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NÚMERO 21

Raúl A. Feliz & John H. Welch

THE CREDIBILITY AND PERFORMANCE OF UNILATERAL TARGET ZONES: A COMPARISON OF THE MEXICAN AND CHILEAN CASES

*Introduction**

In an attempt to combine the alleged credibility enhancing aspects of a long term commitment to a fixed exchange rate with the short term flexibility of fluctuating rates, some countries are moving to unilateral target zones for their exchange rates. Recent theoretical considerations show that opening a target zone can increase the amount of monetary policy flexibility without giving up the commitment to low inflation (Svensson, 1992) and that unilateral target zones can survive a surprisingly long time (Dumas and Svensson, 1991). Further, Krugman and Miller (1993) argue that if traders use so-called "stop-loss" trading rules, target zones can change destabilizing speculation into stabilizing speculation. The increased flexibility that a target zone arrangement gives the stabilizing characteristics of credible fixed exchange rate regimes provides a rationale for adopting unilateral target zones especially in Latin America.

The purpose of this study is to gauge the performance of unilateral target zone arrangements in two Latin American countries, Mexico and Chile. In doing so we look at the institutional and historical evolution of these exchange rate regimes. We then deal with performance in a more formal fashion by looking at the stochastic behavior of the exchange rates and at the credibility of the target zones using techniques developed by Svensson (1991) and Chen and Giovannini (1992a, 1992b, and 1993). The results indicate both the Chilean and Mexican arrangements have been credible. Further, the Mexican band concentrated on stabilizing the exchange rate in order to slow inflation while the Chilean zone emphasizes nominal exchange rate flexibility to preserve real exchange rate stability.[1] Finally, the probability distributions of the exchange rates within the bands indicate that the Mexican authorities have intervened heavily while the exchange rate is in the band, while the Chilean central bank has intervened mainly when the exchange rate reached the upper or lower limit of the band.

But the arrangements themselves took very different forms in each of these countries. Mexico imposed a nominal exchange rate band with a fixed floor and a ceiling which depreciates at a set amount per day. The Chilean band, on the other hand, sets a central parity with the objective of maintaining the real exchange rate. The width of the band has been varied between 5% and 10% over time. The difficult task is to glean which arrangement succeeds in attaining which objectives.

Gauging the usefulness of these different forms of target zones necessarily involves the consideration of the policymakers' objectives for the zone. In both the

* Raúl A. Feliz, Centro de Investigación y Docencia Económicas; John H. Welch, Federal Reserve Bank of Dallas. Prepared for the Western Economic Association International 68th Annual Conference, Lake Tahoe, June 20-24 '1993. Without implicating Thomas Willett, we would like to thank him for his excellent comments. All errors and omissions are the sole responsibility of the authors. The contents reflect solely the authors' own views and should not be associated with the Federal Reserve Bank of Dallas or the Federal Reserve System.

[1] For a discussion of the trade-offs, see Welch and McLeod (1993).

Mexican and Chilean cases, the movement to a more flexible exchange rate is related to the memories of the collapse of their fixed exchange regimes at the beginning of the 1980s. Until then, both countries had tried to use their dollar exchange rates as nominal anchors for the domestic price level. In the subsequent period, each country used the nominal exchange rate to improve their current account deficits by trying to maintain the real exchange rate. Inflation, especially in the Mexican case, remained until very recently stubbornly high.

Since 1988, Mexico has purposely slowed the rate of depreciation of the peso below the rate of inflation in an effort to bring inflation down in conjunction with wage and price guidelines and massive fiscal adjustment.[2] The idea is that a fixed exchange rate arrangement is only sustainable with low inflation. Hence, a commitment to a fixed or slowly depreciating exchange rate is a commitment to low inflation. Seen in these terms, Mexicans have recently given great importance to low inflation. Chileans, despite full fiscal adjustment, are more concerned with external balance and have tried to maintain current account surpluses in the face of increased capital inflows. Consequently, inflation has fallen more slowly than in the Mexican case.

Such a brief background to the adoption of the target zones leaves out many important historical considerations leading to the adoption of these exchange rate arrangements. Though a full description lies beyond the scope of this paper, we now briefly consider the historical performance of the Mexican and Chilean target zones.

The Mexican Target Zone

On November 10, 1991, the Banco de México announced that it would decrease the rate of crawl of the peso from 40 to 20 centavos a day and only the asking price would move. The objective was to increase the bid-ask spread to 60 pesos by March 15, 1992 in the interbank market. The risk of such a move was that market participants would view it as a signal that the exchange rate was no longer viable and that the government could no longer honor its commitment to lower inflation. The reaction to the band, however, was just the opposite. Bankers viewed an arrangement which decreased the Banco de México's role in the foreign exchange market as very positive. Subsequently, the peso moved to the strong edge of the band (appreciated in nominal terms). The reaction and the importance of giving the peso/dollar exchange rate more market flexibility seemed to have convinced the Mexican authorities to widen the zone.

On March 13, 1992, the Banco de México chose to continue widening the band instead of resuming the asking-price slippage of 20 pesos a day. The objective was to have a 5% band by the end of the year. The ability of the foreign exchange market to handle large movements in dollars clearly improved by the opening of the band in addition to decreasing the costs of sterilization. In the week begining March 19, a large

[2] The relationship between inflation and devaluations is still controversial. For a review of these issues, see McLeod and Welch (1993).

foreign securities firm removed $500 million from the market in one day which represents roughly 20% of the total daily volume ($3 billion), for end of fiscal year cleanup. In the past, such a transaction would have caused a panic and a run on the peso with all the corresponding financial chaos. In this case, however, the peso depreciated from 3062 to 3090. The operation was reversed the following week and the peso appreciated back to around 3061. At no time did the peso threaten to go above the top of the target zone. Calm reigned in the interbank market until May and the zone was never close to being threatened. Small movements in the peso, however, caused some minor losses to brokers who are mostly long in pesos (due to the interest differential). The losses are smaller than the transaction costs of covered hedging. Consequently, a latent demand for expanding the current forward (cobertura market) or a futures market for dollars has been building.

