives an estimate of the seigniorage in the area, assessing the inflation tax on money holders implicitly in the very high growth rates of prices in 1992. The order of magnitude of seigniorage is shown to be important; there also exist broad asymmetries regarding its distribution across the economies concerned. The last part of the paper concludes.

2. A look at the macroeconomic imbalances and their cross-country differences

In the former Soviet Union, the annual average loss of real GNP, according to the (partially estimated) data published by the IMF World Economic Outlook of May 1994, was 11.6% in 1991 and 18.2% in 1992, and close to 12 percentage points also in 1993. This sharp and prolonged output fall is aggravated by high inflation: the annual average growth of consumer prices in the area was some 1,300%; it did not change much, on average, in 1993 (1,226%).

Macroeconomic variables differ widely across countries (Table 1): the real GNP loss in 1992 varied from −9% in Turkmenistan to

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1 See Nuti and Pisani-Ferry (1992), Guatinianli and Rebecchini (1994), among others, for recent works on the Russian economy. Papers on regional patterns in the former USSR were presented at the 33rd Annual Meeting of the European Regional Science Association in Moscow, August 1993, and are listed in the references.

2 As it is well known, statistics on output contraction in the economy as a whole are difficult to assess; due to different dynamics across sectors, available data tend to overstate the loss when referring mainly to the state firms and do not take into account the potentially growing newly liberalized sectors, which however have still a limited importance. Moreover, the quality of available data is made more uncertain by the heterogeneity of the statistical sources and of the economies considered in this paper, not to mention the statistical difficulties related to the (in many of the republics) still uncompleted passage from the national accounts, based on the definition of net material product, to western standards.
-46% in Georgia and -52% in Armenia, two countries plagued by wars; in the same year, inflation ranged from around 500% (Uzbekistan and Turkmenistan) to 2,500% (Kazakhstan). In 1993, inflationary conditions worsened in Ukraine (4,500%, on an annual average), the country which has been closest to hyperinflation.5

The contraction in production has been greatest in the republics with a higher level of per capita consumption; the rural areas have registered a lower than average output loss. Also, inflation rates are positively related to the developments indicators; they have been lower in the poorest countries (and agricultural relative prices have fallen in the course of the transition).4 On cross-country data, inflation and the output fall are uncorrelated; instead, the relationship between budget deficits and the growth rate of prices (with the exception of the Baltic countries) tend to confirm the role of monetary financing in the dynamics of the inflationary process.6

Russia, Belarus and Ukraine have an economic structure centered on industrial production, which in 1990 was estimated to represent more than half of real GNP. Also, the three Baltic republics and a small Caucasian state, Armenia, are highly industrialized; the share of industry varied in the same year between 71% (Armenia) and 49% (Lithuania).4 The productive contraction has been aggra-
3. The role of trade interdependence and of relative prices

The abrupt temporal divergences in the pattern of price liberalization have caused unexpected movements in the wage and price structures among different regions of the former USSR; these wide variations in the terms of trade have harmed the traditional commercial ties. It is useful to examine these aspects in more detail.

The previous degree of openness of those countries, both within the former Union and outside the ruble area, was linked to an allocation of production which privileged mainly scale economies. In 1988, the sum of exports and imports inside the area as a ratio of preliminary estimates of GNP (Banca d’Italia 1991) was equal to or higher than 45% in the Baltic states, Moldavia and Belarus, against 21% for the former Soviet average and 13% in Russia. By contrast, Russia had the highest degree of openness with regard to trade outside the ruble area (9.4% of GNP). Consequently, the ratio of internal (regional) and external (international) trade was equal to 73% in Russia and 26% in Ukraine, to reach low and uniform values in the other 13 republics, comprised between 17.6% (Estonia) and 12.1% (Armenia). These data vividly describe both the high regional integration of these economies and their relative isolation towards foreign countries. The drastic reduction in traditional trade linkages has worsened the productive contraction; in fact, the degree of regional openness in 1988 was positively correlated to the output fall in 1990-93.

