

PARTIAL ADJUSTMENT WITHOUT TEARS
A TALE FOR THE TOLAR

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1. Introduction

The creation of the Slovene monetary system dates to October 1991; at the time it was the only East-European example of full domestic convertibility on current-account transactions. It would thus seem appropriate to closely examine and digest the first lessons to be learnt from that experiment in its initial, highly uncertain period.

As early as mid 1990, the threatening political and economic collapse of former Yugoslavia forced the Slovene authorities to look for a new institutional setting for the republic, so as to insulate the economy from the shocks characterizing the rest of the Federation, and to accelerate the transition towards a free-market system. The political development which followed concentrated these efforts on a search for suitable institutions for the newly born country.

The institutional steps which have led to the introduction of the Slovene Tolar (SIT) have already been described and discussed elsewhere (Mencinger (1993)). In short, existing dinar balances in the Republic were exchanged at a 1:1 ratio to keep the process as simple as possible, and the nominal exchange rate was allowed to float freely, starting from a rather arbitrary 32 SIT for the DM. The rejection of a fixed exchange-rate regime was justified on four grounds. First, the Central Bank of Slovenia could not command the amount of reserves necessary to defend a fixed rate against possible attacks. Second, information about the structural features - both real and monetary - of the newly-born economy were lacking to allow any kind of attempt at fixing the rate or at guessing the equilibrium rate. Thirdly, a choice in favour of a fixed exchange rate would have

required an initially very weak tolar in real terms, so as to cope with the existing high inflation rate, which could not be expected to be reduced to OECD levels in a matter of weeks¹. But the initially very weak tolar would itself stimulate inflation: for in a small, open country a rise in the price of tradeables has important consequences on the general price level and may even lead to the dollarization (in Deutsche Mark) of the economy, thereby making a fixed-exchange-rate regime unsustainable. Finally, there was the awareness that the transition and the disappearance of what used to be a domestic Yugoslav market necessarily imply continuous changes in the equilibrium real exchange rate, which can hardly be accommodated by a fixed rate when domestic prices are sticky downwards².

At the same time, foreign-exchange transactions on the current account were kept separate from those on the capital account. In addition, forward exchange market transactions were prohibited, to minimize random exchange-rate fluctuation and to deter possible speculative attacks on the tolar.

It is known that during its first year the tolar has been remarkably strong; actually much stronger than forecast. The nominal exchange rate on current-account transaction rose sharply twice; just after the birth of the SIT (from 32 up to 42 SIT per DM) and in January 1992 (to slightly above 50 SIT per DM), but it then declined very slowly. As a consequence, given the constant rise in the price level - at a decreasing rate³ - the real exchange rate initially increased (i.e.

¹ See Corbo (1992) and Bomhoff (1992) about the need to start with an artificially high real and nominal exchange rate, if the latter is supposed to stay put through the whole transition period.

² If fact, prices were actually increasing.

³ The monthly inflation rate fell from 21.5% in October 1991 to 1.4% in August 1992.

weakened), but then was already significantly stronger by the first half of 1992.

This behaviour seems contrary to common sense and gloomy predictions. Indeed, it is widely accepted in the literature that in the absence of stabilization funds, a high-inflation economy undergoing a transition process is bound to face sizable and continuous increases in its nominal exchange rate, thereby nullifying the efforts to stabilize, and/or requiring the introduction of foreign-exchange restrictions. In fact, none of this happened in the case of Slovenia, where the Central Bank was even forced to sell tolar, to forestall an appreciation in nominal terms. Finally, in August 1992, the Bank of Slovenia deliberately let the tolar depreciate by increasing the demand for foreign exchange, accumulating reserves and trying to sterilize, or at least postpone, the ensuing monetary effects by means of open-market operations.

Within this framework, the aim of the present paper is twofold. On the one hand, a simple model is presented in section 2., to describe the theoretical behaviour of the tolar on the market for current-account transactions in the initial, highly uncertain period, starting from the end of January 1992 (the initial adjustment period has been ignored)⁴. Such a model is then estimated and tested in section 3. and its relevance for the real world assessed. Some results are derived in section 4., so as to estimate the likely dynamics of the tolar exchange rate in the short-to-medium term; the implications for policy making are analyzed in detail.

2. The features of the model

An economy undergoing a transition process faces two

⁴ What has happened until the end of 1991 has no rational explanation, for the initial exchange-rate level was chosen rather arbitrarily, i.e. by assuming that the April 1988 Dinar/DM exchange rate was the equilibrium exchange rate.

kinds of change. One is during the period (or the moment) in which the transformed institutional setting is introduced; the other is the kind of change which takes place as a response to the new property-right system. The former affects the behavioural rules of the economy; the latter, on the other hand, affects the state of the economy, say its efficiency, and the nature of its disequilibria. In the case of Slovenia one should however also consider the abrupt changes in the characteristics of demand and supply provoked by politics - both the independence of the republic and the collapse of the rest of Yugoslavia. These changes, even if hardly predictable, at least in the short run, do play a major role as regards the conditions of the Slovene economy.

In the present paper the behaviour of one particular variable - the nominal exchange rate - has been observed, and a possible explanation has been put forward. The focus is on the period following the institutional change (liberalization), between the end of January 1992 and the end of August 1992. Thus, the period immediately following the institutional shock (October 1991) has been excluded, and attention restricted to what might be defined as the beginning of the stabilization process.

Within this framework, empirical investigation can follow two different strategies. One possibility is to examine the nominal exchange-rate behaviour as reflecting changes in the nominal and real variables of the underlying economy; this choice has of course been the object of considerable debate in a vast literature, where the various versions of the monetary and portfolio models have been discussed and tested⁵.

By and large, the results offered by this approach have been relatively satisfactory when applied to medium- and long-run perspectives. But such models are weak in providing short-

⁵ See, for instance, the survey presented in MacDonald-Taylor (1992).

run explanations of the exchange-rate behaviour. They do seem useful however in describing the trend elements of such variables, which actually seem to follow the structural features of the economy⁶.

In the case of Slovenia, however, structural modelling does not appear very promising; for three reasons.