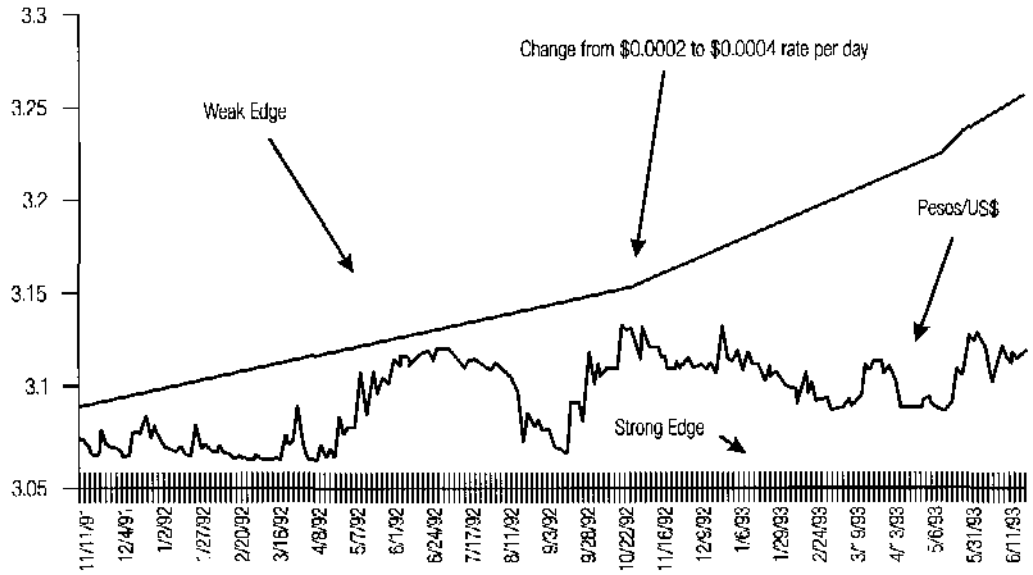
In May and June 1992, Mexican financial markets became nervous and illiquid. These developments seemingly came independent of economic fundamentals. Foreign reserves continued to rise, inflation continued to fall, manufacturing exports continued to grow, and the public sector borrowing requirement will be negative this year. The lack of liquidity stemmed from actions taken by the Banco de México in early April to decrease the banking system's exposure to foreign loans by limiting the foreign exchange liabilities of banks to 10% of total assets. Banks then started prepaying their loans from foreign sources in late April and early May. Additionally, the new pension program came on line which had to be funded by the banks decreasing available credit for other purposes. All this combined to push interest rates up and weakened the peso within the interbank market target zone (figure 1). The interest rate on Cetes moved out of a range compatible with complete credibility of the exchange rate target zone.

Mexican markets continued extremely volatile during the U.S. presidential year as the future of the North American Free Trade Agreement negotiations became ambiguous. Mexico's financial markets are very sensitive to such news because Mexico's economic policies are based upon an ever increasing integration with the United States. The Banco de México continued to keep interest rates high at around 17% to bring inflation closer to the U.S. level.

By August, the exchange rate in the interbank market had been effectively stabilized by the Banco de México (figure 1). But expectations of devaluation were still strong. Capital moved in and out of Mexico according to these expectations and developments on the stock market.

Complicating matters were losses emanating from the low real interest rates on an issue of inflation indexed bonds (Ajustabonos). The June 17 auction at which the Ajustabonos were sold set the real interest rate at 3.5% per year before the recent increase in interest rates. A good portion of these bonds were purchased by fixed income money market accounts which were paying higher interest rates to fund their position. Losses are estimated at around $1 billion. Further, the recently privatized Banco Internacional had a large portion of its money market portfolio in these bonds. The imminent large losses were avoided by a swap with the Mexican government *at par* of Ajustabonos for Cetes which are earning 17%. The maneuver created turmoil because

Figure 1
Mexico: Interbank Daily Exchange Rates and Target Zones
November 11, 1991 to June 11, 1993



the other banks demanded equal treatment. The problems ultimately led to the relaxation of the restrictions on foreign borrowing by Mexican banks and the problems seem to have abated for now.

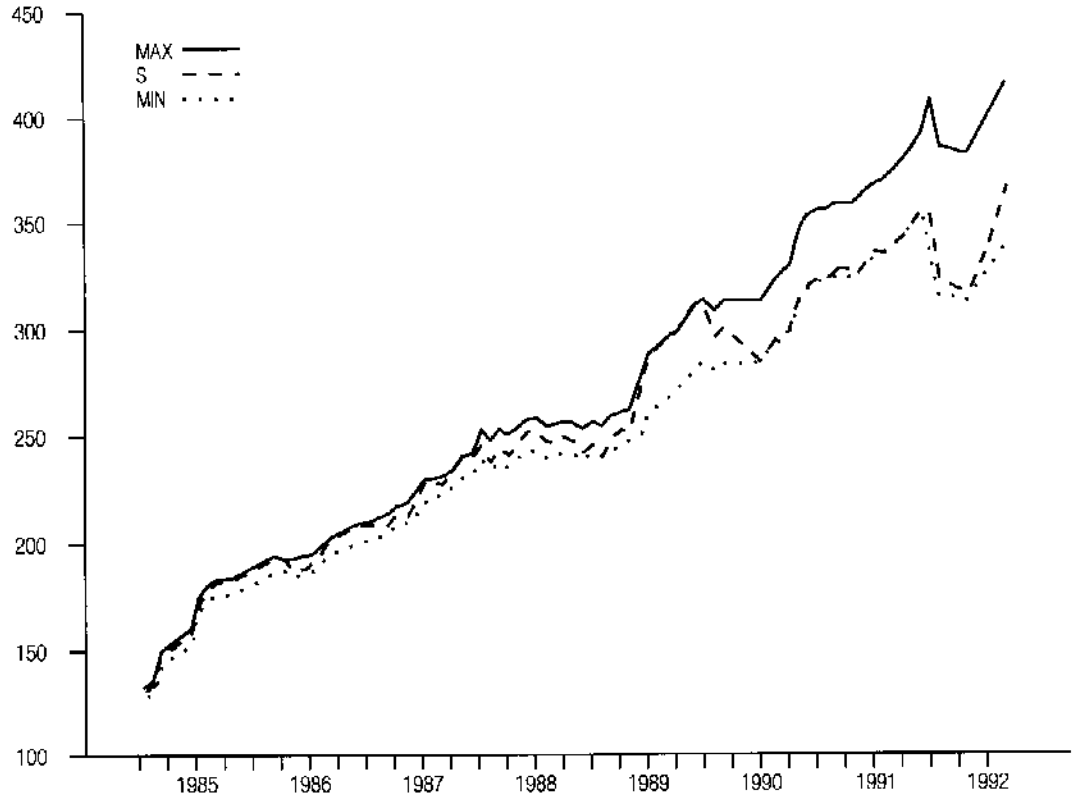
The zeal to bring inflation down in Mexico slowed economic growth dramatically in the second half of 1992 to around 2.5% as opposed to the expected 4.0%. The U.S. presidential election campaigns increased the uncertainty surrounding the ratification of NAFTA and subsequently increased uncertainty in Mexico. Coupled with the ever increasing current account deficit, this uncertainty caused outflows of capital and pressure on the exchange rate from September to November 1992. In November 1992, the Mexican government decided as part of its renegotiated Pacto that the target zone would be widened at a faster pace.

The reaction by the market has been surprisingly favorable. The exchange rate immediately started appreciating within the band, upward pressure on interest rates turned into downward pressure, the stock market continued a recovery, and foreign capital started pouring back into Mexico. The Banco de México's foreign reserve position continues to strengthen and output growth seems to be improving.

The Chilean Target Zone

The collapse of the fixed exchange rate regime in Chile in 1982 put serious pressure on the financial system due mainly to the increase in foreign debt servicing. Since the

Figure 2
Chilean Target Zone, 1985-1992



financial collapse of 1982, Chileans have explicitly tried to maintain a cheap real value of the peso to maintain output and profitability of exports. Exchange rate policy nonetheless has gone through a number of changes especially in terms of the width and central parity of the exchange rate band.

