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Testing the Credibility of the Belgian Hard Currency Policy

Prepared by Vincent R. Koen [1]

Authorized for Distribution by H. Vittas

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Abstract

Interest rate differentials have been widely used to assess the degree of policy credibility. A problem with this measure, however, is that the relationship between the differential and credibility varies not only across maturities but also with the actual level of the exchange rate. The alternative approach used in this paper, based on the construction of rate-of-return bands, overcomes this difficulty. It is applied to Belgium, which in May 1990 hardened its exchange rate policy stance. Comparisons with other small, open European economies are carried out. Econometric evidence is provided supporting the claim that the announcement and active implementation of a tighter exchange rate link does make a difference.

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Summary

Traditionally, interest rate differentials have been used to assess the degree of policy credibility. One problem with this measure, however, is that it does not allow for the fact that the relationship between the differential and credibility varies not only across maturities but also with the actual level of the exchange rate. The alternative approach used in this paper, based on the construction of rate-of-return bands, overcomes this difficulty. It relies on the fact that an exchange rate target zone implies bounds on the extent of depreciation and appreciation of the exchange rate. For a given foreign interest rate, these bounds translate into bounds on the domestic currency rate of return on foreign investment, thus defining a rate-of-return band around the foreign interest rate. The latter will be wider, the shorter the maturity, since the maximum depreciation or appreciation per unit of time rises as the term shortens. In a context of free capital mobility, and in the absence of tax and other distortions, the lingering of the domestic interest rate for a given term above the corresponding rate-of-return corridor and the absence of major capital inflows would signal the perception of a non-trivial devaluation risk. This test, however, is asymmetrical: that domestic interest rates do remain within the corridor does not necessarily imply that the target zone is credible.

This methodology is applied to Belgium, which in May 1990 announced the adoption of a harder exchange rate policy. Comparisons with other small, open European economies are provided. Then, a number of cross-country regressions are carried out that support the claim that an official and active commitment to a tighter exchange rate link does make a difference.

I. Introduction

On May 22, 1990, the Belgian authorities confirmed their intention to peg the Belgian franc more closely to the most stable currency in the European Monetary System (EMS), thus committing themselves to move with the German currency both during and in between EMS realignments. Thereby, Belgium joined a few other countries (namely, the Netherlands and Austria) in maintaining an exchange rate band vis-à-vis the deutsche mark that is significantly narrower--possibly on the order of ± 0.5 percent--than the band formally agreed upon under EMS rules (see first panel of Chart 1). This de facto commitment to a narrow band was emphasized more recently by official statements to the effect that Belgium was ready to proceed to phase three of the Economic and Monetary Union (EMU). This could be interpreted to mean that, as far as Belgium is concerned, the required conditions of economic convergence are perceived by the authorities to have been fulfilled.

An important question that arises in this context is that of the credibility of this commitment. Traditionally, interest rate differentials have been used to assess the degree of policy credibility. One problem with this measure, however, is that it does not allow for the fact that the relationship between the differential and credibility in fact varies not only across maturities but also with the actual level of the exchange rate. The alternative approach used in this paper, based on the construction of rate-of-return bands, overcomes this difficulty. 1/

The underlying idea is very simple. An exchange rate target zone implies bounds on the extent of depreciation and appreciation of the exchange rate. For a given foreign interest rate, these bounds translate into bounds on the domestic currency rate-of-return on foreign investment, thus defining a rate-of-return band around the foreign interest rate. The latter will be wider the shorter the maturity, since the maximum amount of depreciation or appreciation per unit of time rises as the term shortens.

In a context of free capital mobility, the lingering of the domestic interest rate for a given term above the corresponding rate-of-return corridor and the absence of major capital inflows would signal a lack of credibility of the exchange rate regime (at least within the horizon indicated by the term). In this case, it can be inferred that investors perceive that the risk of regime change, in the form of a devaluation before the end of that term, is nontrivial.

It should be noted from the outset that this test is asymmetrical: the fact that domestic interest rates do remain within the corridor does not

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1/ The methodology is borrowed from Svensson (1990), who carries out the exercise for Sweden, which adopted a target zone policy in 1977, pegging the krona to a trade-weighted currency basket, first without posting the width of the band, and since June 1985 with a publicized ± 1.5 percent band.

necessarily imply that the target zone is credible. Indeed, the expectation of a small shift of the exchange rate band (i.e., a shift that would not imply a discrete jump of the exchange rate out of the existing band) is compatible with such a pattern. In practice, it should also be recognized that capital market imperfections, intercountry differences in tax treatment of capital income and other such considerations imply that interest rates wandering outside the corridor may not unambiguously reflect a credibility gap.

An alternative approach to the same issue relies on the computation of expected depreciation rates for various horizons. This will be done in passing, under a set of somewhat restrictive assumptions.

Having computed measures of the credibility gap for Belgium and a set of other small open European economies, a number of cross-country regressions are carried out in order to impute these gaps to a number of potential explanatory factors, including the stance of fiscal policy, the competitiveness of the economy and the past behavior of the exchange rate.