An important source of diversification of economic patterns inside the area concerns the likely impact of replacing the traditional structure of planned prices with the relative prices prevailing in the international markets. Goskomstat (the central statistical office of the former USSR) calculated the ratio between international and internal prices for 1990, before the “big bang” policy of rapid price liberalization pursued by Russia. The comparison is valid, as a first approximation, only with reference to fairly homogeneous goods (primary commodities, standardized manufacturing products); given a ratio of foreign to domestic prices of 0.97 at the official exchange rates, however, these data give a useful account of the previous, different price structure, conditional on an approximate parity of the overall terms of trade.

As is well known, in the former USSR the relative price of energy products was greatly undervalued with respect to world levels; the products of the extractive industry were relatively cheaper as were, to a lesser extent, investment goods and transportation and communication services. Symmetrically, there was an overvaluation of the prices of agricultural and consumer goods, particularly in the case of the food industry and light manufacturing. This relative price structure was reflected in an implicit re-allocation of resources, from the areas producing non-agricultural primary commodities and investment goods to those producing consumer and agricultural goods. In the opposite direction, there was a flow of direct transfers to finance the investment requirements of extractive industries and to assure the presence of a sufficient wage gap to incentivize the allocation of the labour force (Orłowski 1993).

Several authors have estimated and compared the trade balances (as a ratio of GNP) evaluated on the basis of domestic and international prices, for determining the gains or losses (at predetermined volumes, thus abstracting from price elasticities and income counter-effects), as a percentage of regional products, due to the complete adoption of the relative international price structure. These different estimates (Banca d’Italia 1991, Senik-Leygonie and Hughes 1992, Orłowski 1993, Tarr 1994) based on partially diverse methodologies and reference years (in 1990 the world relative price of energy was high and this fact clearly affects the estimates) achieve results which are similar in many respects.

Given the different endowments of natural resources and the varying degrees of regional specialization of production, the impact of adopting the international price structure would be negative and particularly severe for five small open economies in the European area: Belarus, Moldavia, Estonia, Latvia and Lithuania. These repercussions are instead more differentiated in the Central Asian area which would be less affected, as a whole, due to both the presence of natural resources and fewer manufacturing industries (on the other hand, this region has suffered most from the loss of direct transfers
from the Union’s budget). In the case of Turkmenistan, the energy sector would provide a higher gain, as a ratio of GNP, than Russia’s; the impact of the relative international prices would also be beneficial for Turkmenistan and Kyrgyzstan. Instead, two Asian countries, Tajikistan and Uzbekistan, would be subjected to a loss; this negative trade shock is, however, estimated to be potentially offset by the favourable effects on trade outside the area.

Symmetrically, the gain for the most diversified economy, the Russian Federation, can be evaluated between 12% and 18% of GNP (respectively at 1988 and 1990 prices) on the total (outside and inside the area) trade, close to 6-7 percentage points regarding regional exchanges.

An important contribution by Senik-Leygonie and Hughes evaluates the consequences on trade of regional production with negative value added.9 The lowest “implicit profit rates” computed at world prices are concentrated in the republics producing mostly consumer goods (Belarus, Ukraine, the Baltic states), while value added is higher in areas producing agricultural and extractive commodities, where integration would be more immediate. Furthermore, applying as a corrective proportion the amount of exports given by industries with negative value added at world prices, a negative impulse would be suffered by some Asian countries (particularly Uzbekistan), Moldavia and the Baltic states.10

In any case, a common limitation of the methodologies considered in this section concerns the implausibility that the technical coefficients crystallized in the existing input-output tables, for 1987-90, remain unaffected by the wide movements of relative prices and overall terms of trade. Moreover, the restrictive assumption of a

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9 The notion has been introduced by McKinnon (1991). In the planned economies, the widespread use of artificial prices, which were far from the actual costs of production, have fostered the adoption of technologies that, evaluated at international prices, would remain unprofitable at any exchange rate. The use of uneconomical productive processes means a high consumption of primary inputs; price repercussions on costs would determine an output contraction.

