ETLA ELINKEINOELÄMÄN TUTKIMUSLAITOS
THE RESEARCH INSTITUTE OF THE FINNISH ECONOMY
Lönnrotinkatu 4 B 00120 Helsinki Finland Tel. 609 900 Telefax 601753

Keskusteluaiheita - Discussion papers

No. 438

Olavi Rantala

STABILIZING AND DESTABILIZING EXCHANGE RATE REALIGNMENTS

ISSN 0781-6847

04.05.1993

RANTALA, Olavi, **STABILIZING AND DESTABILIZING EXCHANGE RATE REALIGNMENTS.** Helsinki: ETLA, Elinkeinoelämän Tutkimuslaitos, The Research Institute of the Finnish Economy, 1993. 23 p. (Keskusteluaiheita, Discussion Papers, ISSN 0781-6847; no. 438).

ABSTRACT: The paper analyses different exchange rate policy regimes from the point of view of a small open economy. A regime allowing for periodic exchange rate realignments has stabilizing qualities, although less than one with a fully flexible exchange rate. However, if a realignment rule is adopted with a lag, destabilizing exchange rate expectations may easily arise. The adverse interest rate fluctuations associated with exchange rate expectations have aggravated cyclical changes in Finland.

KEY WORDS: fixed exchange rate, realignment policy rule, flexible exchange rate

Tiivistelmä

Tutkimuksessa käsitellään valuuttakurssipolitiikkaa ja pienen avotalouden reaktioita ulkomaisiin kysyntäshokkeihin kiinteän ja kelluvan valuuttakurssin järjestelmissä. Tarkastelussa käytetään avotalouden makromallia, jossa oletetaan rationaaliset odotukset ja hintatason hidas sopeutuminen kysynnän muutoksiin (Dornbusch 1976). Tavanomaisen joustavan valuuttakurssin analyysin ohella tutkimuksessa käsitellään myös kiinteän valuuttakurssin tapausta ja valuuttakurssin muutoksiin liittyviä ongelmia. Kysymys on lähinnä kotimaisen tuotannon reaktioista ulkomaisiin kysyntäshokkeihin maassa, jossa kiinteän kurssin tavoitteesta huolimatta on melko säännönmukaisesti jouduttu turvautumaan valuuttakurssin muutoksiin talouden vakauttamiseksi.

Jos tällaiseen politiikkasääntöön on totuttu, vientikysynnän heikkeneminen voi aiheuttaa devalvaatio-odotuksia. Nämä puolestaan johtavat kotimaisen koron nousuun ja kotimaisen kysynnän laskuun, joka syventää viennin vähenemisestä alkanutta suhdannetaantumaa, kuten Suomessa tapahtui tämän vuosikymmenen alussa. Toisaalta kansainvälisen kysynnän ja viennin lisääntyminen saattaa johtaa revalvaatio-odotuksiin, korkotason laskuun ja kotimaisen kysynnän liialliseen kasvuun, kuten kävi 1987-89.

Tutkimuksessa osoitetaan, että valuuttakurssiodotuksista johtuvien korkomuutosten takia talouden reaktiot vientikysynnän vaihteluihin ovat voimakkaampia kuin ne olisivat siinä tapauksessa, että valuuttakurssi kyettäisiin pitämään uskottavasti täysin kiinteänä. Toisaalta säännönmukaiset valuuttakurssipolitiikan reaktiot odottamattomiin kansainvälisiin kysyntäshokkeihin voivat sinänsä stabiloida taloutta, jos shokkeihin reagoidaan välittömästi siten, ettei haitallisia odotuksia ehdi syntyä. Ääritapauksena on täysin joustava valuuttakurssi ja voidaankin todeta, että kelluva valuuttakurssi on periaatteessa paras vaihtoehto suojaamaan kotimaista tuotantoa ulkomaisen kysynnän vaihteluilta.

1. Introduction

This paper discusses the effects of realignments of a fixed exchange rate on a small open economy. For that purpose we use a standard open economy macroeconomic model with the assumption of rational expectations.

The specific question to be analyzed is the effect of the speculation concerning expected realignments which may follow from a monetary policy rule where exchange rate realignments have regularly been used as an emergency measure in severe cyclical problems. If there is such a policy rule, the agents in the foreign exchange and financial markets will sooner or later notice it. Consequently any major external shock may spur speculation concerning a change in the exchange rate, which may aggravate the effects of the shock.

The destabilizing effect arises because, with forward-looking expectations, an anticipated devaluation following a negative external shock raises the domestic interest rate. This will dampen the domestic demand and exacerbate the downturn in the economy.

A positive external shock may work in the opposite direction. It may raise revaluation expectations and lower the interest rate, thereby accelerating the growth in the economy.

The essential problem, at least in a simple perfect foresight model, seems to be a lag in the realization of the realignment. If there were no lag and the realignment rule were followed credibly and immediately after the external shock, there would not be any reason for the speculation. At the other extreme, moving from a realignment policy rule to a regime of a completely fixed exchange rate with full credibility makes it necessary to convince the market that the lag has grown to infinity.