II. Rate-Of-Return Bands and Credibility Gaps

Let e_t be the spot exchange rate (BF/DM), and i_t^n and i_t^{*n} the annualized Belgian and German n month domestic interest rates, all at time t. The annualized *ex post* Belgian franc rate of return r_t^n on an investment in an n-month deutsche mark denominated instrument is then:

$$(1) \qquad r_t^n = (1+i_t^{*n})\left(\frac{e_{t+n}}{e_t}\right)^{\frac{12}{n}} - 1$$

In between two EMS realignments, the spot exchange rate is allowed to fluctuate within a band:

$$(2) \qquad \underline{e} \leq e \leq \overline{e}$$

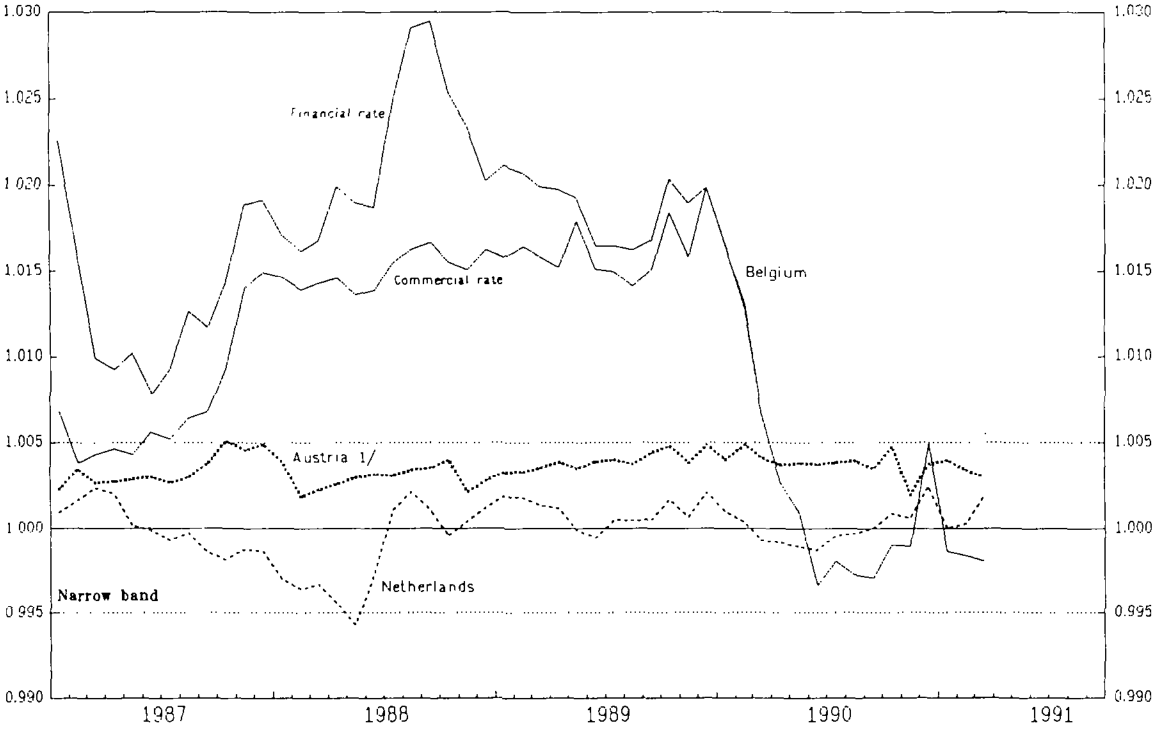
By equation (1), the rate of return r_t^n is therefore restricted to move within a corridor:

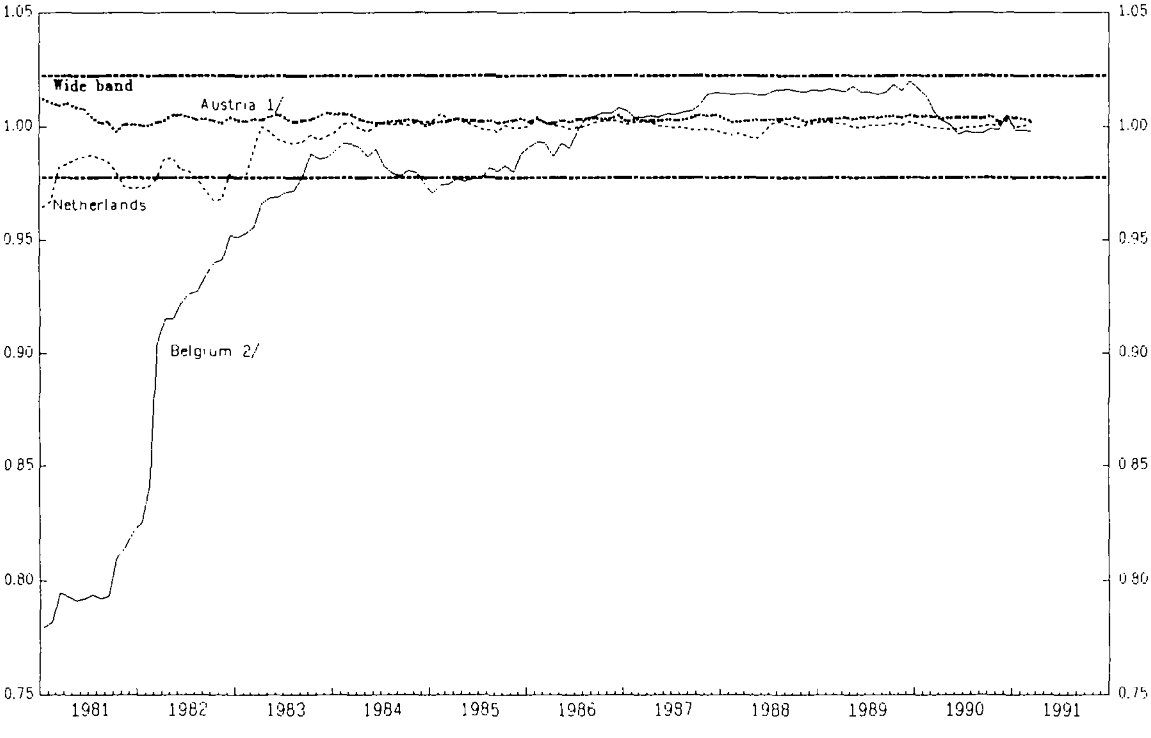
$$(3) \qquad \underline{r}_t^n \leq r_t^n \leq \overline{r}_t^n$$

where the lower and upper bounds are directly obtained from (1):