10 These estimates are made more uncertain, however, by the high sectoral concentration of negative, or close to zero, value added which is almost completely recorded in one sector, the food industry (see Table 1, p. 360 in Senik-Leygonie and Hughes 1992). In economies with underdeveloped sectors, where costs of productive services are imputed to industry, it is difficult to distinguish between production and distribution in a Western definition, and the problem may be partially overestimated. Instead, the downgrading of the Central Asian area is mainly due to the low profitability of the local textile industry; the producing countries were exporting the primary commodities (wool, cotton) to Russia, Belarus and the Baltic states, with much higher industrial capacity.

"small open economy", a price taker on world markets, is applied to an area with a population of 290 million and ample endowments of natural resources, infrastructures and human capital; the ceteris paribus conditions implicit in these empirical exercises are thus mainly conjectural.

However, there is actually a danger that, in the complete absence of protectionist measures, a rapid import substitution at the expense of local production in the consumer goods sectors could determine a progressive "kuiwarianization" of the former Soviet economies; the existing structure of world prices would allow them only to export energy and extractive resources.11 In the longer run, the increasing degree of openness to external trade can promote the adjustment of relative costs of factors of production toward an equilibrium. The fast movement of prices toward international levels would give the firms a correct signal and promote their adaptation.12 In practice, however, relative prices are distorted by high inflation, and complete integration could signify the loss of the market by the national firms. The rapid liberalization of external trade recently implemented by these transitional economies is thus a courageous choice. Another unresolved question concerns the global effects of their re-orientation of external trade. Actual integration would require the removal of the existing barriers which, albeit formally banned, are often maintained in a non-explicit manner. The existence of ample comparative advantages makes the resort to protectionism practice more likely; for instance, in 1992 the European Community imposed limitations on the import of steel...
from Hungary, Poland and former Czechoslovakia. These problems require time, and a considerable amount of political skill, to reach a solution.

4. Empirical results on the impact of inflation on money velocity and on the distribution of seigniorage in the ruble area

The lack of coordination on price deregulation has generated remarkable contrasts among the republics concerned. The Baltic states liberalized prices in 1991, before the CIS; in 1992, following the implementation of shock therapy, the Russian Federation abruptly moved the terms of trade to her advantage. Moreover, in the time span of two and a half years, two drastic monetary reforms have changed equilibria in the area. Because old rubles circulated in 1992 in most of the former Soviet republics, the second reform can be interpreted as a corrective measure for enhancing discipline in the area and reaching a de facto reappropriation of monetary sovereignty, excluding the peripheral countries from the common currency.

Given the incomplete diversification of production and the former orientation of trade, it is possible to distinguish (in a pragmatic manner, due to the rapid changes in both the political and institutional frameworks) between the states most closely linked to the ruble area and the economic policies of the leader country, the Russian Federation (Belarus, Kazakhstan, Uzbekistan, Tajikistan, Armenia) which, following the monetary reform of July 1993, were authorized to use old rubles until the eventual reconstruction of the currency union; Ukraine, which is pursuing an independent economic policy and can influence the equilibria in the area due to both her dimension and degree of industrialization (a population of 52 million, a real GNP of about a quarter of Russia's); finally, the small open economies that have speedily introduced their own money, or are on the way and seem more inclined to follow autonomous policies (Lithuania, Latvia, Estonia, Georgia, Moldavia, Azerbaijan, Kyrgyzstan, Turkmenistan).

The loss of financial control which has followed the attempts to decentralize the economy requires an evaluation of the macroeconomic aspects concerning seigniorage; high inflation rates have facilitated an implicit reallocation of resources across countries.

As is well known, the programme of reforms translates into the virtual loss of the planned system's traditional mechanisms of implicit taxation, based on the reallocation of the surplus of state firms. The contraction of revenues brought about by relative price movements, by the diminishing weight of the state sector and the collapse in production has been partly compensated by a reduction of subsidies, the introduction of fiscal requirements on international transactions, and by energy price rises (an important source of indirect taxation). All this notwithstanding, the budget deficits in transitional countries have risen rapidly as a ratio of GNP.

According to Bailey's (1956) classical contribution, seigniorage is defined as the hidden taxation on money holders (cash and bank deposits) due to inflation; its appropriation depends, for the newly independent states, on the introduction of an own currency.