Between 1982 and 1985, Chileans followed an explicit sliding peg without fluctuation bands based upon the "acuerdo" parity set by the central bank. In 1985, the Chileans opened a band of 2% on each side of this central parity. What distinguishes and complicates the analysis of the credibility of the Chilean band is the fact that realignment of the central parity is continuous. Figure 2 depicts the evolution of the exchange rate and the target zone since 1985.[3]

A number of observations can be made about the evolution of the target zone. First, the exchange rate has tended to stay near one of the edges of the band. Helpman and Leiderman (1992) argue that this reflects concerns with fluctuations in the price of copper. Brisk fluctuations move the rate from one edge of band to the other. These

[3] For a brief comparison of the Chilean band with the Israeli band, see Helpman and Leiderman (1992).

movements have at times caused not only a large change in the central parity but also a widening of the band. The first occurred in January 1988 when the band was widened to ± 3%.

It was widened again to ± 5% in June 1989. In each of these cases, these widenings or realignments occurred when the exchange rate was bumping against the upper edge of the band. However, Chile, as well as Mexico and the rest of Latin America, began to experience large capital inflows starting in 1990 and the exchange rate moved to the bottom of the band.

Sterilizing these capital inflows —that is the purchase of $4.5 billion in 1991 and 1992 by the central bank— became significant. On January 23, 1992, the central bank undertook a large realignment of the central parity but this time it took the form of a 5% appreciation of the peso and a widening of the band to 10%. Capital has continued to flow to Chile despite this appreciation of the nominal (and of the real) peso dollar exchange rate and efforts to slow this inflow by throwing "spanners in the wheels" of capital account transactions. These measures include *a)* moving to a basket of currencies as opposed to the dollar as the basis of changing the central parity and *b)* the establishment of a 20% reserve requirement for 90 days (later extended to one year) on foreign credits (Zahler, 1992; Banco Central de Chile, 1992).

The Chilean central bank has concentrated mainly on the flexibility of the target zone. They are willing to give up a certain amount of higher inflation (or slower deceleration of inflation) to maintain their real exchange rate (Dornbusch and Fisher, 1992) and accommodate external shocks such as changes in the international price of copper (Helpman and Leiderman, 1992) and capital flows (Zahler, 1992).

The Stochastic Properties of the Target Zones

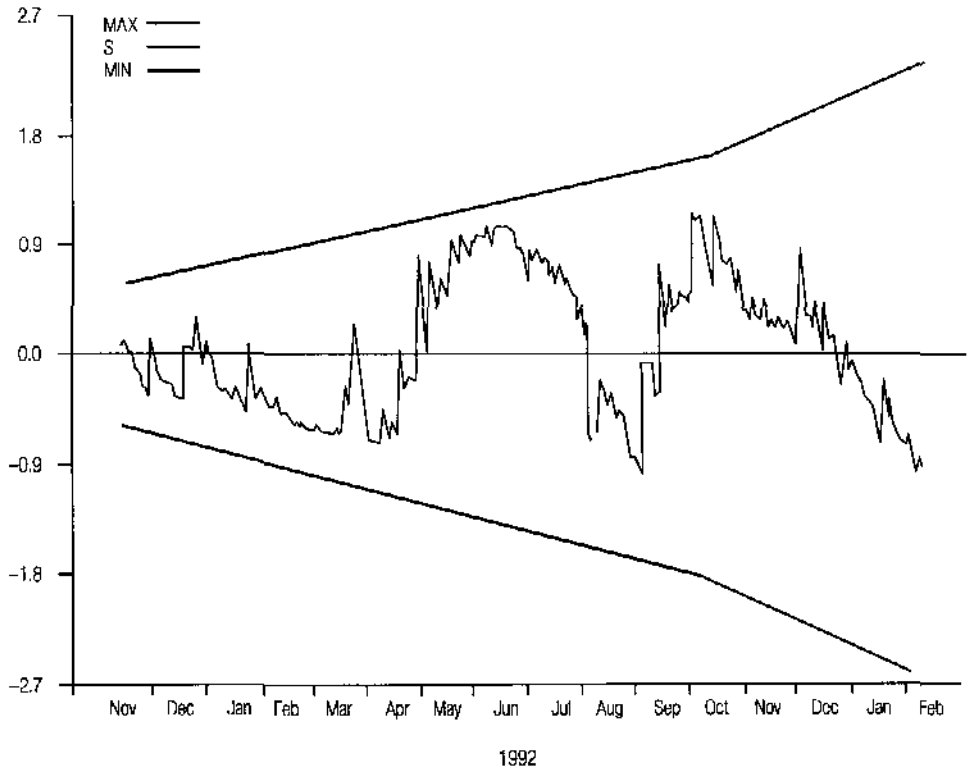
In order to look at the stochastic properties of exchange rates in target zones, we need to carefully describe the different determinants of its behavior. The most useful way to do so is to decompose the value of the (log of the) exchange rate, s_t, into the central parity of the target zone, c_t, and the deviation from the central parity, x_t

$$s_t = c_t + x_t \tag{1}$$

Here, by definition, $-L_t \leq x_t \leq L_t$ where L_t is the radius or distance between the central parity and the boundaries of the band.

Figures 3 and 4 depict the Mexican and Chilean exchange rate movements within the bands. These numbers were generated by subtracting the central parity from the observed exchange rate. Notice that the Mexican exchange rate tends to stay in the middle of the band and displays a large degree of mean reversion. The Chilean exchange rate has stayed close to the edges of the band, toward the top in its early years and later in the 1980s toward the bottom.

Figure 3
Mexico: Deviations of Peso/$US from Central Parity



A usual assumption is that of uncovered interest rate parity where the (log) interest rate differential equals the expected rate of (overall) depreciation