Accordingly, the lag in the exchange rate policy reaction has important implications. Therefore, following the setup and solution of the basic model in sections 2 and 3, we analyze first in section 4 the case where the realignment takes place immediately after the external shock and then in section 5 the effect of a lag in the realignment. The realignment policy is compared to a perfectly flexible exchange rate regime in section 6.

To give some empirical relevance to the theoretical analysis we analyze in section 7 the relationship between cyclical changes and devaluation expectations in Finland since the mid-1980's. It is shown that, after the liberalization of foreign capital movements and the domestic financial market, there has been a visible negative correspondence between the interest rate and cyclical developments. To a large extent the excessive cyclical changes can be traced back to the type of economic policy problems we are discussing here.

2. A macroeconomic model of a small open economy

In an open economy with free capital movements, adjusting a seemingly fixed exchange rate as a means of carrying out stabilization policy may ultimately turn out to be destabilizing if the realignment is delayed. The financial and foreign exchange market agents may easily learn the rule that a negative external shock will be followed by a devaluation and a positive shock by a revaluation. The more often the policy rule is used, the more likely it is that it will be discerned.

The destabilizing effect arises because devaluation expectations raise the domestic interest rate and this will dampen the domestic demand and output even more than the external shock alone would do. On the other hand, a positive external shock may lead to revaluation expectations and lower the domestic interest rate, which accelerates the economy more than would be implied by the increase of the foreign demand.

In order to analyze thoroughly this problem we specify a macroeconomic model of a small open economy incorporating rational expectations. It is a variant of the standard model analyzed by Dornbusch (1976, 1989) and Obstfeld and Rogoff (1984) among others. The main difference as compared to the usual analysis of the flexible exchange rate regime is that we also analyze the case where the exchange rate is either

completely fixed or changes according to an explicit policy rule. In the cases where the exchange rate is flexible or completely fixed the model is

$$y = \alpha y^* + \beta(e - p + p^*) - \gamma(i - p') \quad (1)$$

$$m = p + \delta y - \epsilon i \quad (2)$$

$$p' = \phi(y - y_\infty) \quad (3)$$

$$i = i^* + e' \quad (4)$$

Moreover, in the fixed exchange regime the exchange rate is set at the level

$$e = e_0 \quad (5)$$

On the other hand, in the flexible exchange rate regime the money supply is an exogenous policy variable

$$m = m_0 \quad (6)$$

In the fixed exchange rate regime, the domestic interest rate, i, equals the foreign interest rate, i*, and the nominal money stock, m, is determined by the demand for real balances (2). By contrast, in the flexible exchange rate regime the money stock is given by the nominal money supply and the domestic interest rate is determined by the uncovered interest parity condition (4) where the derivative of the exchange rate with respect to time is denoted by $e'(t) = de(t)/dt$.

The term y denotes the domestic output and y* is the foreign output. The domestic price level is denoted by p and p* is the foreign price level. The term y_∞ denotes potential long-run output, which is also the exogenous steady state level of output. Accordingly, there is long-run policy neutrality and our focus will be in the short-run effects of external shocks and exchange rate policy.

Equation (1) is the standard open economy goods market specification where the demand for domestic output, y, depends on foreign output, y*, the price competitiveness of the domestic economy, e-p+p*, and the real interest rate, i-p'. Equation (2) is the money market specification of the standard IS-LM model.

Equation (3) determines the movement of the home price level, p'(t) = dp(t)/dt, as a reaction to goods-market disequilibrium. Obstfeld and Rogoff (1984) show that the Phillips curve should be augmented by a term describing the rate at which the price of domestic output would increase if that price were fully flexible. This is, however, not necessary here because we assume that all exogenous shocks are unanticipated.

All variables except the interest rates, i and i*, are logarithms so that the parameters denoted by Greek letters are elasticities. All parameters are assumed to be positive.

3. The fixed exchange rate regime

Equations (1), (3), (4) and (5) give a linear differential equation for the logarithm of the price level in the fixed exchange rate regime

$$p' = \rho(p - p_\infty) \tag{7}$$

The characteristic root is

$$\rho = -\beta\phi/(1 - \gamma\phi) \tag{8}$$

The root is negative, and the model has a stable solution, if $\gamma\phi < 1$. A similar condition applies also to the conditional stability of the flexible exchange rate regime as Obstfeld and Rogoff (1984) have shown.

The steady state price level and the steady state money demand are

$$p_\infty = (\alpha y^* + \beta(e_0+p^*) - \gamma i^* - y_\infty)/\beta \tag{9}$$

$$m_\infty = p_\infty + \delta y_\infty - \epsilon i^* \tag{10}$$

The time paths of prices, output and money stock from the initial values, p_0, $y(0)$ and $m(0)$, towards the long-run steady state levels, p_∞, y_∞ and m_∞, are given by equations

$$p(t) = (p_0 - p_\infty)\exp(\rho t) + p_\infty \tag{11}$$

$$y(t) = (y(0) - y_\infty)\exp(\rho t) + y_\infty \tag{12}$$

$$m(t) = (m(0) - m_\infty)\exp(\rho t) + m_\infty \tag{13}$$

In the case of output and money stock the notations $y(0)$ and $m(0)$ are meant to indicate that the initial values of these variables are determined endogenously. By contrast, the price level is sticky and its initial value is predetermined, $p(0) = p_0$.