In order to reach a quantitative evaluation, albeit approximate, Fischer's (1982) formulation of seigniorage as a ratio of national product can be applied:

\[
\frac{\text{Seigniorage}}{\text{GNP}} = \frac{dM}{Y} = \frac{dM}{M} \cdot \frac{M}{Y}
\]

1) The removal of disequilibria related to fiscal origin requires the strengthening of the firms' budget constraints, in order to assign specific costs and benefits to each producer. In the meantime, the systemic risks of the formerly planned economies are still high: the difficulties of the state firms affect each other due to the existence of a complex network of credit relationships linked to trade transactions and to the reparations of huge overdue payments, which are however declining in real terms (see Sarcinelli 1992, on the recent Eastern European experience).
This definition can be easily adapted to the empirical work and permits a new contribution to this literature. From the quantity identity \( MV = Y \), considering that \( dM/M = dY/dV \) (for \( dV \), \( dV \) equal or higher than unity) and substituting, yields:

\[
\frac{\text{Seigniorage}}{\text{GNP}} = \frac{dY}{dV} = \frac{M}{Y}
\]

The amount of seigniorage is positively linked to the variation of nominal income \( (dY) \), to the "bias" of the inflation tax \( (M/Y) \), money as a ratio of GNP) and inversely related to velocity changes \( (dV) \). \textit{Ceteris paribus}, in a country with an underdeveloped financial system, money as a ratio of GNP can be high and seigniorage potentially more widespread; moreover, the inflation tax goes up in the presence of money illusion or as a consequence of the lack of adequate monetary substitutes.

Seigniorage can be estimated, given the variation in nominal income, the previous monetary levels and adopting (to offset the incompleteness of country data) a working hypothesis on the behaviour of money velocity, which can be assumed to depend positively on the expected inflation rate:

\[
V_t = f(\pi_t, X_t)
\]

If economic agents forecast a high future inflation rate \( \pi_t \), they will try to escape the inflation tax by lowering money holdings and increasing velocity, \( X_t \) is a vector of other explanatory variables which potentially have additional influence on money as a ratio of GNP: the difficulties in the payments system and the widespread resort to barter, variations in the propensity to save (in monetary form),\textsuperscript{19} the possibilities of currency substitution, the accumulation of large amounts of uncollectable credits on behalf of intra-firm trade.

\[
\text{Regarding the expectations formation mechanism, two alternatives can be applied:}
\]

\[
\begin{align*}
4a) & \quad \pi_t = \pi_{t-1} \\
4b) & \quad \pi_t = E(\pi_t | L_{t-1})
\end{align*}
\]

In (4a) the expected inflation at time \( t \) is simply the inflation rate at time \( t-1 \); in (4b) agents form expectations rationally, on the basis of the information set available in the previous period. In the econometric application, the explanatory variable is predetermined (the lagged inflation rate) in the first case; in the second, the instrumental variables estimation proposed by McCallum can be applied (Chow 1983, chapter 11), introducing as a regressor the inflation rate at time \( t \) and as instruments the variables of the information set potentially known at time \( t-1 \). In both cases the estimators will be consistent.

A very relevant aspect concerns the appropriate definition of money. Evaluations of seigniorage usually employ concepts of "high powered money", more directly controlled by the central bank (currency and bank reserves). In the case of the former USSR, it is more relevant to apply a broader definition, which includes both cash and bank deposits (in rubles).\textsuperscript{17} Indeed, due to the presence of highly negative interest rates in real terms, seigniorage on money deposits is not only appropriated by the central bank or the government but by the entire system of commercial banks, and transmitted to their clients (mainly large state firms). This implies the persistence of a redistributive policy across regions, sectors and firms and the diffusion, within the monetary union, of the impulses of the price-liberalization process by exporting the inflation tax.