$$i - i* = \delta_t = E[\Delta s_t | I_t] \tag{2}$$

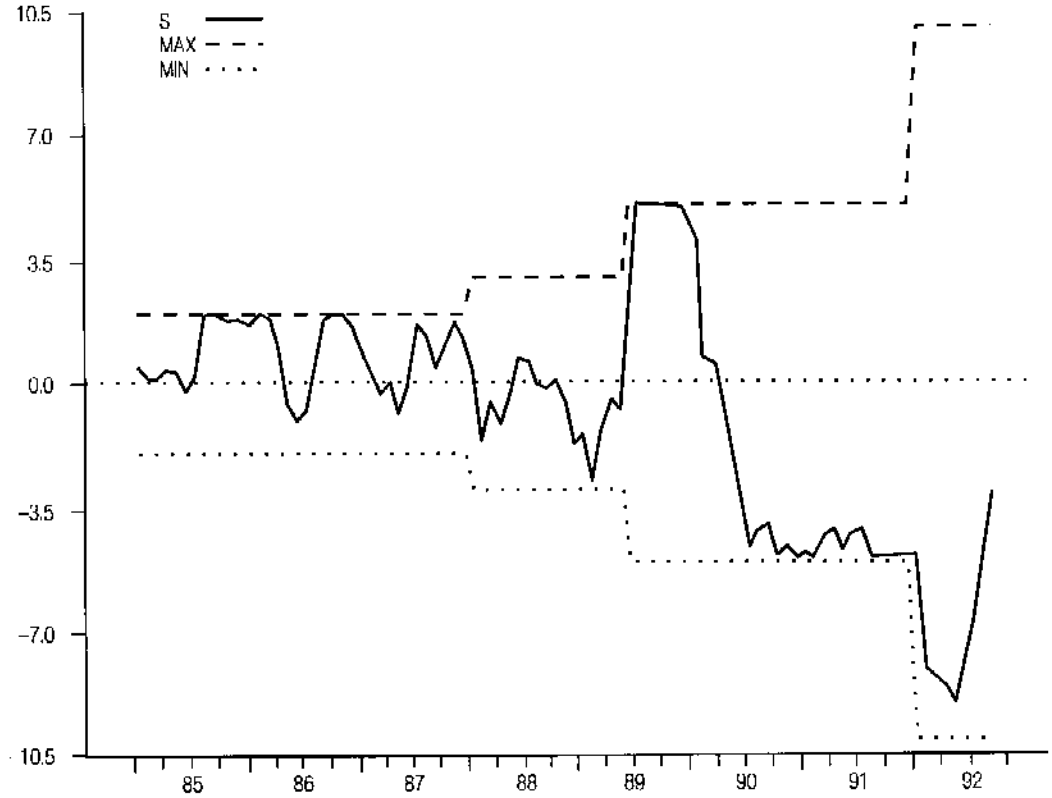
Taking first differences of equation (1) and substituting into equation (2) yields

$$\delta_t = E[\Delta c_t | I_t] + E[\Delta x_t | I_t] \tag{3}$$

Now the interest rate differential equals the expected realignment of the central parity plus the expected depreciation within the band. We can use this relationship to estimate the size of the expected realignments. The interest rate differential is observed. Therefore, to get a measure of expected realignments, we need to estimate the stochastic behavior of the exchange rate within the band. Once we do this, we can then say something about the credibility of the target zones in question.

The behavior of the exchange rate within the band, however, is of some interest in itself. Krugman's (1991) original model shows that in a credible exchange rate regime, the mere existence of the target zone will tend to stabilize exchange rates

Figure 4
Chile: Deviations of Peso/$US from Central Parity, 1985-1992



implying a nonlinear relationship between the exchange rate and so-called "fundamentals". Least squares estimates of this nonlinear relationship, namely Flood, Rose, and Mathieson (1992), have not found evidence of this so-called "honeymoon" relationship. However, such projection equation methods do not explicitly account for the possible nonlinearity introduced by the target zone. Specifically, assuming movements in the exchange rate are normal when in fact they are bounded, creates an estimation problem.

Chen and Giovannini (1992a and 1992b) formulate a projection estimation procedure using a Box-Cox transformation which does not depend as highly on the assumption about the projection equation error because it assumes only that the probability density function falls within a whole family of distributions, the Pierson family. The Box-Cox transformation is performed on the position of the exchange rate in the target zone.

$$y_t^* \equiv \ln\left(\frac{L_t + x_t}{L_t - x_t}\right) \tag{4}$$

Their transformation enjoys a number of advantages. First, the transformation is unbounded despite the target zone and conventional estimation techniques are appropriate. Second, this transformation locates the exchange rate within the band through the ratio of the distance of the exchange rate within the band and the lower limit of the band to the distance of the exchange rate within the band and the upper limit of the band.

We can use least squares to estimate the position of the exchange rate within the band in the following projection equation

$$y_t^* = z_t\beta + \varepsilon_t \tag{5}$$

The independent variable Z can include any conditioning elements on x_t. We include various measures of interest rate differentials, past values of y_t, and dummy variables for realignments which in the case of Mexico took the form of increasing the rate of devaluation of the top of the band and for Chile changes in the sizes of the bands.

The results of this estimation using the Newey and West (1985) estimator of the variance-covariance matrix appear in table 1 for Mexico and table 2 for Chile. Although we will use this projection equation later to estimate confidence intervals for the expected realignment and depreciation within the band when gauging the credibility of the target zones, these results reveal an important characteristic of both target zones. Specifically, the estimates of the parameter ß which measures the persistence of changes in the exchange rate within the band are significantly less than one for both Mexico and Chile. This indicates a large amount of mean reversion that is, large positive (negative) changes in the deviation from central parity that today are offset by negative (positive) deviations tomorrow. We take this as *prima facie* evidence of Krugman's (1991) "honeymoon effect" although such a conclusion is not as strong as previously thought (Rose and Svensson, 1992).

Now we would like to estimate the shape of the probability distribution of x_t using equation (5). To do this we look at the transformation

$$y_t \equiv \gamma + \delta y_t^* \equiv \delta \ln\left(\frac{L_t + x_t}{L_t - x_t}\right). \tag{6}$$

As in Giovannini and Chen (1992), we assume that y has the standard normal distribution $N(0,1)$. Then the distribution of x_t, given the lower and upper bounds, is defined by the parameters γ and δ. When $\gamma = 0$, x_t has a symmetric density function while the density function converges to the normal as δ tends to infinity.

Once we have found these parameters we can estimate the distribution function of x through the change in the variables transformation

$$f(x_t) = \left|\frac{dy}{dx}\right| \Phi(y_t) = \mathbf{J}\,\Phi(y_t) \tag{7}$$

Table 1
Projection Equation for the Exchange Rate MEX$/US$

$$y^*_{t+20} = \alpha_0 + \alpha_1 D^1_t + \alpha_2 D^2_t + \beta y_t + \Theta(i_{t-j} - i^*_{t-j})$$

Degrees of Freedom: 269, $R^2 = 0.3734$
Standard Error: 0.8224

Variables	*Parameters*	*Coefficients*	*Std. Errors*
Constant	α_0	9.4029	3.5173
D_1	α_1	3.5173	0.6241
y_t	β	0.5918	0.1444
$(i_t - i^*_t)$	$\Sigma\Theta_j$	−1.6702	0.6403
$(i_t - i^*_t)^2$	$\Sigma\vartheta$	0.0706	0.0290

D = Realignment dummy November, 1992.
i_t = Mexican interest rate on 3 month CDs.
i^*_t = U.S. interest rate on 3 month CDs.

Table 2
Projection Equation for the Exchange Rate CH$/US$

$$y^*_{t+20} = \alpha_0 + \alpha_1 D^1_t + \alpha_2 D^2_t + \beta y_t + \Theta(i_{t-j} - i^*_{t-j})$$

Degrees of Freedom: 83, R^2: 0.4447
Standard Error: 2.4437

Variables	*Parameters*	*Coefficients*	*Standard Dev.*
Constant	α	1.8174	0.7140
D_1	α_1	−1.7525	0.6690
D_2	α_2	−1.5560	1.2483
D_3	α_3	−1.7525	0.6690
y_t	β	0.5239	0.1239
$(i_t - i^*_t)$	Θ	−0.0619	0.034

D_1 = Realignment dummy January, 1988.
D_1 = Realignment dummy June, 1989.
D_1 = Realignment dummy January, 1992.
i_t = Chilean interest rate on 3 month CDs.
i^*_t = U.S. interest rate on 3 month CDs.