First, the period considered here is too short to allow economic and institutional fundamentals to be reflected in the exchange-rate behaviour. In addition, the application of a more or less sophisticated monetary/portfolio model appears superfluous in a situation with *de facto* no capital mobility and a highly simplified institutional framework. Furthermore - and perhaps more importantly - the dynamic characteristics of most economic features of Slovenia after independence (if anything, because of its transition from a "socialist" to a "capitalist" framework) is such that the assessment of the structural features of the country is extremely difficult, if not hopeless. Thus, even if it had been possible to collect all the data which would have been necessary in order to estimate the economic structure of this country, one would need to have clear ideas about the dynamics of such a structure. This is obviously impossible, for such data refer to an unbalanced economy, and therefore are a mix between the actual fundamental features of the economy and its imbalances. The solution of the identification problems which follow may be provided by general-equilibrium modelling; although not without ambiguities⁷. But such solutions are out of question if the

⁶ A possible source of ambiguity is provided by the notion of structural models; for they usually refer to models where the values of the explanatory variables do change, but their effects on the economy follow a fixed structure. Actually, the structure may vary through time, as in the variable-coefficient models; but the theory behind such a change is usually very weak, if not totally absent.

⁷ For instance, a distinction is made in Dervis, De Melo, Robinson (1982, p.196) between the *equilibrium* and the

data and the time span observed are limited, as in this case. Not only; by extending the period one should have taken into account the deep changes which occurred - say - in 1993, when capital mobility became important and the abundance of foreign exchange started to present serious problems to the monetary authorities.

A second strategy, both simple and persuasive, has therefore been preferred. Within this framework, exchange-rate movements are analyzed as if they were following some kind of adjustment process. In particular, uninformed traders - and given the uncertainties which have characterized the Slovene economy after its birth, that appears to be a very reasonable assumption - consider the expected change in the price level (P^*) as the most obvious variable to look at in order to form expectations about the exchange rate (E^*) and buy or sell tolar accordingly⁸. In particular, one may assume that Slovenes believe that the exchange rate tends to behave according to a weak purchasing-power condition⁹, with foreign

optimal exchange rates, the former referring to the would-be market price of a given currency, the latter referring to its shadow price. It is hard to say which of these the *actual* exchange rate follows.

⁸ Other obvious candidates as benchmarks in order to build expectations are the trade and the current-account balances. Both, however, present problems. First, data on such balances become available much later than the statistics on prices; in addition, figures may be misleading due to seasonality and "accidents". For instance, Slovene foreign trade has been undergoing a deep rerouting process, due to the loss of the Croatian and Serb markets, which in the past were the most important trade partners of Slovenia. As a matter of fact, when trade or current-account figures are published, they are most likely to reflect structural features no longer applicable to the current situation; and the kind of information they deliver is negligible if compared with that conveyed by past exchange-rate values.

⁹ There is plenty of evidence that this is actually the case, and not only in Slovenia.

prices moving at a constant rate¹⁰.

At the same time, however, buyers and sellers of SITs know that the Central Bank often intervenes to smooth out changes in E , the actual exchange rate; as a consequence, operators end up acting as if the actual change was just a fraction of the expected change. It is thus possible to write

$$\log E - \log E_{-1} = \mathbf{a} \cdot (\log E^* - \log E_{-1}) + \mathbf{g}_1 \cdot \mathbf{Z}_1$$

and

$$\log E^* = \mathbf{b} \cdot \log P^* + \mathbf{g}_2 \cdot \mathbf{Z}_2$$

It then follows that

$$\log E = a \cdot \log P^* + b \cdot \log E_{-1} + c \cdot \mathbf{Z}[1]$$

$$\text{where } a = \mathbf{a} \cdot \mathbf{b}$$

$$b = 1 - a$$

$$c \cdot \mathbf{Z} = \mathbf{g}_1 \cdot \mathbf{Z}_1 + \mathbf{a} \cdot \mathbf{g}_2 \cdot \mathbf{Z}_2$$

Of course, this does not mean that the exchange rate actually follows such rule; indeed, there is ground to believe that it does not, following the structural changes involved in the transformation process. But it is nevertheless plausible to assume that on average agents ignore the intensity and perhaps even the sign of the effects of structural change on the exchange rate; and that agents form their expectations by looking at the only variables readily available - prices - and consider the result of structural change as a random variable distributed normally around zero.

¹⁰ According to the standard weak-PPP literature the exchange rate should move proportionately to the dynamics of relative prices, that is of the Slovene price level relative to the German price level, as we are dealing with the SIT/DM exchange rate. In this case it is actually reasonable to assume that the German inflation rate is perceived as constant, so that it can be ignored in our estimates.

where Z_1 and Z_2 are two vectors of exogenous variables (in logarithms): the former takes into account the effect of unexpected shocks on the actual exchange rate, while the latter takes into account the effects of other variables (apart from expected prices) on the expected exchange rate.

The estimates of the coefficients obtained from equation [1] would be doubtful. Although the test for unit root indicates that variable E is an integrated process of the first order¹¹ and the spurious-regression problems might be overcome, the small dimensions of the sample make techniques relying on non-stationary time series questionable (and the search for consistent-parameter estimates is therefore beside the point)¹².

The above variables were then redefined in terms of proportional changes, so as to get rid of the non-stationarity problem, without major consequences on the quality of short-run forecasting. The following equation has thus been estimated:

$$PDE = a_1 \cdot PDPR + a_2 \cdot PDPR^2 + b \cdot PDE_{.1} + c_1 \cdot DSTER + c_2 \cdot PDOFFE_{.1} + c_3 \cdot PIND + e[2]$$

where PDE is the proportional change in the exchange rate, $PDPR$ is the expected inflation rate, $DSTER$ describes sterilized purchases of foreign exchange by the Central Bank. $PDOFFE$ is the proportional change in the official exchange rate, a type of past-exchange-rate moving average¹³ which

¹¹ But is not a random walk, due to the presence of serially-correlated residuals.

¹² See Granger-Newbold (1974); and also Stock-Watson (1988) for a simple survey of the literature concerning the use of OLS techniques in these circumstances.

¹³ The official exchange rate is published by the Bank of Slovenia and is used to fix custom duties. But it is a moving-parity rate obtained as a variable-weight moving average over a sixty-day period. Weights fall with inflation: with no inflation all days would bear the same weight.

takes account of the "long-term" memory of operators. The third term is the proportional change in industrial production (PIND), which takes account of the size of the tradeable sector, typical of a small, price-taking economy (international demand for Slovene commodities is assumed to be perfectly elastic). Slovenia fits this assumption remarkably well, as witnessed by the ease with which export re-routing has actually been accomplished, so that the increases in industrial production led with to increases in the international net demand for tolarars.

3. Estimates and tests

3.1 About the data

Given the relatively short time span analyzed in this paper, weekly series have been constructed from daily data. The period included in the analysis is from the end of January 1992 to the end of August 1992. Although data were also available for the end of 1991, they have been neglected in order to avoid the disturbances caused by the privatization of apartments, which occurred between the end of 1991 and the beginning of 1992.