The empirical estimates concern data on consumer price inflation and money velocity for nine countries of the former USSR, based on partially estimated IMF figures, which pool together to sum 46

\textsuperscript{17} This broad definition recalls the original contribution of Bailey (1956, p. 104: "[...] if the banks do not, in fact, charge the economic rate of interest on their loans and pay no interest on deposits [...] the government's share of the total 'tax' on cash balances is only the share of currency in the total money supply. The balance of the tax is appropriated by people who are fortunate enough to get bank loans"). However, it can be applied to seigniorage in 1992, not later; in the course of 1993, interest rates in the area were progressively raised, in the last quarter in Russia, they became positive in real terms.
quarterly observations. The countries and periods considered are: Armenia (92.I-92.III), Moldavia (91.IV-92.III), Azerbaijan (91.IV-92.III), Kazakhstan (91.IV-92.IV), Latvia (91.II-91.IV), Lithuania (91.I-92.IV), Ukraine (91.IV-92.IV), Belarus (91.IV-92.IV) and Russia (91.IV-93.IV). The sample in the case of the two Baltic states include the year 1991 because they anticipated the price liberalization.

Considering initially the first differences of the variables $V = \log (Y/M)$, $\pi = \log (dP/P)$, the following pooled regression is estimated (quarterly inflation is expressed at an annual rate):

$$dV = 0.169 + 0.128 \text{ det (L1)}$$

$$t = (3.97) (9.63)$$

$$t = (4.08) (9.46)$$

$T=37 \quad R^2=0.718 \quad SER=0.259 \quad DW=2.472 \quad LM(4,31)=1.352$  

(0.21)

$$JB=0.483 \quad BPL=0.371 \quad BPE=3.453 \quad ARCH=0.019 \quad RESET=9.435$$

(0.79) (0.54) (0.06) (0.89) (0.06)

Since the diagnostic tests detect a moderate degree of heteroskedasticity at the 6% level, we have also computed White's con-

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18 Money data (currency and deposits in rubles) are end of period figures, obtained from the statistical appendixes of nine issues of IMF Economic Review (up to September 1993). The central bank's recent IMF data on the Russian Federation has been obtained by courtesy of A. Giuntini from the Bank of Italy Research Department. Velocity has been computed using consumer prices because analogous observations on GNP deflators are unavailable; annual real GNP data have been converted to quarterly observations using as a proxy the available indicators of industrial production. Instead, average money holdings as a ratio of GNP in 1991 (M/Y, the reciprocal of velocity) for all the 15 republics are taken from Mokhasevskii (1992, p. 449); they are compatible with the available data from the IMF.

19 In the regressions (5a) and (5b) first differences are computed on the actual vector of lagged observation (thus losing nine observations, one for each country). The regional dummies are not significant (considered both together and individually) and have been dropped. The diagnostic statistics are as follows: SER is the standard error of regression, LM is Godfrey's test for autocorrelation based on Lagrange multipliers (the test is applied to four lags); JB is Jarque-Bera statistics for error normality, BPL and BPE are Breusch-Pagan tests for heteroskedasticity (linear and exponential), ARCH is Engle's test for autoregressive heteroskedasticity, RESET is Ramsey's specification test (Judge et al. 1985). Reported p-values are in parentheses.

The introduction of a linear trend (higher polynomials are not significant) in the levels of the variables improves the specification: in particular, the regression now passes the RESET test. The linear growth of velocity proxies for the joint contribution of several systemic factors (the unobservable variables of vector $X$); the wide

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20 Instruments are the constant, the regional dummies, inflation lagged one and two months, a linear and a squared time trend. Under IV, available diagnostic tests are fewer than with OLS; however, using OLS estimates, results are very close to those based on instrumental variables.
diffusion of barter due to the lack of stable prices and the difficulties of the payments system; the spreading of enterprise arrears. With instrumental variables, we have:

\[ V = 0.357 -0.609 \text{ MOL} -1.915 \text{ AZE} -1.634 \text{ KAZ} -3.897 \text{ LET} \]

\[ t = (1.69) (-2.91) (-7.58) (-5.17) (-10.14) \]

\[ t_e (1.85) (-2.41) (-8.41) (-5.83) (-13.29) \]

\[ -3.809 \text{ LIT} -5.169 \text{ UCR} -5.314 \text{ BIE} -7.116 \text{ RUS} +0.168 \text{ TREND} \]

\[ (-7.76) (-8.22) (-7.59) (-8.15) (-7.86) \]

\[ (-10.82) (-11.76) (-10.61) (-11.43) (-11.63) \]

\[ +0.124 \pi \]

\[ (6.19) \]

\[ (7.34) \]

\[ T=46 \quad R^2=0.833 \quad SER=0.236 \quad DW=1.969 \quad \text{(IV estimates)} \]