Table 3
Unconditional Density Curve for the Exchange Rate MEX$/US$

$$y_t \equiv \gamma + \delta \ln\left(\frac{L + x_t}{L - x_t}\right), -L \le x_t \le L$$

δ	γ
1.03422 (0.039526)	0.09006 (0.0552)

Table 4
Unconditional Density Curve for the Exchange Rate CH$/US$

$$y_t \equiv \gamma + \delta \ln\left(\frac{L + x_t}{L - x_t}\right), -L \le x_t \le L$$

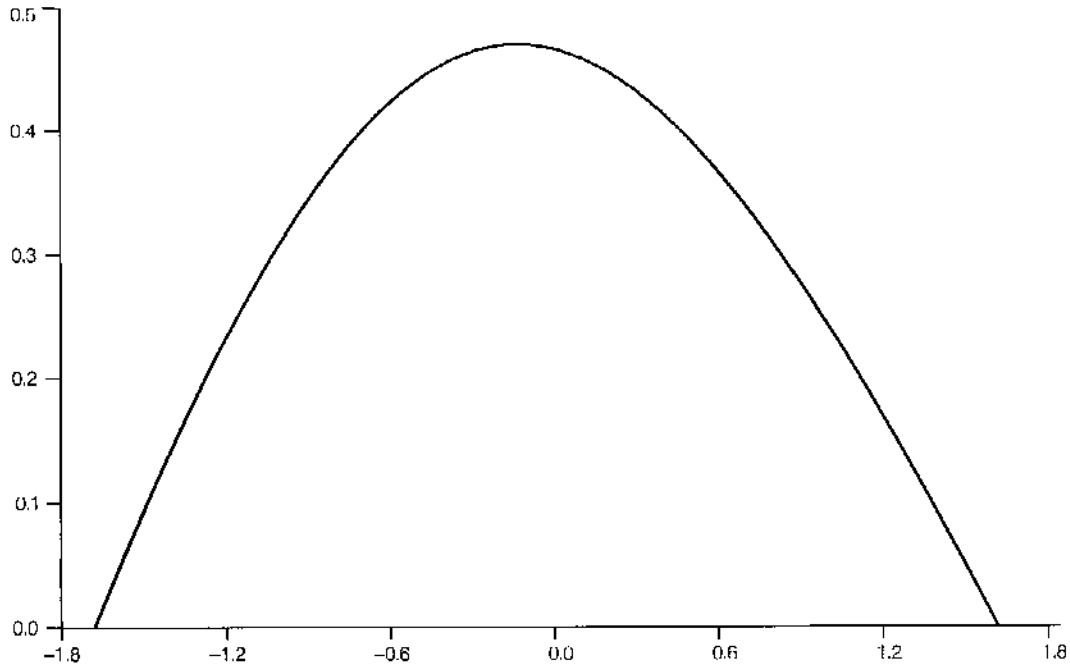
δ	γ
0.3226 (0.0235)	0.0529 (0.1031)

where J is the Jacobian matrix of y and $\Phi(.)$ is the standard normal density function. Then the log likelihood function for x_t is

$$l = \sum_T \ln J + \sum_T \ln \Phi(y_t) \tag{8}$$

We maximize this likelihood function to estimate γ and δ. These estimates appear in table 3 for Mexico and table 4 for Chile. Using these estimates, we generated graphs of the density functions for the exchange rate movements in the bands pictured in figures 5 and 6. The Mexican density function is symmetric and almost normal. This means that the Banco de México tends to intervene inside the band instead of when the exchange rate reaches the edge of the band. On the other hand, the density function of the Chilean band is bimodal and U-shaped. This is the shape predicted by the Krugman model with marginal intervention or intervention at the boundaries.

Figure 5
Unconditional Density Curve for Deviations from Central Parity of $MEX/$US



The Credibility of the Target Zone

A pressing policy question for central banks concerns the credibility of the bands. Most of these tests try to gauge in some way market expectations about possible realignments and therefore are grounded in uncovered interest rate parity (UIP). A number of techniques have been developed. We will concentrate on two of them. The simplest was developed by Svensson (1991) who calculated *credibility bounds* on interest rates implied by UIP when the target zone is credible. Using the notation of equation (3) and assuming the band is credible, that is the central parity depreciates at the announced rate $\bar{c}$, then the maximum (log) interest rate differential consistent with a credible target zone, δ_{max}, is determined by

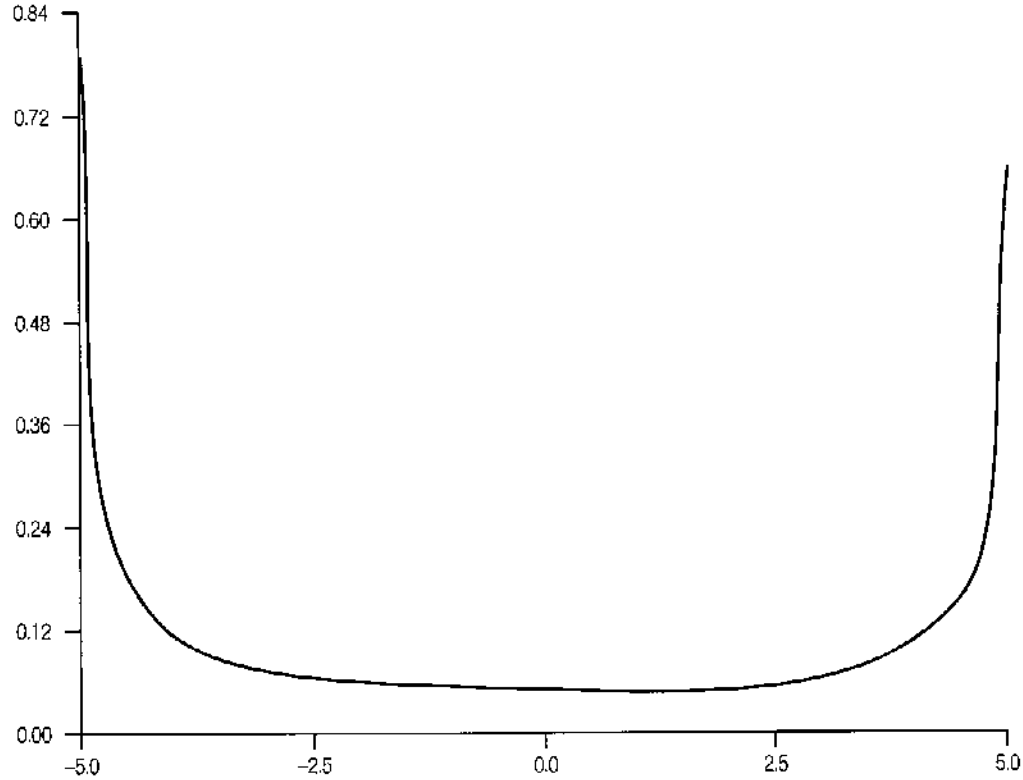
$$\delta_{max} = \bar{c} + \Delta x_{max} \,. \tag{10}$$

Analogously, the minimum interest rate differential is

$$\delta_{min} = \bar{c} + \Delta x_{min} \tag{11}$$

where $x_{min} \leq 0$.