In particular, *E* refers to the weekly SIT/DM exchange rate¹⁴ on the market for current-account transactions, in which enterprises, banks and the Central Bank operate without restrictions¹⁵.

Two hypotheses have been tested as regards approximations of the expected price level P^* .

¹⁴ Computed as the average of daily rates.

¹⁵ The daily data on the exchange rate for current-account transactions (*E*), on the "official" exchange rate (*OFFE*), and on the cumulative sterilized purchases of foreign exchange by the Central Bank (*STER*, denominated in thousand Deutsche Mark) were provided by the Bank of Slovenia.

First, the proportional change in P^* has been assumed to be equal to the past actual rate of change in P during the weeks in which the inflation rate is unknown; and equal to the actual inflation rate during the week in which the survey is carried out. According to a second hypothesis, expected inflation is set equal to the past actual rate of change in P (as before), but it is updated only after the results of the survey have been disclosed.

In both cases the actual inflation rate has been computed with reference to the retail-sale price index, published on the basis of an official survey carried out on the 20th of each month; the weekly inflation rate is simply assumed to be $7/30$ of the monthly inflation rate¹⁶. Expectations are therefore updated monthly, for it is assumed that the agents are cautious (as they are most likely to be, in transition), believe that the authorities are unlikely to inflate, but prefer to wait for the results before adjusting their expectations downwards.

According to the first working hypothesis, the expected inflation rate for the week centered on the 20th of month (t) turns out to be the same as the true value published in that week; whereas according the second working hypothesis, the expected inflation rate for the same week is formed on the published values for month ($t-1$); and the values published for month (t) form the basis for expected inflation only starting the week which follows. We shall refer to the first as to the

¹⁶ Thus, a constant weekly inflation rate is implicitly assumed within each 30-day period. Another criterion has also been attempted, by computing the linearly-interpolation values between each survey. Since static expectations seem preferable to adaptive expectations from an intuitive viewpoint (as structures were changing quickly), and since estimates according to the latter gave almost the same results as the former, the adaptive-expectations hypothesis for converting monthly values into the weekly inflation rate has been dropped.

"static rational expectations hypothesis" (SRH); to the latter as to the "static expectations hypothesis" (SH).

The monthly data on industrial production (IND) are published by the Statistical Office of Slovenia. Weekly (missing) observations are calculated by linear interpolation between the monthly data centered on the 15th of each month, with the index being set equal to 100 at the beginning of 1991.

Two OLS regressions with 31 observations have thus been run in order to estimate the coefficients of [2], with the following results:

SRH	SH
$a_1 = -0.85 [-1.9]$	$a_1 = \text{non sign.}^{17}$
$a_2 = 29.18 [1.7]$	$a_2 = \text{non sign.}^{18}$
$b = 0.238 [2.4]$	$b = 0.343 [3.4]$
$c_1 = 22E-8 [2.0]$	$c_1 = 13E-8 [1.1]$
$c_2 = 0.145 [2.2]$	$c_2 = 0.189 [2.9]$
$c_3 = -0.396 [-2.8]$	$c_3 = -0.341 [-2.2]$

The above estimates present a reasonably high fit ($R^2=0.64$ and 0.60 in the SRH and in the SH case, respectively)¹⁹; in both cases the presence of serial correlation and the non-normal distribution of the residuals, the presence of heteroscedasticity and incorrect functional form have all been tested and comfortably rejected²⁰. Structural stability of the

¹⁷ The value for the t-test is -0.38.

¹⁸ The value for the t-test is 0.16.

¹⁹ The exclusion of the constant terms doesn't seem to cause major problems in both cases; its inclusion would be statistically non-significant (with $t=0.9$ in the SRH equation and $t=1.2$ in the SH equation) and would cause an increase of the R squared from 0.64 to 0.65 and from 0.58 to 0.60, respectively.

²⁰ Cf. Pesaran-Pesaran (1991) for references to the

parameters has been confirmed through a CUSUM and a CUSUMSQ test.

3.2 About the results

Although the SRH equation seems to be an acceptable explanation for the behaviour of the tolar during the first period of transition, the SH story has to be modified. Indeed, static expectations on prices do not play an important role as far as the exchange rate is concerned (see also figs. 1 and 2). Rather, the results displayed in the SH column in the section above are compatible with a model where the actual exchange rate (E) is a fraction of the expected value (E^*)²¹, and the expected exchange rate is formed on the basis of the past values of E , after the influence of the Z -variable vector is taken into account:

$$\log E = \mathbf{g} \bullet \log E^*$$

$$\log E^* = \mathbf{d}_1 \bullet \log E_{.1} + \mathbf{d}_2 \bullet \log Z$$

literature concerning such tests and the econometric software used in this paper. In particular, serial correlation of the residuals has been verified through a Lagrange-multiplier test and Durbin's h statistic (with better results in the SH case than in the SRH case), their distribution through a Bera-Jarque test; heteroscedasticity through Koenker's LM test and functional-form misspecification by means of Ramsey's RESET test.

The results provided by these diagnostic tests do not change significantly if the regressions are run with a constant term: the null hypotheses are always accepted comfortably.

²¹ Because of the expected smoothing intervention by the Central Bank.