CHART 1

Nominal Exchange Rate Developments





Source: IMF, International Financial Statistics.
1/ 1.00 = 1990 central rate in the ERM or 7.01 S/DM.
2/ Commercial rate before March 1990.

$$(4) \qquad \underline{r}_t^n = (1+i_t^{*n})\left(\frac{\underline{e}}{e_t}\right)^{\frac{12}{n}} - 1$$

$$(5) \qquad \overline{r}_t^n = (1+i_t^{*n})\left(\frac{\overline{e}}{e_t}\right)^{\frac{12}{n}} - 1$$

Equations (4) and (5) indicate that the bounds of the corridor are decreasing in e_t and that its amplitude is decreasing in n. The first observation simply results from the fact that the weaker the currency (i.e., the higher e_t), the larger the potential appreciation and the smaller the potential depreciation within the band. Consequently, the implied range of domestic currency return on deutsche mark investments is shifted down. The second point is explained by the fact that the maximum exchange rate movement allowed within the band would result in a smaller rate of change per unit of time at longer maturities, thus compressing the width of the band.

If capital is sufficiently mobile, and operators on the foreign exchange market rule out any realignment that would project the Belgian franc/deutsche mark parity out of the current band during the next n months, i_t^n must remain inside the corridor. Otherwise, a riskless arbitrage opportunity would persist. Hence, excursions of the domestic interest rate beyond the corridor's limits provide prima facie evidence of a credibility gap. 1/

III. Building Credibility

This section should start with a note of caution. Although the interest rates used in the following comparisons were selected so as to minimize the possible divergences between the underlying instruments' characteristics, some cross-country differences subsist, especially for the long-term measures. These may affect the interpretation of the evolution of credibility, and are even more likely to bias the levels in the computation of the credibility gaps. Potential sources of discrepancies include differences in taxation and in attached options (for longer-term

---

1/ It may be noted that an expected realignment would increase the deviation of i_t^n from the corridor only to the extent that it also changes the expected path of the spot exchange rate.

instruments), or dissimilar terms (which do matter if yield curves happen to be steep). [1]

It should also be stressed that the distinction between various horizons points to a dual interpretation of the term "credibility," at least for the short and medium run. Short-run credibility of a hard currency policy per se can in principle be achieved even if fundamentals are on an unsustainable course, i.e., even if economic policy as a whole is perceived to be incompatible with long-run fixity of the exchange rate. However, the concepts of credibility of a hard currency policy and of credibility of overall economic management would tend to coincide in the long run.

The traditional interest differential charts for several small open European economies suggest that credibility does not come overnight when a country commits itself to a stable nominal exchange rate (Chart 2). Regarding Belgium, the short-term premium over the deutsche mark interest rate has gradually declined since the January 1987 EMS realignment. Its fall accelerated after the hard currency policy announcement. The premium even vanished at the end of November 1990, but reappeared since. Two relevant small open economy precedents are the Netherlands, a founding member of the EMS, and Austria, which recently applied for membership. Two other interesting benchmark EMS countries are Denmark and Ireland, since like Belgium they display large public debt/GNP ratios, but unlike Belgium they did not adopt a narrow exchange rate band vis-à-vis the deutsche mark. [2]

In the case of the Netherlands, illustrated in Chart 3, the actual three-month rate since the last realignment of the central rate between the deutsche mark and the guilder has essentially stayed within the corresponding wide and narrow corridors. [3] The long-term rate hovered slightly above the upper edge of the wide corridor until the early months of 1986, and stayed within that corridor thereafter. [4] By this test, it could be said that it took around three years for the exchange rate policy to become fully credible. Other factors come into play, however, to explain the subsequent somewhat erratic behavior of the long-term rate. In particular, the 10 percent German withholding tax--announced in October 1987, implemented in January 1989 and withdrawn in July 1989--may account

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[1] Ideally, one would want to compare the yields to maturity on liquid, tax-free zero coupon bonds with exactly the same remaining life, and hence the same duration.