Overall, the close similarity of the coefficients estimated both in levels and first differences is an indication of a reliable specification.\(^{21}\) As a further check on stability, it is possible to separate the Russian Federation from the rest of the sample. In the ruble area outside Russia, we estimate:

\[ V = 0.290 -0.696 \text{ MOL} -2.100 \text{ AZE} -1.923 \text{ KAZ} -4.280 \text{ LET} \]

\[ t = (1.25) (-3.09) (-7.11) (-4.94) (-8.74) \]

\[ t_e (1.53) (-2.83) (-9.15) (-6.48) (-12.66) \]

\[ -6.345 \text{ LIT} -6.339 \text{ UCR} -5.870 \text{ BIE} +0.193 \text{ TREND} +0.126 \pi \]

\[ (-6.74) (-6.33) (-7.07) (6.70) (5.56) \]

\[ (-10.40) (-10.10) (-11.24) (10.61) (6.58) \]

\[ T=37 \quad R^2=0.845 \quad SER=0.264 \quad DW=1.969 \quad \text{(IV estimates)} \]

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\(^{21}\) For instance, if the "true" model is \( Y = \beta X + \epsilon \), we have \( Y - Y_i = \beta (X - X_i) + \epsilon - \epsilon_i \). The coefficients on \( X \) and \( DX \) must be equal; the estimation of the model in first differences, however, will not be efficient (due to the presence of a unit root in the errors' moving average).

Analogous results for the Russian Federation (fairly indicative, since they are based on nine quarterly observations only) are:

\[ V = -5.129 \text{ RUS} +0.132 \text{ TREND} +0.109 \pi \]

\[ t = (-4.01) (4.59) (2.70) \]

\[ t_e = (-4.74) (6.16) (5.26) \]

\[ T=9 \quad R^2=0.809 \quad SER=0.220 \quad DW=2.274 \quad \text{(IV estimates)} \]

The estimated magnitudes: 0.193(\(\pi\)) + 0.126(\(\pi\)); 0.132(\(\pi\)) + 0.109(\(\pi\)) give a range sufficiently wide for calculating the velocity variations and consequently the amount of seigniorage in the area (of course the trend, like inflation, must also be annualized). This range has been used for computing the change of velocity between 1991 and 1992 in ten former Soviet republics. Annual averages of \( V \) in both years are instead available by IMF data for Russia, Ukraine, Belarus, Lithuania and Kazakh. These estimates are preliminary, however, given the likely presence of measurement errors and the paucity of available observations. On the other hand, the high variability of these series is likely to improve the precision of the estimated coefficients.\(^{22}\)

These figures (Table 2) permit (for the first time, to the author's knowledge) an approximate overall evaluation of seigniorage in the entire ruble area, before the abandonment of the common currency. The order of magnitude of the inflation tax in 1992 was very high in

\(^{22}\) This point merits a brief discussion. Following, for instance, an example by Judge et al. (1983, p. 709), given a linear relationship \( Y = \beta X + \epsilon \), suppose that instead of the "true" variable \( X \), the econometrician observes or measures \( X_0 = X + \alpha \), where \( \alpha \) is the measurement error. With one explanatory variable, we have:

\[ \text{plim} (\hat{\beta} - \beta) = \frac{\beta \sigma_e^2 - \beta ^2 \sigma_{e_0}^2}{\sigma_e^2 + \sigma_{e_0}^2} \]

Because of the presence of measurement errors, OLS estimates are biased downward, as is the impact of inflation on velocity. Due to wide macroeconomic imbalances which occur, however, the explanatory variables (both observed and "true") present an ample variance, both cross-country and over time, and the bias is thus not likely to be high (the result, however, holds only asymptotically).
Russia, it is about 28% of nominal GNP. In the case of Ukraine, seigniorage is 20% of GNP; in the largest republics (Belarus, Kazakhstan and Uzbekistan) it can be evaluated at about 10%. It is still high in the smaller states of Moldavia, Estonia, Tajikistan, Kyrgyzstan and Turkmenistan.