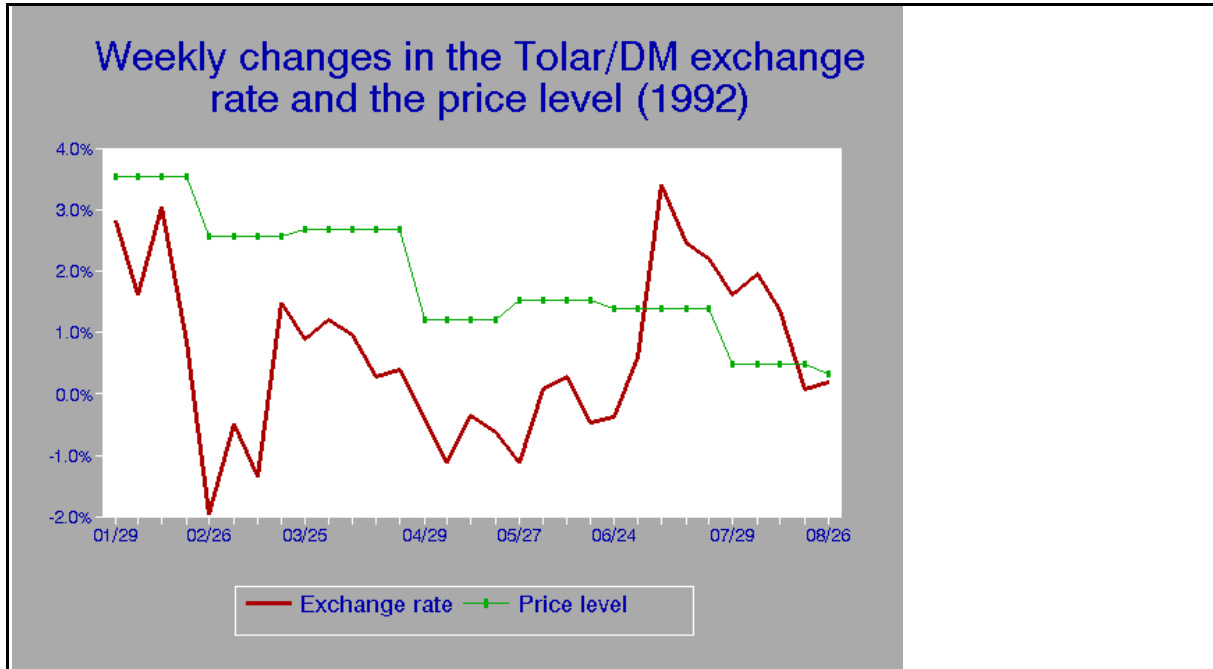


Figure 1

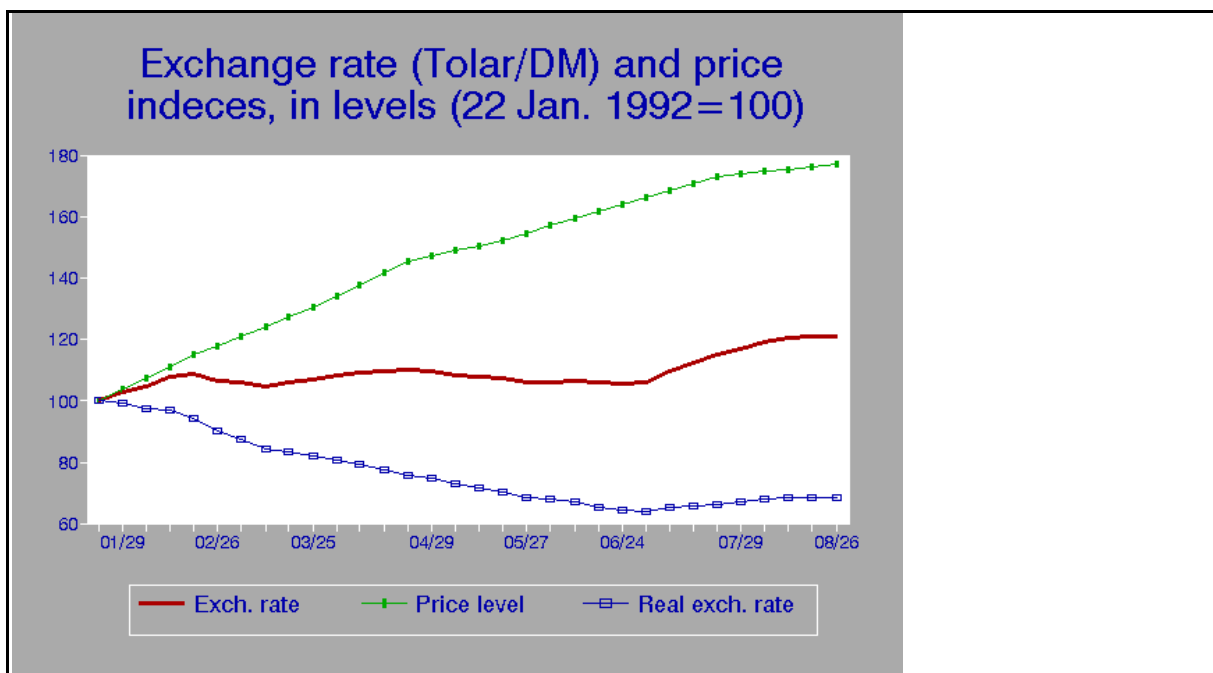


Figure 2

so that the equation to test (in terms of proportional changes) is now:

$$PDE = b' \cdot PDE_{-1} + c'_1 \cdot DSTER + c'_2 \cdot PDOFFE_{-1} + c'_3 \cdot PIND + e[3]$$

$$\text{where } b' = g \cdot d_1$$

$$c' = g \cdot d_2$$

The estimates for the coefficients on [3] turn out to be (t-values in brackets):