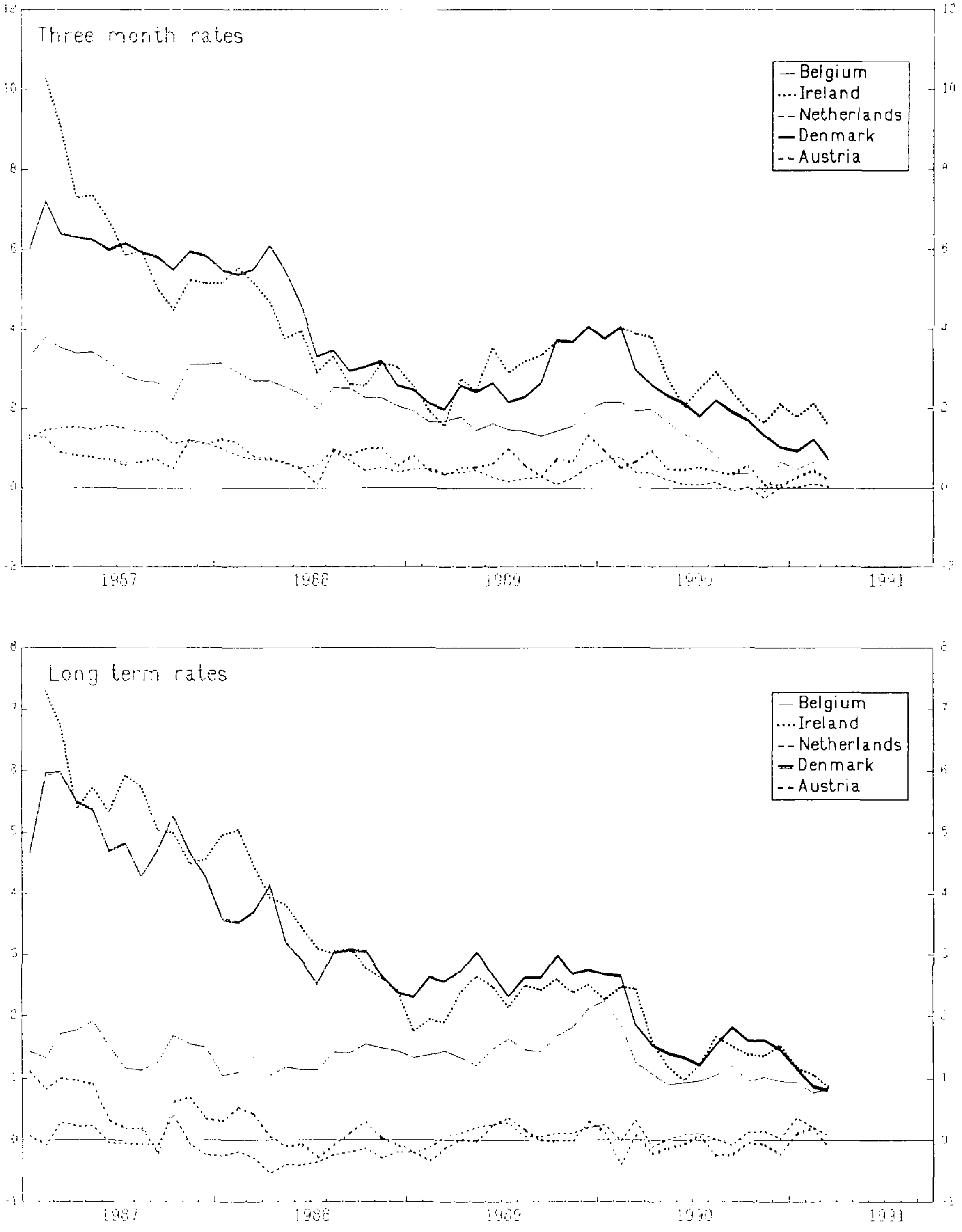
[2] At the end of 1989, the central government's debt in Denmark amounted to about 60 percent of GDP, down from 75 percent around 1984. Admittedly, this remains well below Belgian levels. In Ireland instead, the debt/GNP ratio stood at 130 percent at the end of 1988, while it was peaking at 136 percent in Belgium at the same date.

[3] As a rule, charts are drawn starting at the last devaluation with respect to the deutsche mark, subject to data availability constraints.

[4] Drawing the third panel of Chart 3 for a ± 0.5 percent band would lead to a similar diagnosis.

CHART 2

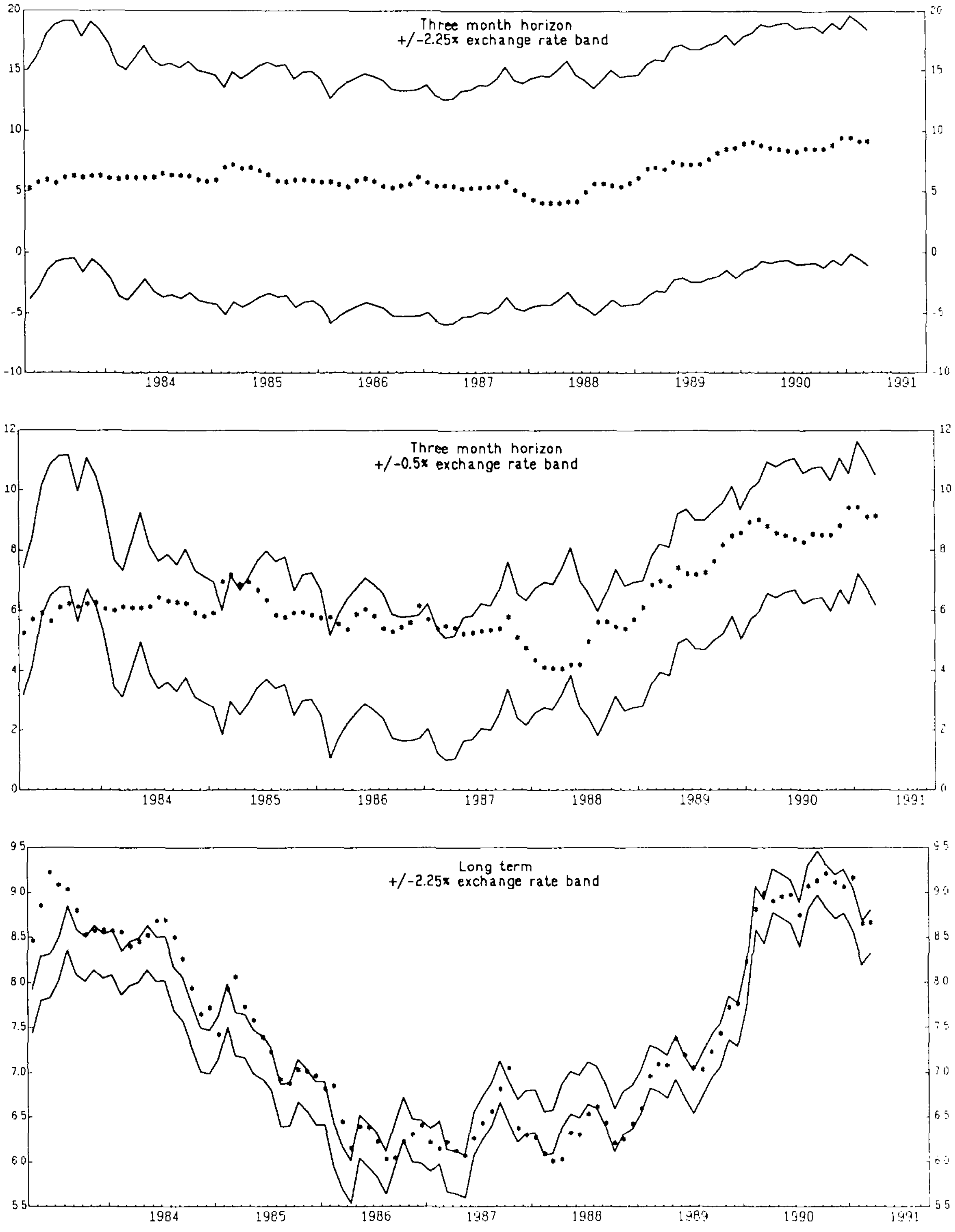
Interest Differentials vis-à-vis Germany
(in percentage points)