Given the exogenous variables, y^*, p^*, i^*, e_0, p_0, and y_∞, the initial values of domestic output and money stock are

$$y(0) = \beta\omega(p_\infty - p_0) + y_\infty \tag{14a}$$

$$= \omega(\alpha y^* + \beta(e_0 - p_0 + p^*) - \gamma i^*) + (1-\omega)y_\infty \tag{14b}$$

$$m(0) = p_0 + \delta y(0) - \epsilon i^* \tag{15}$$

where $\omega = 1/(1 - \gamma\phi) > 1$.

Equations (14a-b) are important for the analysis of the effects of external shocks and exchange rate policy on domestic output. Equation (9) shows that a change in the foreign variables, y^*, p^* or i^*, shifts the steady state price level p_∞. Equation (14a) shows that in the short run output reacts in the same direction as the price level in the long run. In other words, at the time of an unanticipated external shock output jumps in the fixed

exchange regime in a way which resembles the jump of the exchange rate in a flexible exchange rate regime. The jump of the domestic output depends on parameter ω. In the next section we use equation (14b) to analyze the effects of external shocks and exchange rate policy on domestic output.

4. The stabilizing exchange rate realignments

Assume that as a reaction to an unanticipated shock in the exogenous external variables, y*, p* or i*, monetary policy changes the exchange rate. More specifically, assume that the foreign demand falls and in order to alleviate the effect on the domestic economy the home country devalues its currency and raises the exchange rate as a reaction to the negative external demand shock. On the other hand, the domestic monetary policy reaction to a boom in the international economy and a rise in y* is assumed to be a revaluation and a fall in the exchange rate. Looking at the economic history such policy reactions seem to have become a kind of rule in Finland and in some other countries that have had a fixed exchange rate target but have nevertheless had to adjust the exchange rate fairly regularly as a consequence of serious cyclical problems.

In the following we assume that agents in the economy have rational expectations and that the shocks in the external variables are unanticipated. Therefore the shocks are also permanent by nature.

The next question concerns the exact form of the policy rule, i.e. how is the exchange rate related to the other variables of the model. There are, of course, many alternative ways to formulate the policy rule since there are no fundamental economic criteria upon which it can be postulated. Since all policy rules one can imagine are more or less ad hoc assumptions, the criterion used here to make a choice between the alternatives is the simplicity of the rule.

Therefore we assume that the policy rule is a simple log-linear relationship between the exchange rate and the foreign output

$$e(\tau) = -\lambda y^* \qquad (16)$$

The exogenous exhange rate e_0 is replaced by the endogenous $e(\tau)$. The elasticity parameter λ is assumed to be positive. Hence a fall in foreign demand leads to a devaluation and a rise in foreign demand to a revaluation. Parameter $\tau \geq 0$ denotes the policy reaction time.

First we assume that $\tau = 0$ so that the policy reaction takes place immediately after the external demand shock. In this case the domestic output is in the short run

$$y(0) = \omega((\alpha - \beta\lambda)y^* - \beta(p_0 - p^*) - \gamma i^*) + (1-\omega)y_\infty \qquad (17)$$

Accordingly, the immediate exchange rate policy reaction stabilizes the economy because it decreases the elasticity of domestic output to external demand shocks from $\omega\alpha$ to $\omega(\alpha-\beta\lambda)$.

An analogous reaction function could be defined in terms of any one of the other foreign variables. The policy reaction could also be expressed as a linear combination of the exogenous variables. On the other hand, it could be assumed that the reaction takes place only after a shock of sufficient magnitude.

A more crucial question is, however, whether the policy reaction can be assumed to be instantaneous. Considering the conditions prevailing in the real world it may be more realistic to assume that, as far as really unanticipated external shocks are concerned, there is always some time lag between a disturbance and a policy reaction.

5. The destabilizing exchange rate expectations

Monetary policy does not usually react immediately to an external shock. In the following we assume that there is a lag in this reaction, $\tau > 0$. By assumption there is perfect foresight in the world described above so that agents operating in the foreign exchange and financial markets also know the precise timing of the monetary policy reaction, τ,

immediately after the external shock. This may, of course, be an unrealistic assumption concerning the real world conditions. Nevertheless, even if uncertainty concerning the timing of the policy reaction were introduced in the model, this would add very little to the basic message. Therefore we stick to the perfect foresight assumption.

The domestic output at the time of the exchange rate realignment is

$$y(\tau) = \alpha y^* + \beta(e(\tau)-p(\tau)+p^*) - \gamma(i^*-p'(\tau)) \qquad (18a)$$

$$= \omega((\alpha-\beta\lambda)y^* - \beta(p_0-p^*) - \gamma i^* - y_\infty)\exp(\rho\tau) + y_\infty \qquad (18b)$$

The reaction of output to an expected future realignment is, however, quite different because the stabilizing effect of the exchange rate change on price competitiveness has not yet been realized. On the contrary, there comes a destabilizing effect via the interest rate differential associated with the expected change in the exchange rate.