$$b' = 0.321 [4.3]$$

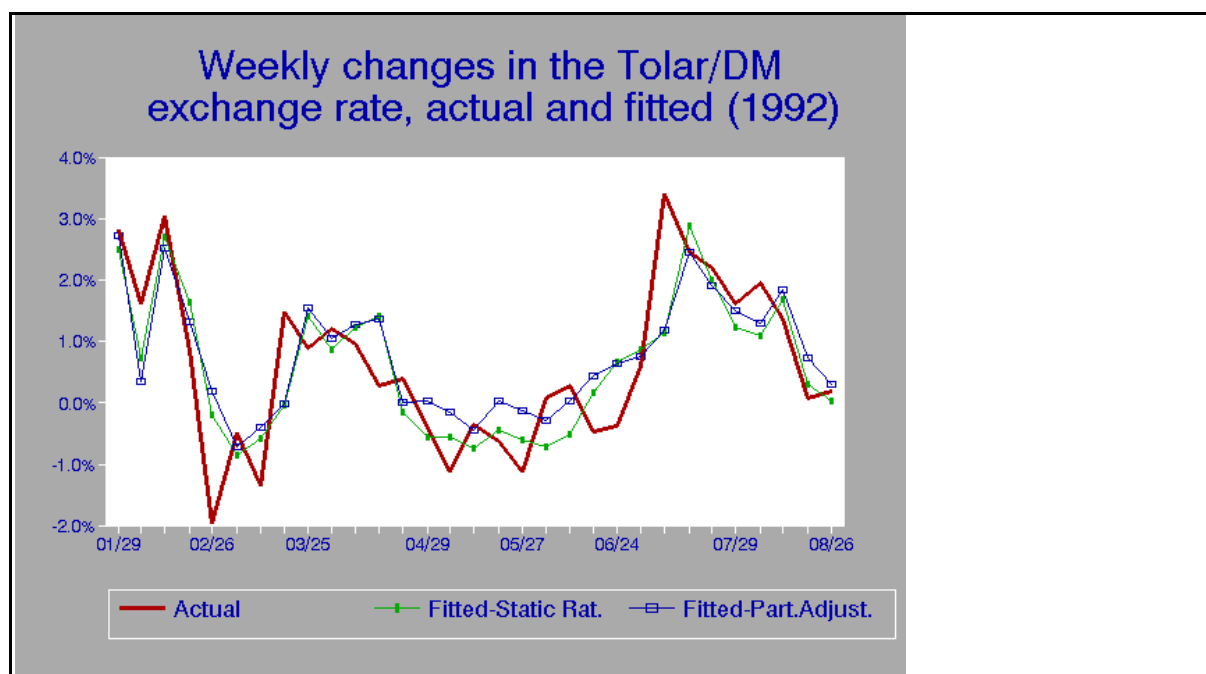
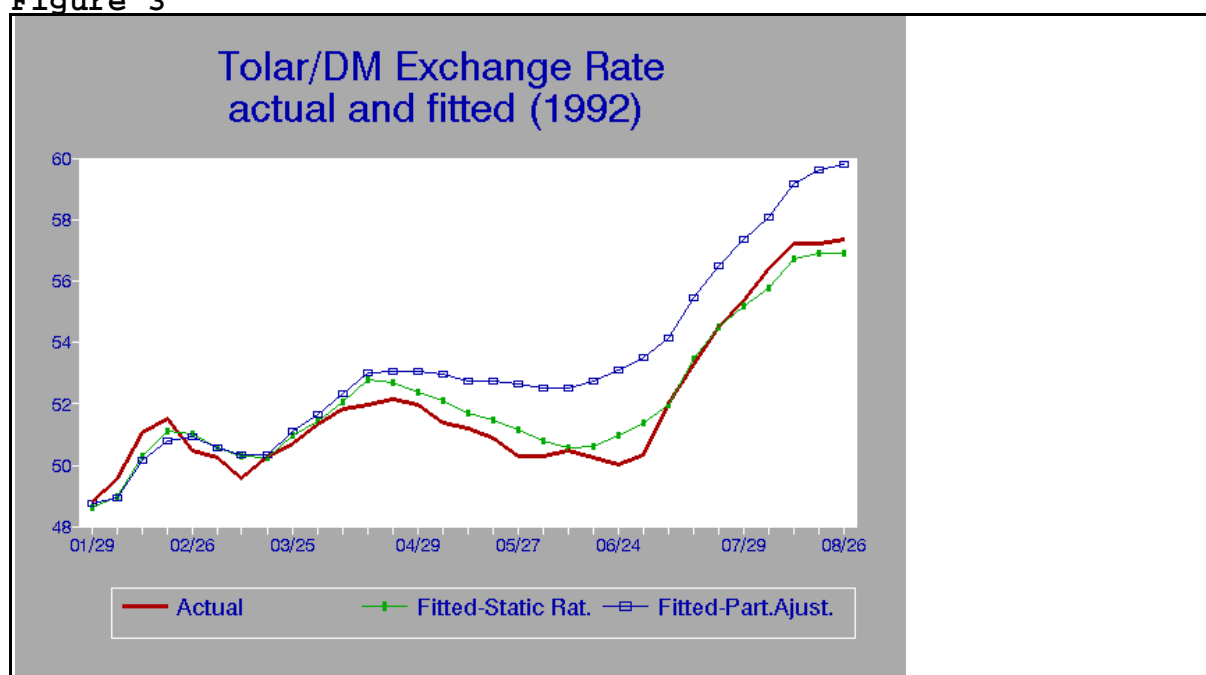
$$c'_1 = 8E-8 [1.0]$$

$$c'_2 = 0.163 [3.0]$$

$$c'_3 = -.346 [-2.5]$$

The choice between the models can thus be restated as follows. Either exchange rate expectations are formed according to a static, rational-expectations hypothesis on prices, as in equation [2]; or - perhaps more likely - according to a partial adjustment hypothesis (PAH), as in equation [3]. As a matter of fact, it can be easily observed that in both cases the estimates are satisfactory²²: the fit is adequate (see also figs. 3 and 4), the coefficients b and b' , c_1 and c'_1 , c_2 and c'_2 are positive, whereas c_3 and c'_3 are negative, as predicted by the theory.

²² As regards estimates of equation [3], R^2 is 0.58, and all the tests on residual serial correlation and normality, functional form, heteroscedasticity and structural stability allow us to accept the null hypotheses comfortably. That holds true also when the regression is run with a constant term.

**Figure 3****Figure 4**

However, under the first hypothesis the estimates for a_1 and a_2 are not as expected. For the global inflationary effect on PDE - i.e. $(-0.845 \cdot \text{PDPR} + 29.18 \cdot \text{PDPR}^2)$ - is positive only during the month of February 1992, and then is negative from

the beginning of March to the end of August; which is in contrast with the theory.

On the other hand, the results concerning the partial-adjustment story are consistent with the theory. The proportional change in the exchange rate is almost 58% of the change experienced in the past (on average, over 34% of that registered in the previous period, over 23% of that in more distant periods); whereas the availability of tradeable commodities seems to slacken the foreign-budget constraint - and thus considerably strengthen the exchange rate. In addition, intervention by the Central Bank does not appear to have a major impact. In other words, whenever the Bank of Slovenia has bought DM in order to build up reserves, the SIT/DM exchange rate has not reacted appreciably; this may be due to the fact that the degree of such intervention have been kept within reasonable limits and have not been perceived, *per se*, as desire to alter the exchange rate. The effect of the additional supply of tolar on the foreign-exchange market has been offset by the effect due to the higher level of foreign reserves in the vaults of the Bank of Slovenia.

3.3 *An extension*

The estimates presented and commented above do raise, however, some technical problems. On the one hand, the presence of PDE_{-1} , the lagged value of the dependent variable makes PDE dependent on all the current and past values of \hat{a} . Thus, since we are in the presence of a partially independent stochastic regressor, OLS estimates of the coefficients are no longer BLUE.

Furthermore, the other two regressors may also contain a stochastic element. For instance, decisions on foreign-exchange intervention by the Central Bank are likely to be generated by equations containing a stochastic element; and the same applies to the dynamics of industrial production. That would not be a major problem if the error in [3] and the stochastic regressors were independent; but no prior knowledge

is available on this point.