Figure 6
Unconditional Density Curve for Deviations from Central Parity of Chilean Peso



These relationships can be written in level form as

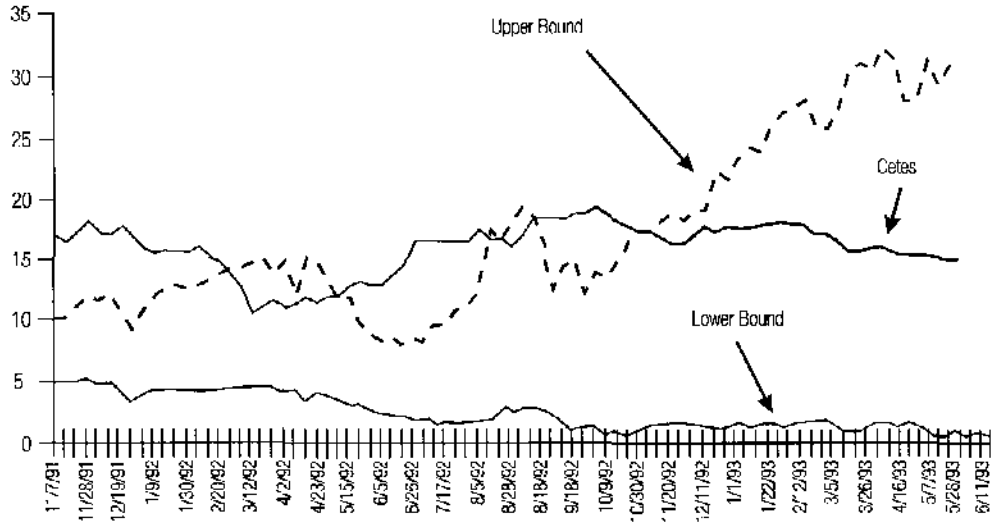
$$i_{\max} = (1 + us)\left(\frac{S_{\max}}{S_t}\right) - 1 \tag{12}$$

$$i_{\min} = (1 + us)\left(\frac{S_{\min}}{S_t}\right) - 1 \tag{13}$$

where $S_{\max}$ is the exchange rate at the top of the exchange rate band, $S_{\min}$ is the exchange rate at the bottom of the band, and S_t is the spot level of the exchange rate. $i_{\max}$ is the maximum domestic interest rate consistent with a credible exchange rate band assuming no risk premium applies and financial markets are perfectly integrated. The bottom of the band ($i_{\min}$) is similarly calculated using the bottom of the exchange rate band.

Figure 7 shows these bounds and 91 day Cetes rates for Mexico during their target zone experience. The interpretation of the band is straightforward. If the Cetes interest rate is within the credibility band, the expected rate of devaluation reflected in interest rate differentials is consistent with the exchange rate staying within the target zone

Figure 7
Mexico: 91-Day Cetes Interest Rates and Credibility Bounds
November 7, 1991 to June 11, 1993



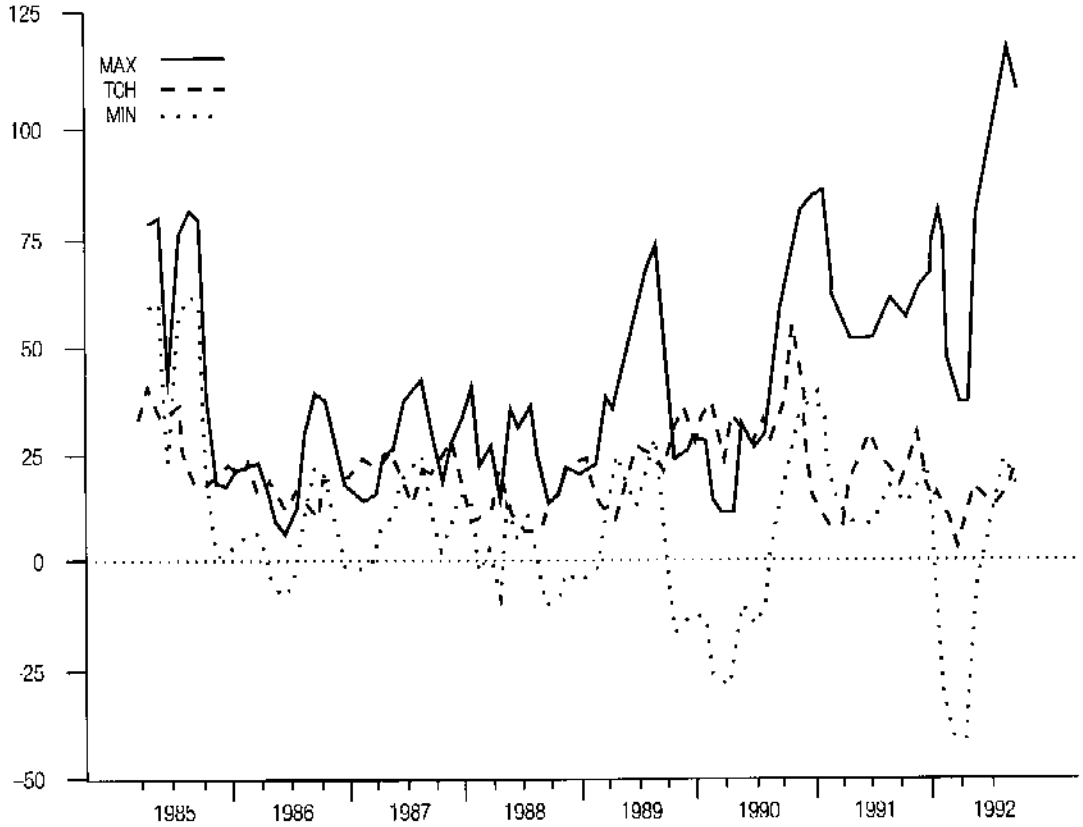
and, therefore, the target zone is credible. If interest rates are above the top of the credibility band, expected devaluation brings the exchange rate outside the zone, and, the zone lacks credibility. One should keep in mind that this definition of credibility is (overly) strict. It does not allow for risk premia and the like.

The interest rate moved closer and finally entered the credibility bound in late February 1992 and stayed there until May. Subsequently, the peso moved to the top of the exchange rate band and interest rates rose outside the credibility band. The reasons behind this reversal, which are described below, are many and do not necessarily have anything to do with credibility. But this graph is an interesting gauge of the credibility of the current exchange rate regime.