Sources: IMF, International Financial Statistics; OECD, Main Economic Indicators; Deutsche Bundesbank; Danmarks Nationalbank; Central Bank of Ireland; Nederlandsche Bank.

CHART 3

Interest Rate Corridors for the Netherlands
(in percentage points)



Sources: IMF, International Financial Statistics; Deutsche Bundesbank; Nederlandsche Bank.

for the dip of the Dutch rate below the corridor during a few months in 1988.

In the Austrian case, pegging started as early as 1981. Based on data available since January 1987, the three-month rate mingles with the upper edge of the narrow corridor associated with a ± 0.5 percent exchange rate band, remaining well within the wider corridor corresponding to an EMS-like band (Chart 4). While the credibility of the nominal parity appears to be validated by the behavior of the short-term interest rate, a more ambiguous answer would seem to be provided by the somewhat irregular pattern of Austrian long-term rates. The persistence of various institutional restrictions on interest differential arbitrage (even after the January 1990 liberalization of capital controls) might, however, explain the occasional excursions of the long-term rate above or below the narrow corridor.

As opposed to the Netherlands and Austria, Denmark's long-term rate has consistently remained far above the corresponding corridor (Chart 5). Even within a quarterly horizon, it would seem that the Danish krone/deutsche mark rate was not at all times perceived as free of devaluation risk. Indeed, compared to the narrow band countries, residual exchange rate uncertainty remains considerable, as illustrated in Chart 6. However, the credibility gap has at times been less wide than suggested by a literal reading of Chart 5. In 1988, for example, substantial capital inflows occurred that put downward pressure on the relative level of the Danish interest rate. But these favorable developments were reversed in 1989, suggesting that the strengthening of credibility was of a temporary nature.

Turning to Ireland, Chart 7 implies that although the EMS target zone bounds may not yet be fully credible in the markets at a five year horizon, long-run credibility has markedly improved since the last realignment of the Irish pound vis-à-vis the deutsche mark in January 1987. At a quarterly horizon, the hypothesis of apparent credibility seems on the whole to be sustained. Interpretation of Chart 7, however, is complicated by the fact that the exchange rate of the Irish pound vis-à-vis the British pound (which is of key importance to Ireland) was highly volatile until October 1990, when the United Kingdom joined the exchange rate mechanism of the EMS.

Belgium exhibits a less stable historical record than the Netherlands or Austria, as the second panel of Chart 1 shows. Therefore, the result of the corridor test pictured in Chart 8 should come as no surprise. The short-run panel suggests that credibility was not unambiguously achieved over the 1987-1989 period. 1/ Since late 1989 though, the domestic interest rate has traveled well within the wide corridor. It even entered

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1/ The top panel of Chart 9 shows that this statement holds even if one corrects for the fact that the rate on three-month Treasury certificates, used here, is in Belgium traditionally slightly higher than the corresponding interbank rate. It also suggests that the use of the Euro-Belgian franc rate would not alter the finding.

the narrow one and remained there for several weeks in the fall of 1990. In any case, short-run credibility would seem to have markedly improved since end 1989. The behavior of the long-term rate, displayed in the lower panel, does not, however, fully corroborate this impression: since the announcement of the hard currency policy, the Belgian long rate has hovered most of the time about 100 basis points above the German one. The persistence of a significant rate-of-return gap has been accompanied by substantial inflows of private capital, but not on a scale sufficient to bring the interest rate within the corridor. This could suggest that the credibility hiatus is a real one. 1/ This conclusion is not altered when alternative long-term interest rate series are used, as shown in the bottom panel of Chart 9, where the tax distorted average long-term IFS rate (used in Chart 8) turns out to be very close, for our purposes at least, to the yields computed for tax-exempt bonds. 2/

Two considerations need to be kept in mind in interpreting the apparent long-run credibility gap. On the one hand, the Belgian yield curve used to be flatter than comparable foreign yield curves, due to the influence that the Treasury was able to exert on the shape of the curve through its dealings with the underwriting consortium. The modernization of public debt management undertaken in 1989 may result in a more conventional term structure. On the other hand, however, if risk premia are taken into account, enhanced credibility would tend to flatten the yield curve. The more credible the hard currency policy, the larger the demand for fixed long-term bonds, since inflation uncertainty is then low and short-run real