The model implicitly assumes perfectly competitive financial markets both in the home country and in the international economy. There are complete markets at all non-negative maturities for zero coupon bonds. Accordingly, there are also perfect international and domestic markets for bonds with a maturity exactly equal to τ. The interest rate on such foreign bonds is i^*. By assumption, this is the interest rate on all foreign bonds.

Assuming perfect foresight implies that there are no exchange rate risk premiums in the domestic bond quotations. Therefore, denoting the level of the exchange rate before and after the change by E_0 and $E(\tau)$, respectively, the equilibrium relationship between the value of domestic and foreign zero coupon bonds maturing at time τ is

$$\exp(-i^*\tau) = (E(\tau)/E_0)\exp(-i\tau) \tag{19}$$

Taking logarithms of both sides of equation (19) gives the equilibrium domestic interest rate

$$i = i^* + (e(\tau) - e_0)/\tau \tag{20a}$$

$$\equiv i^* + \pi \tag{20b}$$

Accordingly, for a given expected devaluation, $e(\tau)-e_0$, the interest rate differential, $\pi = i-i^*$, is a hyperbolic decreasing function of the time until the devaluation, τ. Applying L'Hopital's rule to equation (20a) shows that $\pi \to 0$ and $i \to i^*$ when $\tau \to 0$. Hence an immediate devaluation does not give rise to expectations of devaluation losses and, in the absence of any risks, there is no interest rate differential between domestic and foreign bonds.

Normalizing $E_0 = 1$ the interest rate differential is linked to the foreign demand according to

$$\pi = -(\lambda/\tau)y^* \tag{21}$$

Thus the domestic output immediately after the external demand shock and before the anticipated policy reaction is

$$y(0) = \omega(\alpha y^* + \beta(e_0 - p_0 + p^*) - \gamma(i^* + \pi)) + (1-\omega)y_\infty \quad (22a)$$

$$= \omega((\alpha + (\gamma\lambda/\tau))y^* + \beta(e_0 - p_0 + p^*) - \gamma i^*) + (1-\omega)y_\infty \quad (22b)$$

The time path of output before the anticipated future exchange rate change, $0 \leq t < \tau$, is

$$y(t) = (y(0) - y_\infty)\exp(\rho t) + y_\infty \quad (23)$$

The time path of output after the policy reaction, $t \geq \tau$, is

$$y(t) = (y(\tau) - y_\infty)\exp(\rho(t-\tau)) + y_\infty \quad (24)$$

Equations (18) - (24) determine the reaction of domestic output to external shocks for any policy reaction time $\tau \in [0,\infty)$. If $\tau \to \infty$ so that there is effectively no policy reaction to be expected, the interest rate differential goes to zero, $\pi \to 0$, in equations (20a-b) and the time path of output is exactly the same as it was above in the fixed exchange rate regime.

On the other hand, if $\tau = 0$ and the exchange rate is changed immediately after the foreign demand shock, the interest rate differential vanishes again, $\pi = 0$, as was noted above. However, because in this case the exchange rate is changed, the better price competitiveness begins to improve

the trade balance immediately. This stabilizes the reaction of domestic output to the external demand shock as was seen in equation (17).

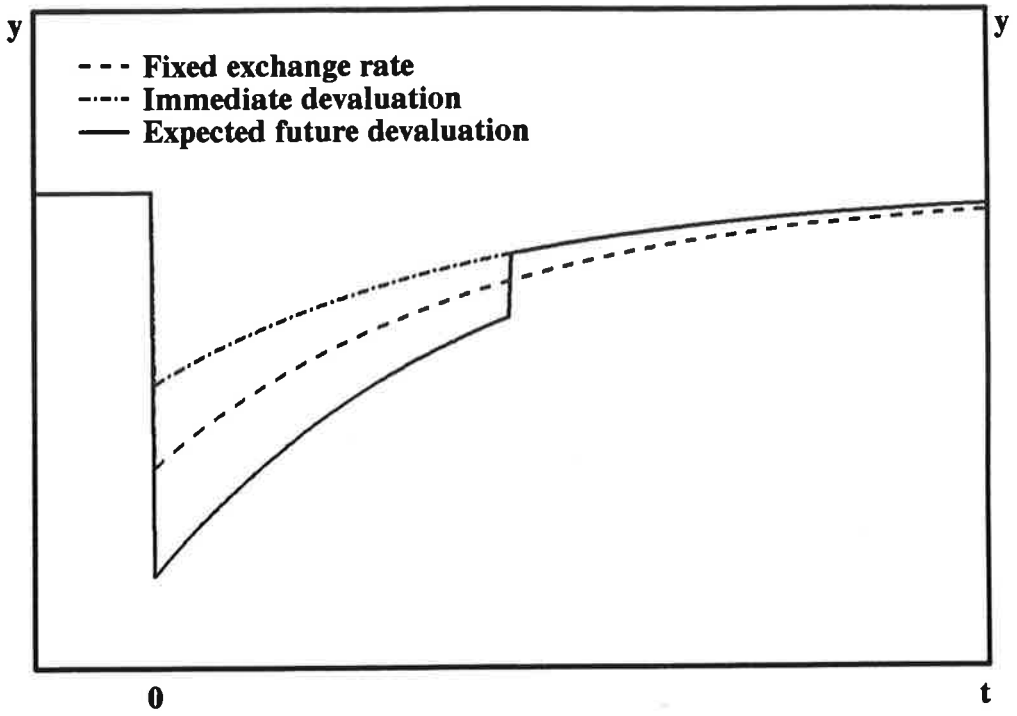
For any positive and finite policy reaction time, $0 < \tau < \infty$, the output path is uniquely determined by equations (18b), (22b), (23) and (24). In the short run, before the actual policy reaction, the exchange rate expectations tend to destabilize the economy because of the adverse interest rate effect. The longer-term output path includes the positive effect of the exchange rate change but the longer the policy reaction time is, the smaller the effect is.