The distribution of seigniorage in the area (as a ratio of nominal GNP in 1992) shows the existence of important asymmetries within the former currency union; the share of the Russian Federation is close to three quarters of the total; for Ukraine it is 16% and 17%, for Kazakhstan it is close to 4%. In the remaining areas it is comprised between 1.4% (Belarus) and some 0.2% (Armenia).

Consider, for instance, the small central Asian republic of Kyrgyzstan; the order of magnitude of seigniorage can be estimated to lie between 20% and 10% as a ratio of GNP, but only between 0.4 and 0.3 percentage points in terms of share of the whole former USSR. The introduction of its own currency gives this country the possibility of appropriating a large amount of inflation tax, without significantly affecting the rest of the area.

5. Conclusions

Notwithstanding the repeatedly noted difficulties in measuring, comparing and estimating the actual magnitudes involved, the quantitative information which has been discussed so far contributes to a more detailed description of the transition process and stresses its diversification. A more general approach, however, would include a cost-benefit analysis on the effects of the movement from a currency

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Table 2

<table>
<thead>
<tr>
<th>Country</th>
<th>Russian Inflation Rate (September-December 1992)</th>
<th>Seigniorage Share of Inflation Tax (as a % of GDP, in 1992)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Russia</td>
<td>50.4</td>
<td>11.0</td>
</tr>
<tr>
<td>Ukraine</td>
<td>31.5</td>
<td>10.9</td>
</tr>
<tr>
<td>Belarus</td>
<td>25.8</td>
<td>10.0</td>
</tr>
<tr>
<td>Estonia</td>
<td>20.3</td>
<td>10.5</td>
</tr>
<tr>
<td>Georgia</td>
<td>15.8</td>
<td>10.0</td>
</tr>
<tr>
<td>Armenia</td>
<td>11.3</td>
<td>5.0</td>
</tr>
<tr>
<td>Uzbekistan</td>
<td>9.0</td>
<td>5.0</td>
</tr>
<tr>
<td>Kazakhstan</td>
<td>7.0</td>
<td>5.0</td>
</tr>
<tr>
<td>Kyrgyzstan</td>
<td>5.0</td>
<td>5.0</td>
</tr>
<tr>
<td>Turkmenistan</td>
<td>3.0</td>
<td>5.0</td>
</tr>
</tbody>
</table>

Endnotes:

1. This estimate is close to the figure (around 31%) recently calculated at the World Bank (Eastley and Vieira da Cunha 1994, pp. 13-14 and 39), notwithstanding some differences in the methodology (the authors compute the inflation tax on monthly money holdings and subtract the interest paid on building deposits). Since only annual observations are available for most of the republics, we preferred not to pursue a higher frequency computation of seigniorage, so as to give comparable data in Table 2. Given the wide range of variation of velocity (from 2.5 for Russia to 7.7 in Kyrgyzstan) in any single republic the change in velocity may not coincide with the estimated average value in the area; moreover, the impact of inflation is mainly concentrated in the first quarter of 1992 (when Russia liberalized prices); due to the unavailability of detailed quarterly data, it is not possible to consider this.

2. An interesting model with externalities in the "production" of seigniorage is Aizenman’s (1992): countries take advantage of it, without considering the adverse consequences of their behaviour on the currency union as a whole. An application to the ruble area must take into account the existing asymmetries; the peripheral economies’ contribution to the inflation tax is marginal.
union based on the ruble to a different monetary regime. However, there is no consensus among economists on the optimal characteristic of the trade-off between a de facto loss of monetary sovereignty (by adhering to the ruble area) and a decentralization of the responsibilities regarding macroeconomic adjustment (following the introduction of national currencies). Monetary independence in the newly created republics is seen as a corollary of political sovereignty and thus has no immediate economic roots. The debate on the costs and potentials of a currency union has not reached definitive results and thus only permits the elaboration of some basic arguments concerning the nature of the constraints and opportunities linked to the new monetary equilibria.