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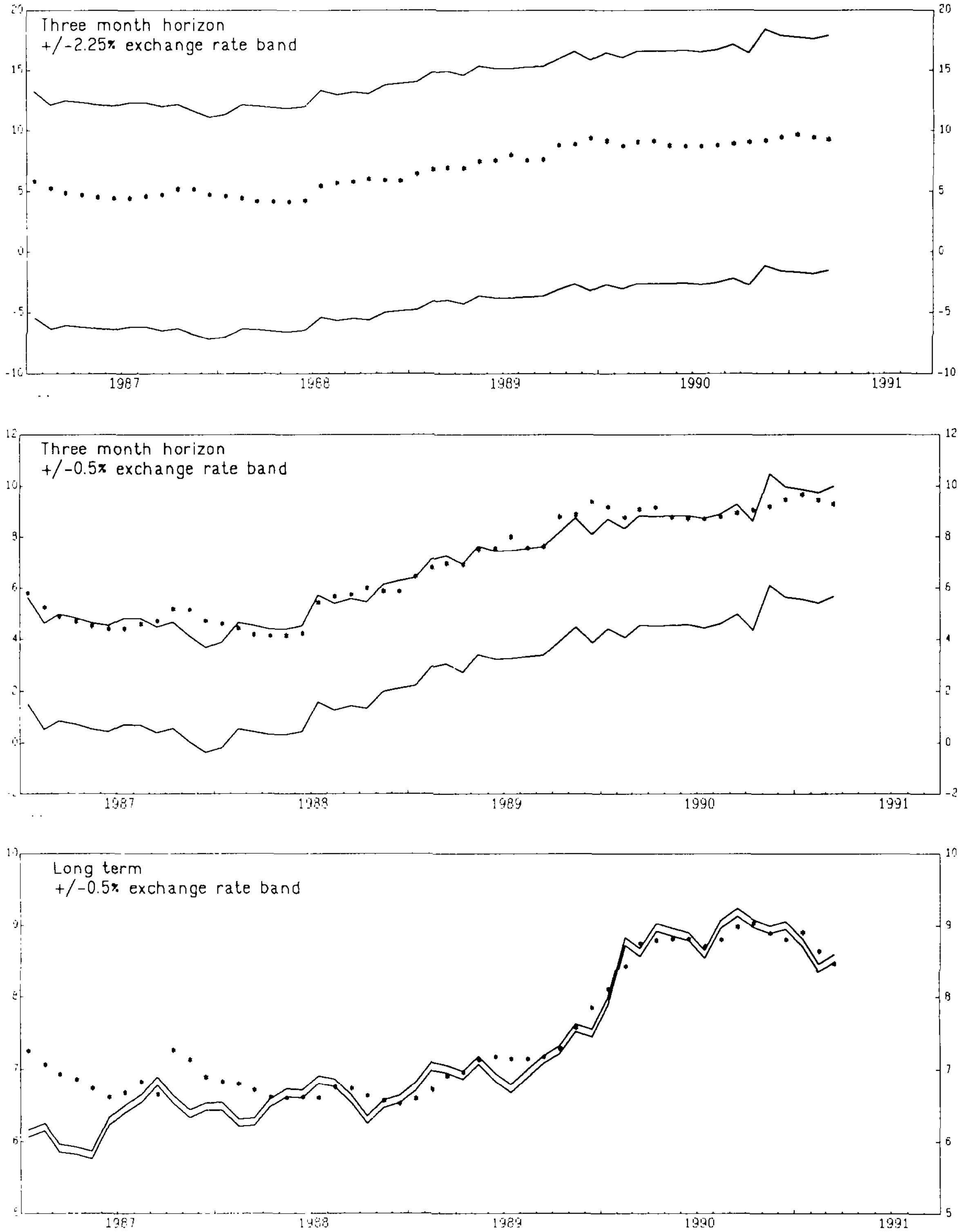
1/ Interpreting the evidence is difficult due to the low frequency (quarterly) of the available series and to the fact that part of the capital movements do not involve any currency switch.

2/ Tax-exempt bonds (OLOs) were only introduced in May 1989. Note that the reduction of the withholding tax on interest income from new assets from 25 percent to 10 percent, effective on March 1, 1990, seems to translate into a downward shift of the IFS rate around that date, as one would expect. But it remains unclear how much the withholding tax matters here, since financial institutions, which hold a large chunk of the stock of bonds, are exempt, nonresidents are refunded and resident nonfinancial corporations see it credited against income tax. In addition, the IFS rate is computed on the basis of the yield of the existing stock of bonds, while the withholding tax cut applies only to new assets. Moreover, Belgian households have been able to circumvent the tax to some extent by investing in Luxembourg-based mutual funds, some of which specialize in Belgian franc bonds. As for maturities, the yield curve appears rather flat between five and ten years, suggesting that averaging yields over different long maturities does not mask any noteworthy phenomena.