In order to assess the approximate "size" of these issues, instrumental-variable estimation has been applied to [3] - the PAH equation. One-period lagged values for PDE_{-1} and PIND have been used as instruments, with the following results:

$b' = 0.428 [2.8]$	$b' = 0.441 [3.3]$
$c'_1 = \text{non significant}$	$c'_1 = \text{omitted}$
$c'_2 = 0.154 [2.6]$	$c'_2 = 0.158 [2.7]$
$c'_3 = -.366 [-1.9]$	$c'_3 = -.431 [-2.8]$
$R^2 = 0.55$	$R^2 = 0.54$

All the tests mentioned in the previous cases have been applied, with satisfactory results.

As can be seen, the results obtained from the IV estimates are similar to those obtained from the OLS procedure. The only relevant change concerns the relative weight of the past values of the exchange rate; whereas the evidence supporting the weak role played by the Central Bank seems to receive additional support by these estimates.

4. Some policy implications

4.1 Strengths and weaknesses of monetary policy

By allowing the exchange rate float, the Slovene monetary authorities decided to regulate the money supply, thereby affecting the equilibrium exchange rate in the long run, and expectations in the short run. In the models presented in the previous sections the authorities' behaviour affects two variables of the Z vector: DSTER and PDOFFE. DSTER defines the change in the value of the foreign-currency-denominated bonds outstanding, through which the Bank of Slovenia manipulates

the demand for foreign exchange; and PDOFFE is the proportional rate of change of the "official" exchange rate, which reflects past policies and their effects on the tolar. The effects of three different policies are analysed. Under policy A it is assumed that there are no interventions (DSTER=0). Under policy B, the "official" exchange rate is taken to be equal to the market exchange rate of the previous period ($PDOFFE = PDE_{-1}$). In the case of policy C, the "official" rate is computed according to a slow-adjustment criterion; that is, it is assumed to be equal to the simple average of the true exchange rates of the previous eight weeks, irrespective of the changes in the price level. The effects of these changes on the rates of change and on the levels of the exchange rate are described in figs. 5 and 6, where the simulated benchmark cases²³ (for the SRH and PAH models) are compared with the dynamics corresponding to economic policies A, B and C.

The results reflect a rather limited capability of the Bank of Slovenia to regulate the exchange rate in the short run. Policy A (no intervention) doesn't affect PDE (the proportional variation in the exchange rate) considerably, neither within the SRH model, nor within the PAH framework; however, in the medium run policy A seems to be relevant as regards levels, when the effects of neutrality build up. Sterilization appears to play a major role in the SRH model, slowing down the spontaneous appreciation of the tolar in real terms.

²³ The simulated benchmarks are the values for PDE generated by the dynamic simulations of the model; where the lagged values for the endogenous variable PDE are not the true values for PDE_{-1} , but those generated by the model in the previous period. Dynamic simulations of policies A, B and C are computed in the same way, by changing the values for DSTER and PDOFFE following the characteristics of each policy.