The reaction of domestic output to a negative external demand shock is demonstrated in figure 1. A downward shift in foreign demand induces a downward effect on domestic output. This reaction is, however, temporary and the output returns back towards the potential level in the long run.

A regime allowing immediate exchange rate realignments stabilizes the domestic output fluctuations as compared to the regime of a completely fixed exchange rate. By contrast, a lag in the policy reaction to a negative foreign demand shock leads to an adverse output reaction as compared to an instantaneous devaluation.

At first the domestic interest rate rises because of devaluation expectations. This dampens the domestic demand

Figure 1: The reaction of output to a negative external demand shock



and aggravates the crash in production. The domestic output remains on a lower path than in the fixed exchange rate regime until the devaluation will be realized, but then the output jumps on the higher path as can be seen in figure 1.

6. A comparison to the flexible exchange rate regime

The previous model of a conditionally fixed exchange rate may be compared to the case of a completely flexible exchange rate. The difference as compared to the fixed exchange rate regime concerns the money supply, which is now an exogenous policy variable.

The steady state price level and the steady state exchange rate are

$$p_\infty = m_0 - \delta y_\infty + \epsilon i^* \tag{25}$$

$$e_\infty = m_0 - p^* + ((1-\beta\delta)y_\infty - \alpha y^* + (\beta\epsilon+\gamma)i^*)/\beta \tag{26}$$

Reducing the flexible exchange rate model (1), (2), (3), (4) and (6) gives a two-equation differential equation system for the price level and exchange rate with coefficients a_{ij} composed of the original model parameters

$$p' = a_{11}(p - p_\infty) + a_{12}(e - e_\infty) \tag{27}$$

$$e' = a_{21}(p - p_\infty) + a_{22}(e - e_\infty) \tag{28}$$

Obstfeld and Rogoff (1984) show that, provided that the condition $\gamma\phi < 1$ is met, one of the characteristic roots of the differential equation system, say σ, is negative and the other root is positive so that the model is conditionally stable.

On the saddle path, as a reaction to any exogenous shock, the exchange rate starts to adjust according to rule

$$e'(0) = \sigma(e(0) - e_\infty) \tag{29}$$

Inserting (29) in (28) gives the relationship between the exchange rate and the price level at the moment of an unanticipated exogenous shock

$$e(0) = e_\infty + \mu(p_0 - p_\infty) \tag{30}$$

where $\mu = a_{21}/(\sigma - a_{22}) < 0$ implies the overshooting of the exchange rate.

The initial interest rate reaction is

$$i(0) = i^* + \sigma\mu(p_0 - p_\infty) \tag{31}$$

Finally, the domestic output is given by equations

$$y(0) = y_\infty + \sigma(p_0 - p_\infty)/\phi \tag{32a}$$

$$= y_\infty - \sigma(m_0 - p_0 - \delta y_\infty + \epsilon i^*)/\phi \tag{32b}$$

The most important point to be noticed in equation (32b) is that the domestic output is completely independent of the foreign output y* even in the short run unlike in the fixed exchange rate regime analyzed above. The flexible exchange rate isolates the real side of the economy totally from foreign demand and price shocks. The only external variable appearing in equation (32b) is the foreign interest rate. Even the foreign interest rate shocks to domestic output could be eliminated by proper adjustments in the money supply.

Closer inspection of equations (25), (26) and (30) reveals that $d(e(0)-p_0+p^*)/dy^* = d(e_\infty-p_\infty+p^*)/dy^* = -\alpha/\beta$. The shift in the real exchange rate as a reaction to a foreign

demand shock exactly eliminates the direct demand effect. Therefore the foreign output does not influence the domestic output at all.

Of course, if we assume a money supply rule like $m = -\lambda y^*$, analogously to the exchange rate policy rule (16) above, the domestic output would again become dependent on foreign output. However, in general the flexible exchange rate regime differs fundamentally from the fixed exchange rate regime.

7. Monetary policy and cyclical changes in Finland

For many reasons the Finnish economy has often been exposed to severe external shocks. Traditionally the monetary policy has been tied to a fixed exchange rate target so that fiscal policy should have taken care most of the stabilization tasks in the economy. It has, however, not been sufficiently forward-looking and efficient. Therefore exchange rate realignments have become an emergency measure which have in fact been used fairly regularly in severe cyclical problems. The markka has been devalued in many recessions and it has also been revalued in a couple of cyclical booms. The last devaluation before the present free floating regime took place in November 1991. Forced realignments and even collapses of fixed exchange rates have, of course, become a fairly general phenomenon all over Europe during the present recession.