Interest rates stayed outside of the band until the August appreciation widened the credibility band to incorporate the Cetes rate. But the exchange rate pressure of September to November, probably related to the U.S. presidential elections, again showed a marked lack of credibility on the part of the band. The decision to open the band faster in November, 1992 widened the credibility band as the peso appreciated and now the indicators are that the exchange rate arrangement enjoys a high level of credibility. Interestingly, the unprecedented reaction of the Mexican market accords well with the analysis of McLeod and Welch (1991).

The Chilean credibility bounds are depicted in figure 8. In order to calculate these bounds we must either assume the market has perfect foresight about the central parity because the central parity is adjusted according to past inflation rates or we must devise expectations about this parity. For the Svensson (1991) tests, we will assume that the market knows the central parity three months ahead with certainty. However, the economic interpretation of these bounds is not as straightforward as the Mexican graphs.

Figure 8
Chile: Credibility Bounds for 3-month CD Interest Rates



We will deal more formally with this problem above. Unfortunately, the Svensson (1991) test generates circular conclusions in that the central parity is automatically adjusted to a credible level and therefore is always credible.

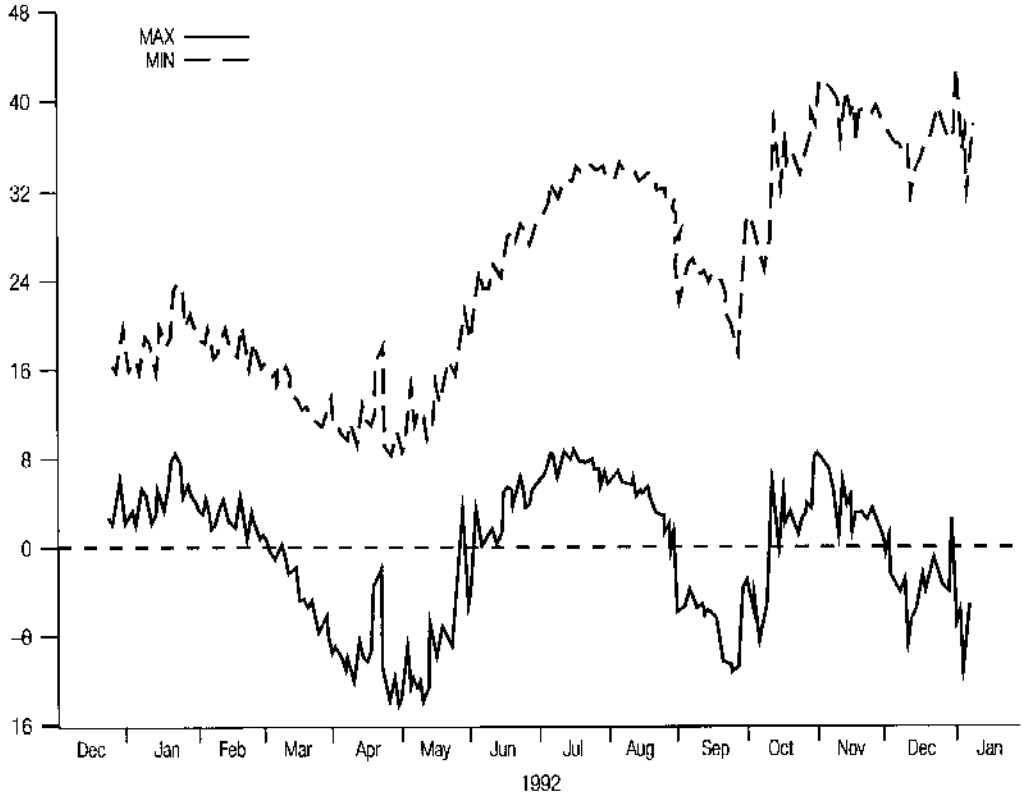
More formal credibility bounds can be generated from the probability distributions generated above. We calculate 95% confidence intervals around the expected value of x_t by first calculating the expected deviation for central parity

$$E[x_t] = \int_{-inf}^{\infty} x_t f(x_t) dx_t \tag{14}$$

then finding the values L and U which satisfy

$$\int_{L}^{E[x_t]} f(x_t) dx_t = 0.475 \tag{15}$$

Figure 9
95% Confidence Intervals for Deviations from Central Parity
28 Days Ahead for $MEX/$US



$$\int_{E[x_t]}^{U} f(x_t)dx_t = 0.475 \tag{16}$$

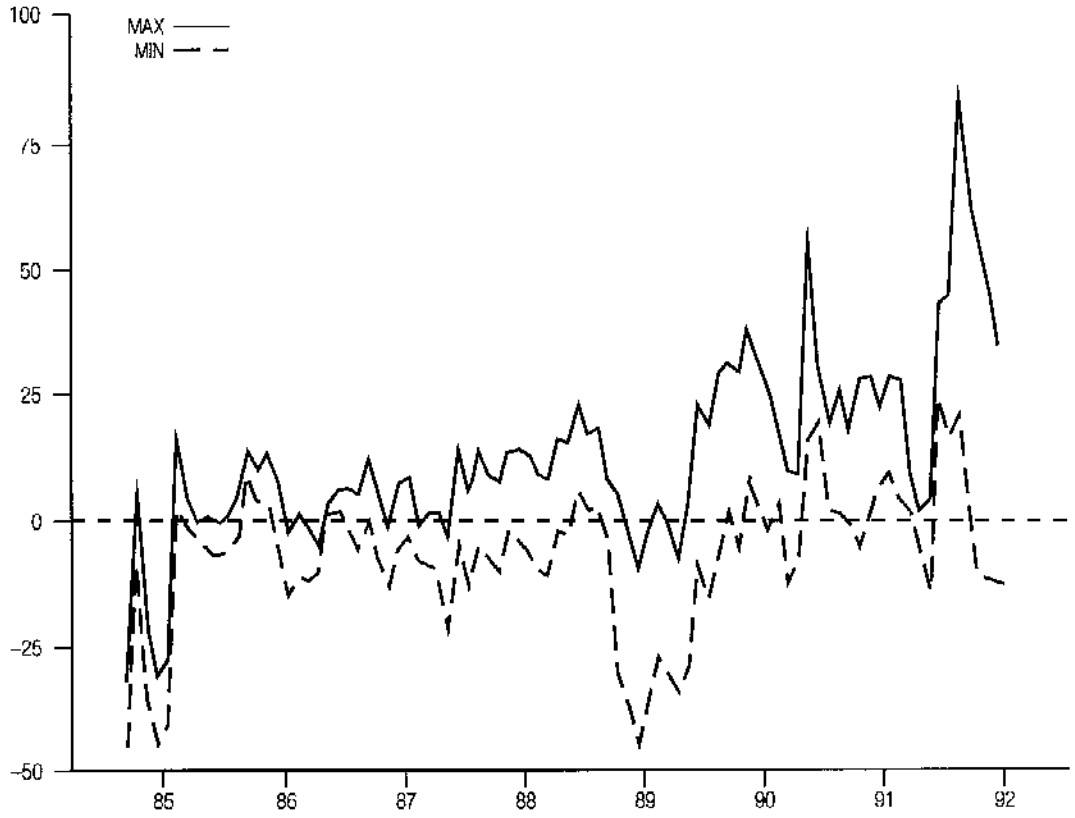
We use these upper and lower bounds to calculate confidence intervals for expected realignment according to

$$E[\Delta c_t|realignment] = \delta_t \; E[\Delta x_t|no\ realignment] \tag{17}$$
$$[\Delta c_t|announced]$$

If zero falls outside of these confidence intervals, the market is expecting a realignment of the central parity and the exchange rate regime is not credible. When zero falls within these bounds, the exchange rate is credible.