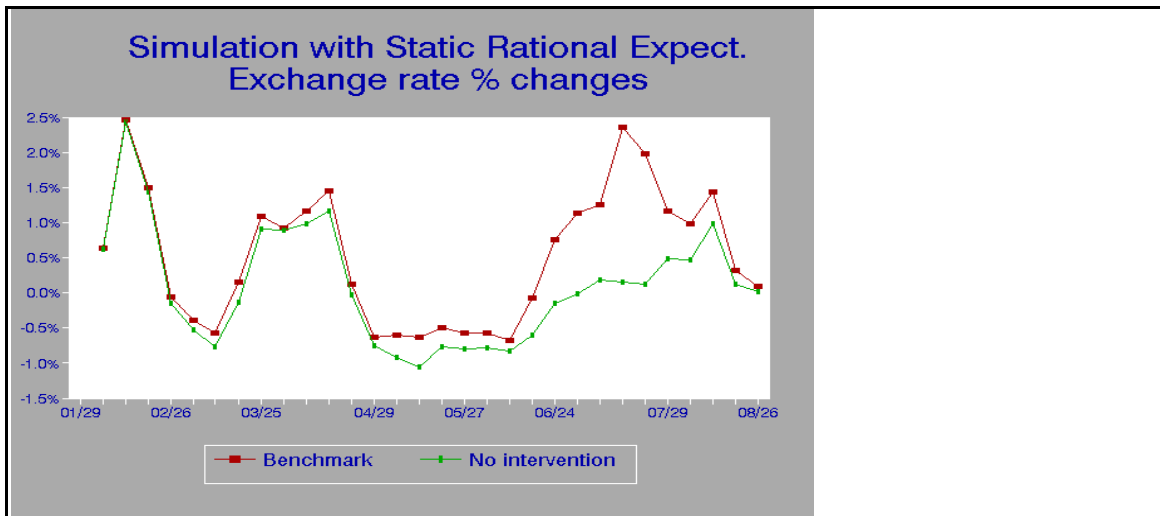


Figure 5A

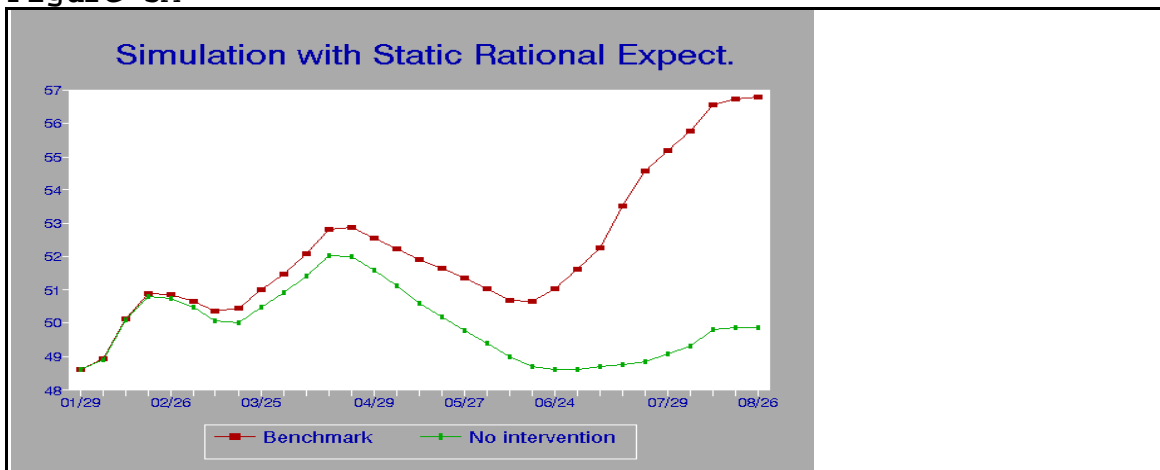


Figure 5B

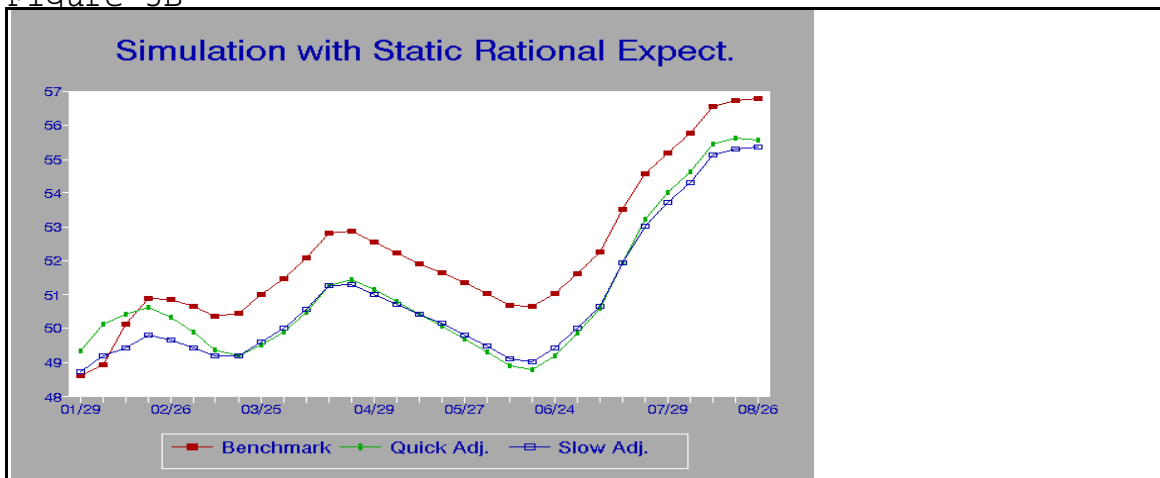


Figure 5C

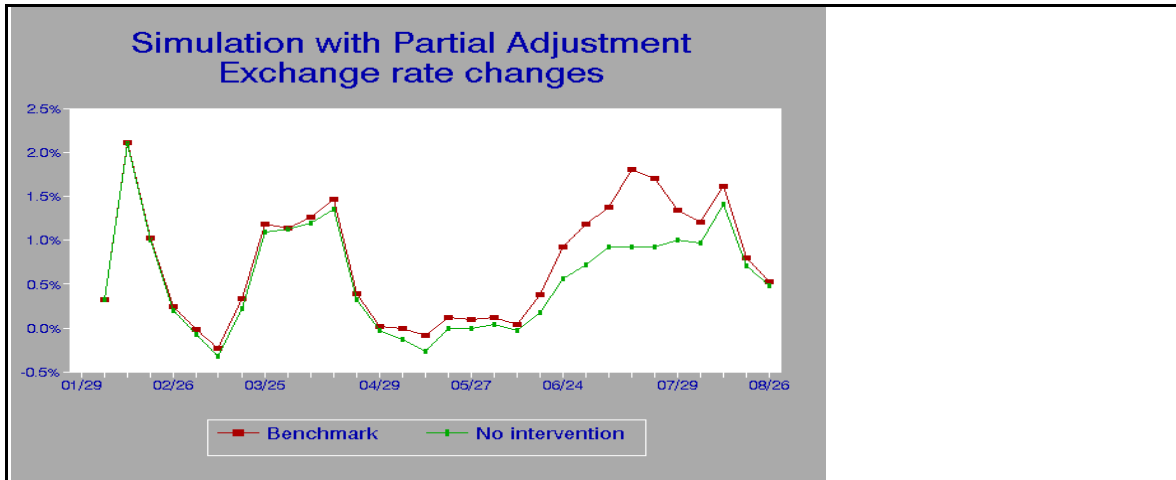


Figure 6A

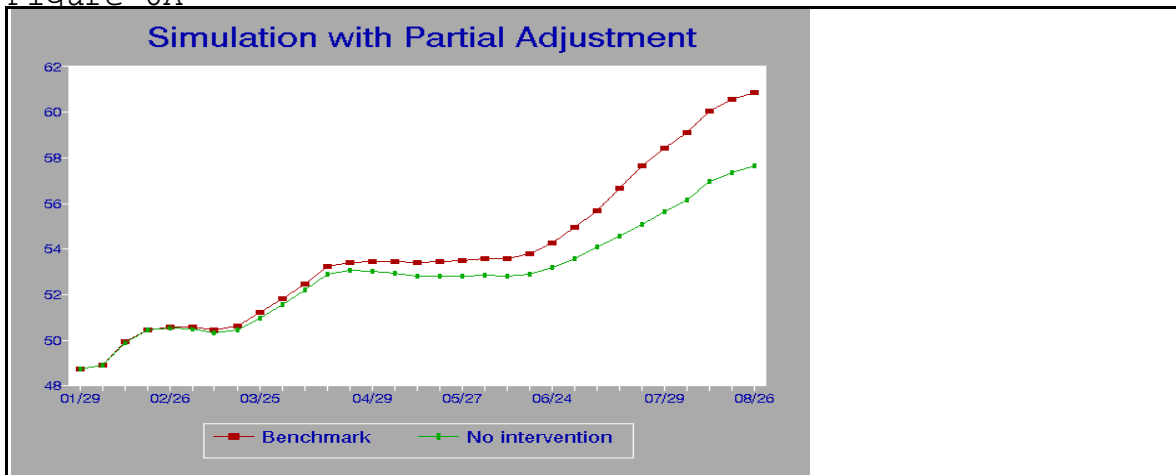


Figure 6B

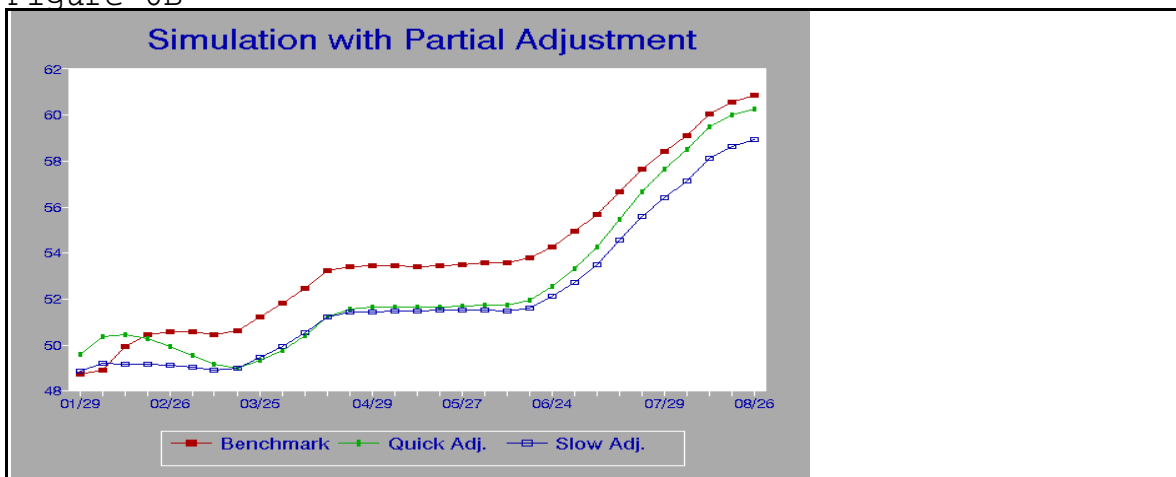


Figure 6C

As for cases B and C, the graphs show that the effects of new rules for the computation of the official exchange rate are negligible²⁴. In other words, expectations formed on past values of the exchange rate are surely important, but the same does not apply to the weights with which past values are taken into account.

4.2 *The relevance of this scenario for other countries*

The PAH scenario for the tolar presented so far emphasizes two major issues.

One concerns the role of expectations as regards the behaviour of the exchange rate. In particular, dealers do not wait for the new data on prices to be disclosed; but they try and anticipate the possible effects of inflation on the exchange rate. Furthermore, there are grounds to believe that dealers are much more interested in the past behaviour of the exchange rate itself - augmented by the effects of other variables - and tend to neglect the past behaviour of the price index.

The second issue refers to the role of intervention and speed in adjustment. It is shown that neither matter very much. Intervention by the Central Bank on the currency market has not affected the SIT/DM exchange rate appreciably; at the same time, the situation would have been by and large the same even if dealers had looked back at the tolar history in a different way (from that assumed in this paper). It is undeniable that deviations, even if small, do matter in the long run, as their effects build up. But it is nevertheless interesting to observe that the PAH dynamics of the tolar exchange rate is virtually independent of the deviations in levels. That means - for instance - that the effects of

²⁴ At the beginning of the period - say February 1992 - the effects seem to have been greater. It should be recalled from the end of section 1., however, that the previous weeks were characterized by disturbances unrelated to economics.

sterilization are mild, but persistent; i.e. in each period the market is affected a little by the presence of the Central Bank, but such deviations, and their effects, will not be cancelled in subsequent periods.

What can be learnt from the Slovene case? In other words, could other East-European countries have benefitted from "the short-run story of the tolar"? Is it possible to claim that, at least in the short run, a "good" start for a new currency is all that matters for that currency to survive in its own right?

Unfortunately, the answer is inconclusive, if not negative. For the initial success of the tolar has been very heavily dependent on the specific structural features of Slovenia and, moreover, on the specific developments that accompanied independence.

Arrangements in most developing countries²⁵ and a large number of scholars suggest that fixed exchange rates²⁶ or crawling pegs²⁷ or both²⁸ suit transition better than free floating.

Slovenia opted for a floating tolar, and the link between the monetary and the exchange-rate system was provided by "The Law on the Bank of Slovenia", that guaranteed the monetary authorities full independence. The independent Bank of Slovenia immediately assumed all "normal" functions of a

²⁵ See Aghevli (1991).

²⁶ See, for instance, Meltzer (1992).

²⁷ See, for instance, Bomhoff (1992), Collier-Joshi (1989).