From the point of view of the stabilization policy it became a problem, at least in Finland, that the financial and foreign exchange markets had learned the policy rule that exchange rate realignments were used as the emergency measure to overcome severe cyclical problems. Especially, after the liberalization of foreign capital movements and the domestic financial market in the 1980's, the new link between the cyclical state of the economy, exchange rate expectations and the domestic interest rate ensued which severely aggravated the cyclical changes in the economy at the time of the fixed exchange rate regime.

Negative external shocks to exports and industrial production could easily lead to devaluation expectations which raised the domestic interest rate in relation to the foreign rate. This dampened the domestic demand and deepened the recession even more than the decrease in exports would have implied. On the other hand, positive external shocks tended to raise revaluation expectations, lower domestic interest rates and overheat the economy.

The relationships between the cyclical changes, devaluation expectations and interest rate and exchange rate developments in the Finnish economy are demonstrated in figures 2 - 4. The cyclical changes are described in figure 2 by the percentage change over the last year in the 12-month moving average of the index of the industrial

production. There is also an indicator of the expected annualized devaluation over the next three months. The negative values of this variable indicate revaluation expectations.

This indicator has been computed by subtracting the foreign interest rate differential associated with expected exchange rate movements within the exchange rate band from the actual interest rate differential depicted in figure 3. The expected exchange rate changes within the band are based on an econometric time series model where the distribution of the exchange rate is truncated lognormal from the edges towards the center of the band as described by Rantala (1992). The Finnish data gives more support to a model implying such a humped-shape distribution of the exchange rate than to the standard target zone model of Krugman (1991) with the U-shaped distribution.

Figure 2 shows clearly the negative correlation between the cyclical changes and the interest rate differential associated with expectations of exchange rate realignments which prevailed in the Finnish economy from the mid-1980's until September 1992 when the fixed exchange rate regime collapsed. In the mid-1980's and 1987-1989 the economy was growing rapidly so that revaluation expectations led to a decreasing interest rate differential in relation to foreign countries.