Figures 9 and 10 present these bounds for Mexico and Chile which are 95% confidence intervals for expected realignment. For Mexico, they look almost the same as the Svensson tests and therefore we will not describe the real time interpretation.

Figure 10
Chile: 95% Confidence Interval for Expected Deviations of CH$/$US from Central Parity

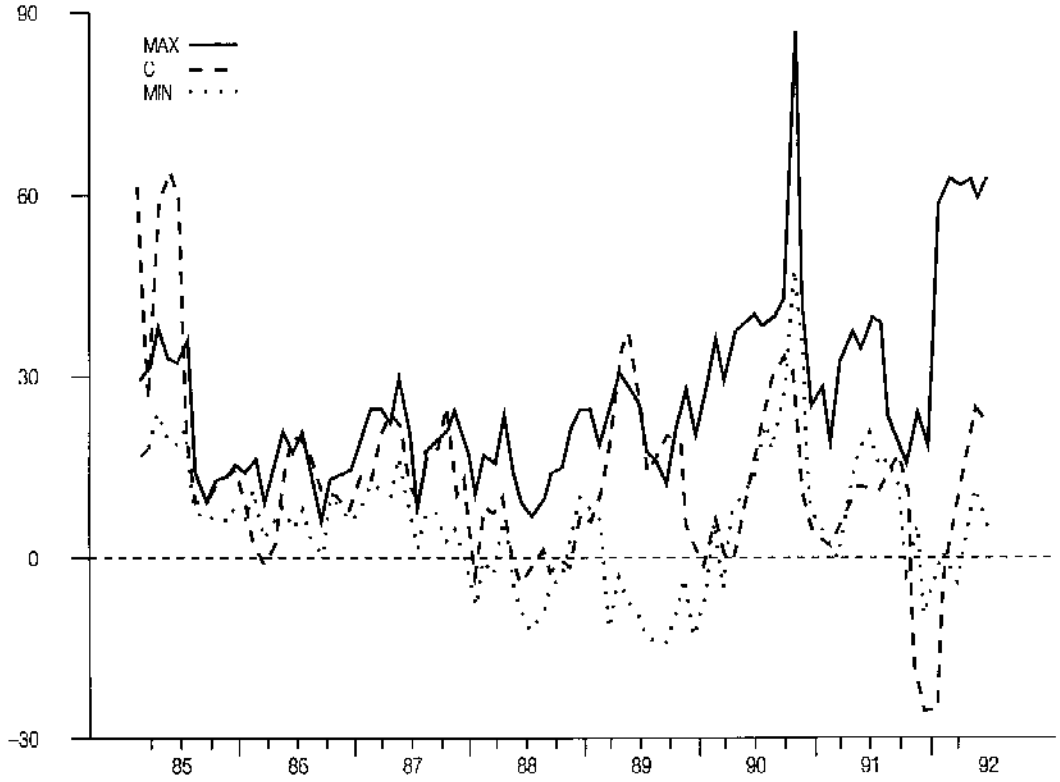


An interpretation of the Chilean bounds (figures 8, 10, and 11) is in order at this point. As mentioned above, speaking about credibility of the Chilean zone is difficult due to the continuous realignment of the central parity. But we can gauge in figure 11 how well the private sector predicted the size and direction of these realignments. The interbank market in Chile predicted all but two major realignments. The first came at the beginning of the period, 1985, when the devaluation of the central parity was larger than expected. The second came at the end of the period, early 1992, when the appreciation of the central parity was larger than expected.

Conclusions

The objective of this paper was to extract some useful lessons by both institutional and formal techniques from the use of unilateral exchange rate target zones. The objectives and the histories of the two target zones as well as the institutional design were clearly different in Mexico and Chile. The increased flexibility of the Mexican exchange rate

Figure 11
Chile: 95% Confidence Interval for Expected Realignments
and Actual Realignments of the Central Parity



has improved the credibility of the exchange rate regime in Mexico and has not come at the cost of slowing the rate of decline in the inflation rate. The decision to widen the band further has allowed Mexico to continue enjoying large capital inflows and avoid a collapse of its exchange rate regime. In Chile, the objective was to sustain Asian style export-led growth. Hence, the Chileans have tolerated perhaps a higher inflation rate to maintain export growth.

One tendency common to both countries is that both target zones have generated substantial mean reversion within the band. This has meant that interest rate variability has not been increased as a function of exchange rate policy and, therefore, the policies have been credible. What is key here is that the bands have allowed enough flexibility of the exchange rate to avoid destabilizing hot money flows and therefore exchange rate policies have not led to instability. And, as inflation has fallen, the central banks have chosen to allow the market to determine the exchange rate as opposed to a fixed or sliding peg entirely managed by the central bank.

Of course, none of this would be possible without the incredible fiscal adjustment achieved in Mexico over the last decade and the prior fiscal adjustment in Chile. But the analysis begs the question: why did these countries wait so long to move to a mar-

ket based exchange rate? Although a full answer goes beyond the scope of this paper, we feel the answer lies in the state of development and liberalization of the financial system.[4] Financial liberalization in Mexico came only after fiscal adjustment and a slowing of the inflation rate. A return to an open financial market in Chile after the 1982 collapse only occurred after a full fiscal consolidation including the reorganization of failed banks.[5] Low inflation and fiscal consolidation have allowed the financial markets in both countries to develop quickly, allowing a fuller development of the interbank market for foreign exchange in addition to other financial instruments.

What seems to be occurring in both Mexico and Chile is that these countries are using target zones to gradually move to market exchange rates. Such a use of target zones stands in sharp contrast to the use in the EMS whose ultimate objective was to move to a unified currency. The recent crumbling of such an effort and the experience of Mexico and Chile indicates that target zones may be a better instrument for moving to flexible rather than fixed exchange rates. Still, the evidence is preliminary, especially in the Mexican case, and deserves more attention from economic researchers.

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[4] For a more exhaustive treatment, see McLeod and Welch (1991).

[5] Ongoing losses at the central bank from this consolidation, the so-called "quasi-fiscal deficit", has always been matched by a Federal Government surplus. Also, a strict system of amortization has been in force since these interventions. The recent inflow of capital has all but eliminated this deficit as the central bank has sold these assets when sterilizing the capital inflow.

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