²⁸ This seems to be the "safe" argument made in Dornbusch (1992, p.418), where it is claimed that stabilization requires fixed exchange rates, but *when overvaluation becomes an issue, ..., one must move to a crawling peg.*

central bank, adopted all the necessary measures to wipe out excess liquidity, and gradually restricted itself to regulating the money supply through open-market operations only. As a consequence, foreign-currency transactions became the only channel of money creation.

This situation turned out to be crucial for the success of the floating tolar. But it is also unlikely to exist in most transition economies, which are in fact characterized by lack of financial and monetary instruments, by the lack of knowledge about how a "normal" monetary and financial system works, and by the eagerness of the new political elites for direct intervention. All these shortcomings obviously decrease the credibility of the monetary authorities. Among other things, expectations about the future behavior of the exchange rate are likely to be formed according to fears and predictions about the future behaviour of the authorities. The past, which is so important in the Slovene case, would hardly be relevant in many other East-European countries.

In addition, and unlike most other East-European countries, the Slovene economy has not experienced lasting shortages of foreign exchange. Its trade-output ratio was over 1.3; almost half of the exports were directed towards the OECD area and provided healthy trade surpluses. This explains why, for instance, the fall in the tolar real exchange rate was nevertheless accompanied by persistent trade surpluses. Furthermore, when independence was declared, the "hard-currency" financial assets of the population amounted to at least two billion dollars.

In fact, the relatively small decline of the nominal exchange rate can only be explained by a number of specific features: the shifts in the structure of the Slovene economy that followed independence, weak reactions to the changes in the real exchange rate²⁹ and monetary policy. In other words,

²⁹ The cause for this has already been explained in the previous paragraph.

the secession and the ensuing collapse of the economies in the rest of Yugoslavia shifted the equilibrium real exchange rate downward by increasing supply and reducing demand for foreign exchange. This was due to the fact that the structure of the Slovene commercial flows to/from the West was quite similar to that to/from the former Yugoslavia. Thus, the supply of foreign exchange increased as producers replaced (at least partially) the former domestic market with the Western markets. On the other hand, the demand for foreign exchange plummeted with the contraction in domestic demand and the rapidly weakening links with the former domestic market. This reduced imports of raw materials.

Finally, the links between the monetary policy and the exchange rate also appear to be country specific. In Slovenia, monetary policy was conceived primarily to lower and control inflation; which is appropriate if the nominal exchange rate is to be kept under control. In no way was it believed that inflation could be anchored to a fixed nominal exchange rate, thereby letting the money supply take care of the budget imbalances or of the pressures on nominal wages³⁰.

³⁰ Of course, this does not mean that the exchange rate should never be fixed. But it can be fixed only where there is no need to have an anchor, i.e. when there is no need to fix it.

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