Figure 2: Cyclical changes and devaluation expectations

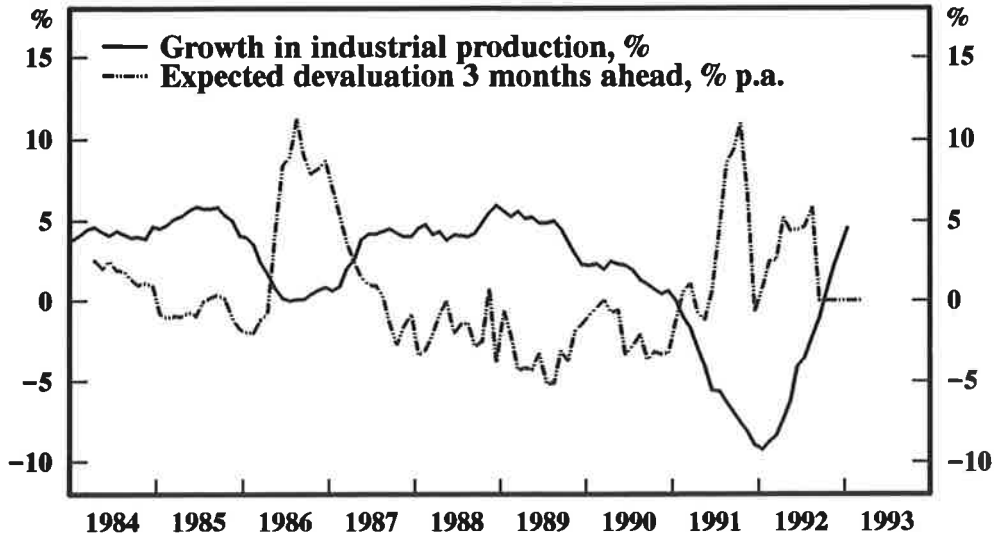


Figure 3: Domestic and foreign interest rates

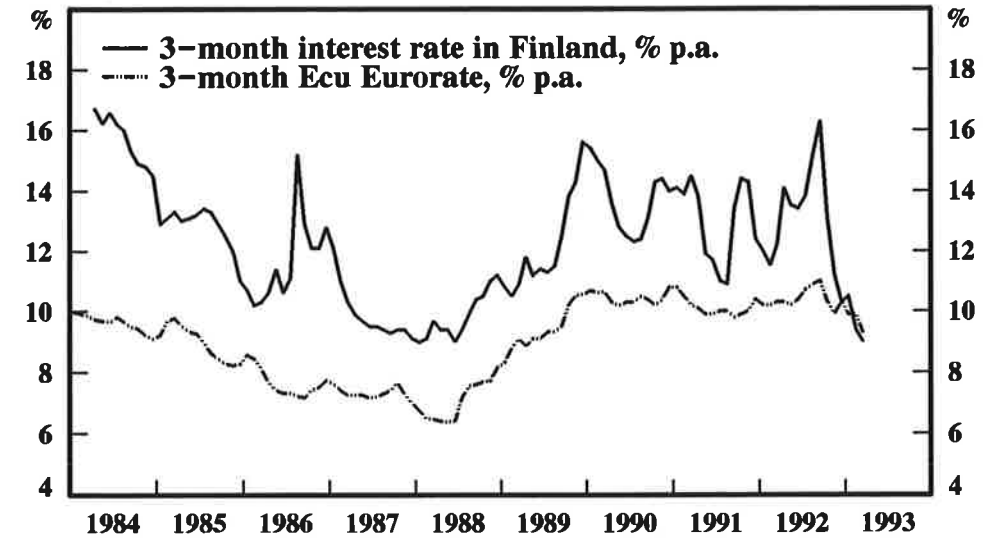
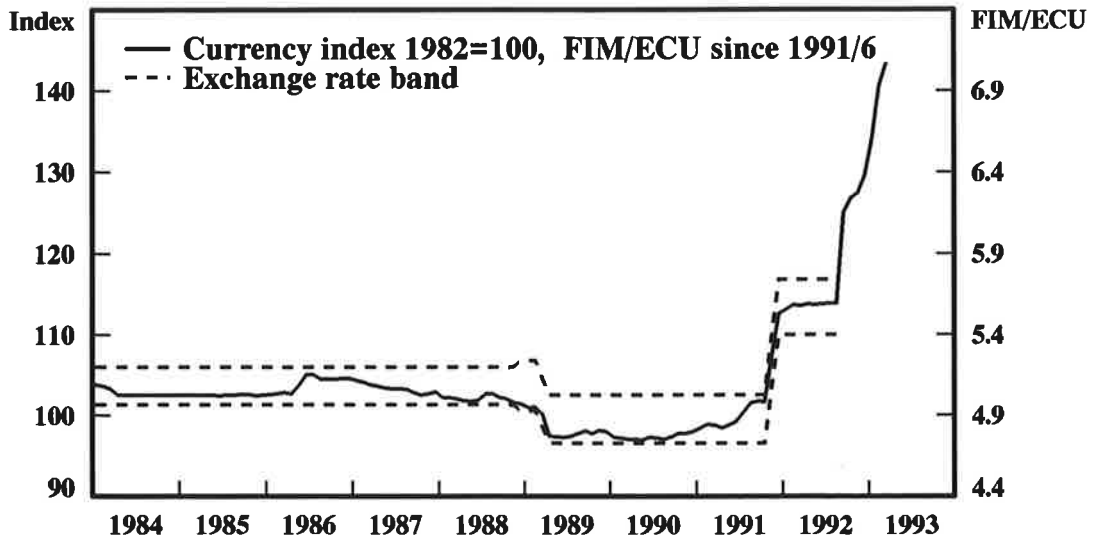


Figure 4: Exchange rate



By contrast, the cyclical downturn in 1986 and the recession, which began in 1990, soon aroused devaluation expectations. The domestic interest rate rose and dampened the domestic demand. This deepened the recession further.

The interest rate differential induced by devaluation expectations rose especially in autumn 1991 anticipating the devaluation which was realized in November. Thereafter the interest rate declined for a while but it rose again in 1992 until the markka was allowed to float in September.

8. Conclusion

The theoretical analysis suggests that the exchange rate regime is important from the point of view of stabilization policy. In principle a flexible exchange rate is the best option for isolating the economy from external shocks.

However, in the real world there may be good reasons for relying on a fixed exchange rate regime. But this option can really work only if it is supported by efficient fiscal policy measures.

In practice the fixed exchange rate policy has often failed. Exchange rate realignments have been used as emergency measures in times of difficult cyclical problems, for instance, in Finland.

However, both the theoretical considerations and the empirical observations from Finland suggest that if the realignments become a rule they may become a problem too. At least, if there is some hesitation in the monetary policy reaction to external shocks in the realization of the previously adopted rule, there may easily arise adverse interest rate fluctuations which aggravate the cyclical changes in the economy.

References

Dornbusch R. (1976): Expectations and Exchange Rate Dynamics, *Journal of Political Economy*, Vol. 84, No. 6, December, 1161-1176.

Dornbusch R. (1989): Real Exchange Rates and Macroeconomics: A Selective Survey, *Scandinavian Journal of Economics*, 91(2), 401-432.

Krugman P.R. (1991): Target Zones and Exchange Rate Dynamics, *The Quarterly Journal of Economics*, Vol. CVI, August, Issue 3, 669-682.

Obstfeld M. and Rogoff K. (1984): Exchange Rate Dynamics with Sluggish Prices under Alternative Price-Adjustment Rules, *International Economic Review*, Vol. 25, No.1, 159-174.

Rantala O. (1992): An Econometric Diffusion Model of Exchange Rate Movements within a Band, Implications for Interest Rate Differential and Credibility of Exchange Rate Policy, *Finnish Economic Papers*, Vol. 5, No. 2, 98-109.

E L I N K E I N O E L Ä M Ä N T U T K I M U S L A I T O S (ETLA)
THE RESEARCH INSTITUTE OF THE FINNISH ECONOMY
LÖNNROTINKATU 4 B, SF-00120 HELSINKI

Puh./Tel. (90) 609 900 Telefax (90) 601 753
Int. 358-0-609 900 Int. 358-0-601 753

KESKUSTELUAIHEITA - DISCUSSION PAPERS ISSN 0781-6847

No 411 RISTO MURTO, Korkorakennemallien käyttö korkoriskin arvioinnissa ja hallinnassa. 28.08.1992. 41 s.