CHART 4

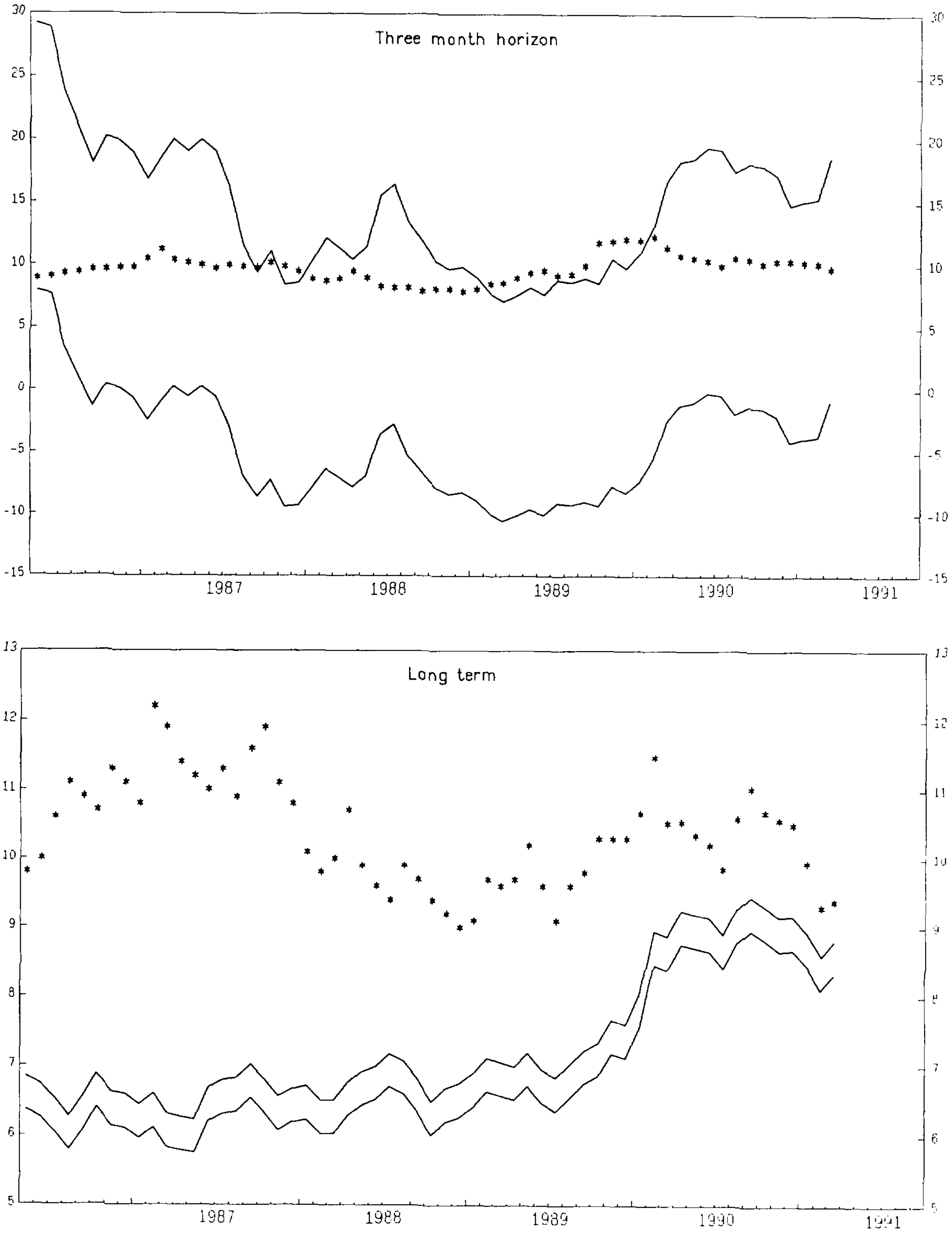
Interest Rate Corridors for Austria
(in percentage points)



Sources: IMF, International Financial Statistics; Deutsche Bundesbank; Oesterreichische Nationalbank.

CHART 5

Interest Rate Corridors for Denmark
(in percentage points)