A first criterion is based on the available adjustment tools. As is well known, in the presence of a common currency, offsetting an exogenous impulse requires adequate flexibility of wage and price levels across areas, or a compensatory variation of quantities (output and employment) or, as a last instance, the mobility of factors of production (labour force migration); relatively young economies, with a sufficient amount of flexibility, could take advantage of the economics of information, transaction and scale associated with a common currency. On the other hand, labour mobility in the past has been a characteristic of the Slav and Caucasian populations, which provided specialized industrial workers. In the case of central Asian republics, with high demographic patterns and an oversupply of unspecified labour (Marrie 1993), the population has always resisted, also for cultural reasons, migration towards industrial districts. In nations like Uzbekistan, the introduction of an independent currency can thus give an alternative opportunity to mass migration.

A second argument concerns the probability of asymmetric shocks related to the low diversification of the economy and the spreading of systemic risks. If the exchange rate constitutes an additional instrument for compensating differentials in macroeconomic fundamentals, a practical limitation derives from the lack of credibility, which may suggest following a leader country, or by the difficulties of policy coordination; this justifies the choice of some of the poorest republics (for instance, Tajikistan) of remaining linked to a country with a totally different structure of production and economic potential.

The extension of external disequilibria, and of the corrections necessary to compensate them, influences the shock-absorb role of the exchange rate (augmenting the possibilities of overshooting from macroeconomic fundamentals) and affects the degree of segmentation of national economic policies. It is generally agreed that the openness of the economy increases the "demand" for a monetary union; the extent of economic integration is positively correlated to the economics of transaction of the common currency; also, openness strengthens the automatic stabilizers (import demands, variations in relative prices of traded goods) which contribute to bring the economy back to equilibrium without relying on exchange-rate adjustments. Major openness of the economy explains the initial permanence in the ruble area of Belarus, while in the case of the small open Baltic economies the choice of monetary independence is closely linked to their prospective reallocation of trade toward Northern Europe.

The nature, temporary or irreversible, of the narrowing of the ruble area sums up the overall transition uncertainties. It is difficult to indicate possible paths of developments for the republics, necessitating the availability of up-to-date information on their present orientation regarding fiscal, monetary and trade issues. This empirical work has discussed the origin of the main shocks and evaluated how the high inflation in the area has modified money velocity and represented an involuntary source of financing through seigniorage: its order of magnitude is high. Due to the lack of coordination on price-liberalization decisions and to the violence of the impulses, these economies have rapidly reached the inefficient segment of Bailey's curve (1956) and abandoned their common currency.

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25 The supremacy of a political, rather than economic, significance of a monetary union is well represented by the experience of the German unification. The parity exchange of western and eastern marks within the area was initially unfavoured by most economists (due to the existence of a productivity gap not compensated, in a monetary union, by adequate differentials in wage levels).

26 On this subject see, among others, Cesaroni (1992).
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The Political Economy of Reciprocity: A Comment

KURT ROTHSCHILD

In an interesting article dealing with reciprocity clauses in tariff reductions (Arndt 1994) Professor Arndt poses the intriguing question why reciprocity is so frequently demanded although economists have always preached (proved?) that unilateral tariff reductions or tariff removals by themselves are a sure way towards greater efficiency and welfare. To this he adds the further question why -- in spite of this general tradition of reciprocity -- several countries in the Asian-Pacific region have recently embarked on unilateral trade liberalisation. The following remarks try to supplement Arndt's arguments which -- so it seems to me -- leave out some important aspects.

Starting from the classical and perennial free trade bias of economic theorists based on the argument of allocative efficiency, Arndt does not treat the insistence on reciprocity as a "fact" simply to be taken into account when one describes and analyses economic reality, but as something whose existence has to be "explained" because it runs counter to the "obvious" welfare arguments of economists. According to Arndt, two political factors are mainly responsible for the insistence on reciprocity: firstly, the superior power of producer interests in following their aim to gain or maintain market access in industries subject to foreign competition, and secondly the popularity of "voodoo economics", i.e. the "prevalence of protectionist fallacies among the general public in most countries" (p. 264) which adds political support to the producers' demands.

* Wien (Austria).