No 412 MIKA MALIRANTA, Paperiteollisuuden palkat ja tehdasteollisuuden palkkarakenne. 28.08.1992. 37 s.

No 413 SYNNÖVE VUORI - PEKKA YLÄ-ANTTILA, Industrial Transformation in Finland - From Factor Driven to Technology-Based Growth. 15.09.1992. 37 p.

No 414 RITA ASPLUND, Occupational Earnings Differentials in Finland - Empirical Evidence from a Cross Section of Individuals. 16.09.1992. 51 p.

No 415 JUHA KETTUNEN, Increasing Incentives for Reemployment. 16.09.1992. 30 p.

No 416 TIMO MYLLYNTAUS, Technology Transfer and the Contextual Filter in the Finnish Setting. Transfer Channels and Mechanisms in an Historical Perspective. 18.09.1992. 52 p.

No 417 RITA ASPLUND (Ed.), Human Capital Creation in an Economic Perspective. 12.10.1992.

No 418 V. BUSHENKOV - V. KAITALA - A. LOTOV - M. POHJOLA, Decision and Negotiation Support for Transboundary Air Pollution Control between Finland, Russia and Estonia. 15.10.1992. 25 p.

No 419 HARRI LUUKKANEN, Helsingin palvelualan yritykset: Suljettu sektori murroksessa; esitutkimus. 07.10.1992. 93 s.

No 420 JUHA JUNTTILA, Kotitalouksien pankkitalletusten kysyntä Suomen vapautuneilla rahoitusmarkkinoilla. 10.11.1992. 93 s.

No 421 PETER SJÖBLOM, ETLAs databastjänst och dess marknad. 01.12.1992. 97 s.

No 422 PASI AHDE - TEET RAJASALU (eds.), On the Economic Structure of Estonia and Finland before the 1990's. 01.12.1992. 101 s.

No 423 PER HEUM - PEKKA YLÄ-ANTTILA, Firm Dynamics in a Nordic Perspective - Large Corporations and Industrial Transformation. 15.12.1992. 81 p.

No 424 MARKKU RAHIALA - TAPANI KOVALAINEN, Wage Formation in Finland in the 1980's; An Econometric Study. 17.12.1992. 41 p.

No 425 JUHA KETTUNEN - REIJO MARJANEN, Suomen työnantajain keskusliiton palkkatilastot: Syntyhistoria, sisältö ja käyttötarkoitus. 17.12.1992. 42 s.

No 426 PETRI ROUVINEN, Data-guide to OECD Exports. 15.01.1993. 75 p.

No 427 RITA ASPLUND, Private- and Public-Sector Earnings Structures in Finland. 25.01.1993. 72 p.

No 428 RITA ASPLUND, Human Capital and Industry Wage Differentials in Finland. 25.01.1993. 94 p.

No 429 KARI ALHO, Growth, the Environment and Environmental Aid in the International Economy. 26.01.1993. 36 p.

No 430 OLAVI LEHTORANTA, Technology Diffusion and Lifetimes of Paper Machines, Posing the Question and Description of the Data. 10.02.1993. 30 p.

No 431 JUHA KETTUNEN - JUHANA VARTIAINEN, Suomen teollisuuden työntekijöiden palkkarakenne. 15.02.1993. 35 s.

No 432 KARI ALHO, Terms-of-Trade Booms, Sectoral Adjustment and Fiscal Policy in a Small Open Economy. 18.02.1993. 27 p.

No 433 MIKA WIDGRÉN, Voting Power in Trade Policy and Social Regulation of an Expanded EC: A Partial Homogeneity Approach. 04.03.1993. 21 p.

No 434 THOMAS ARONSSON - KARL-GUSTAF LÖFGREN, Human Capital, Externalities, Growth and Welfare Measurement. 16.04.1993. 15 p.

No 435 KARI ALHO, An Evaluation of the Reasons for High Nordic Price Levels. 19.04.1993. 20 p.

No 436 ESKO TORSTI, Price-Cost Margins in Finland: Static and Dynamic Approaches. 20.04.1993. 39 p.

No 437 JARI HYVÄRINEN, Pietari, Viro, Itäisen Suomenlahden seutu: kehittyvä vai taantuva talousalue. 22.04.1993. 93 s.

No 438 OLAVI RANTALA, Stabilizing and Destabilizing Exchange Rate Realignments. 04.05.1993. 23 p.

Elinkeinoelämän Tutkimuslaitoksen julkaisemat "Keskusteluaiheet" ovat raportteja alustavista tutkimustuloksista ja väliraportteja tekeillä olevista tutkimuksista. Tässä sarjassa julkaistuja monisteita on rajoitetusti saatavissa ETLAn kirjastosta tai ao. tutkijalta.
Papers in this series are reports on preliminary research results and on studies in progress; they can be obtained, on request, by the author's permission.

E:\sekal\DPjulk.chp/04.05.1993