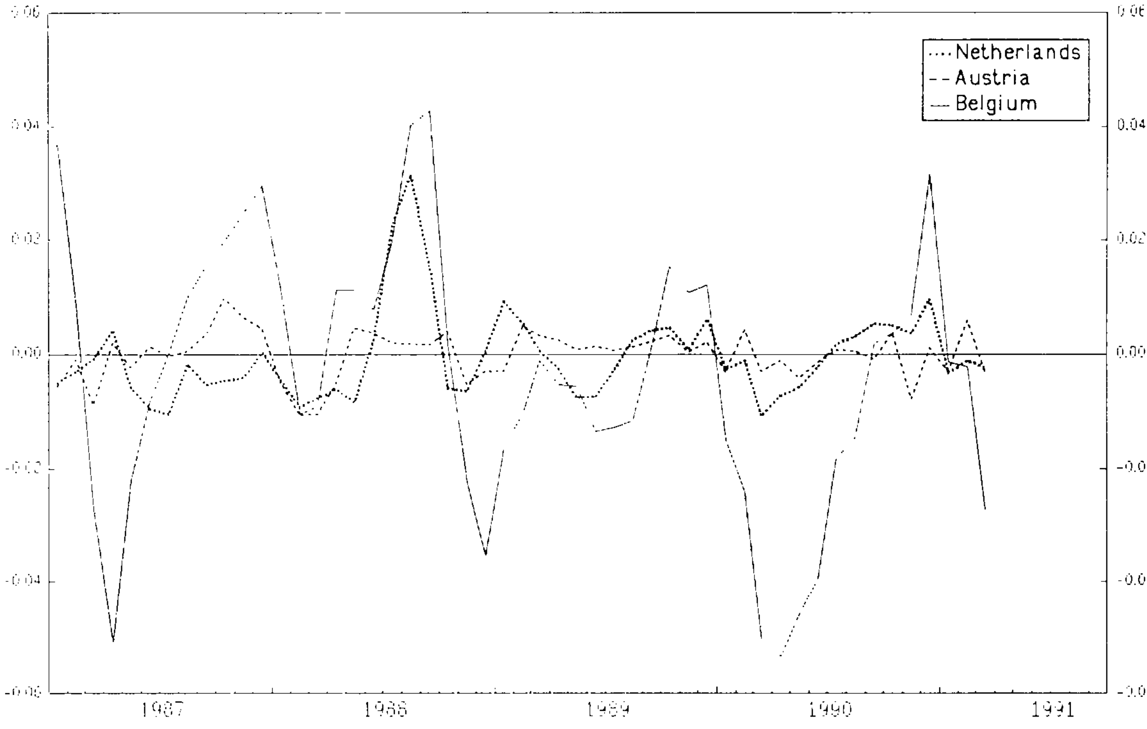


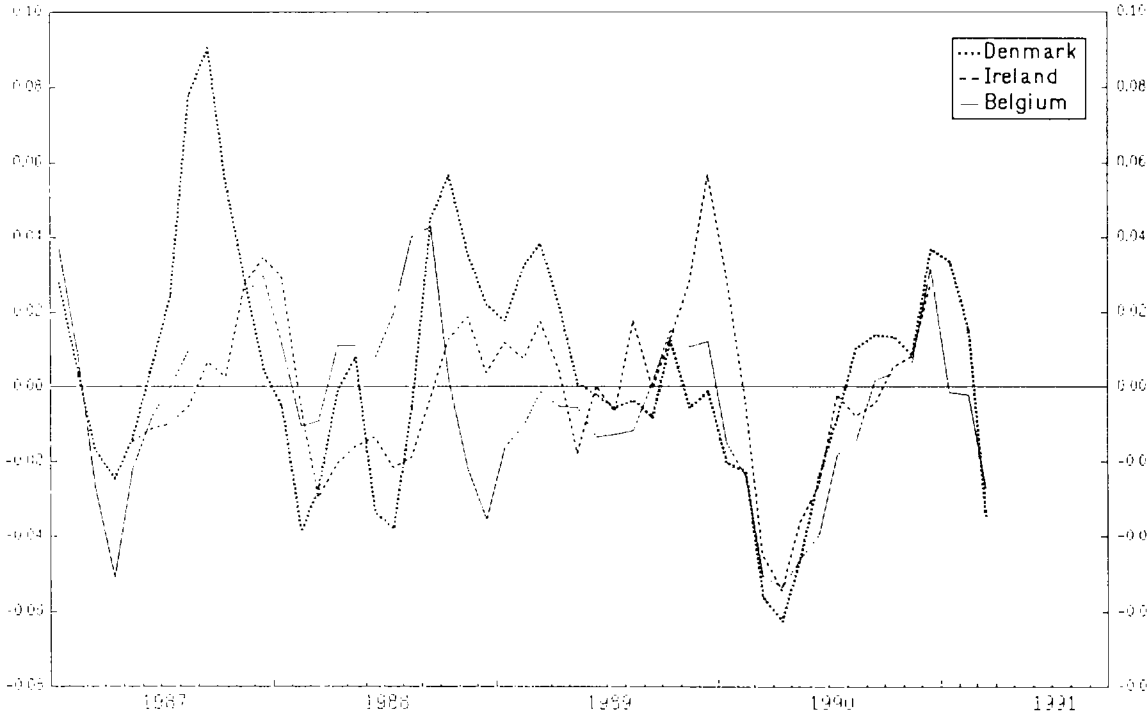
Sources: IMF, International Financial Statistics; Danmarks Nationalbank.

CHART 6

Short Term Exchange Rate Volatility

(Annualized quarterly rates of change)

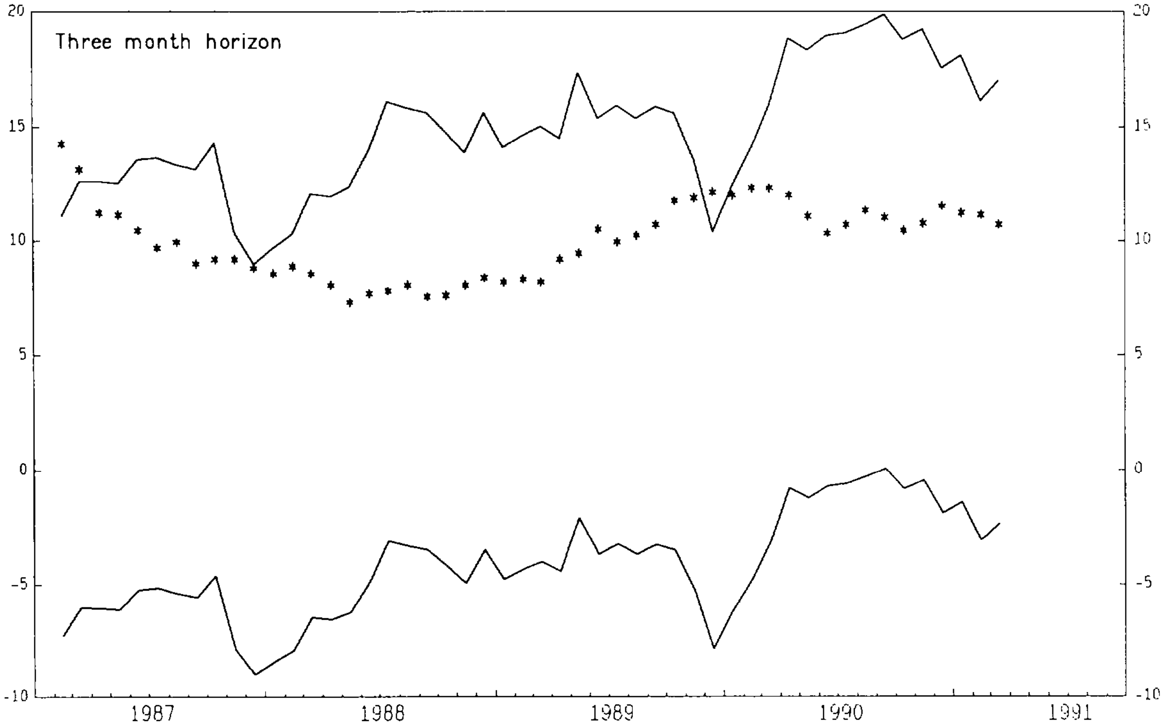


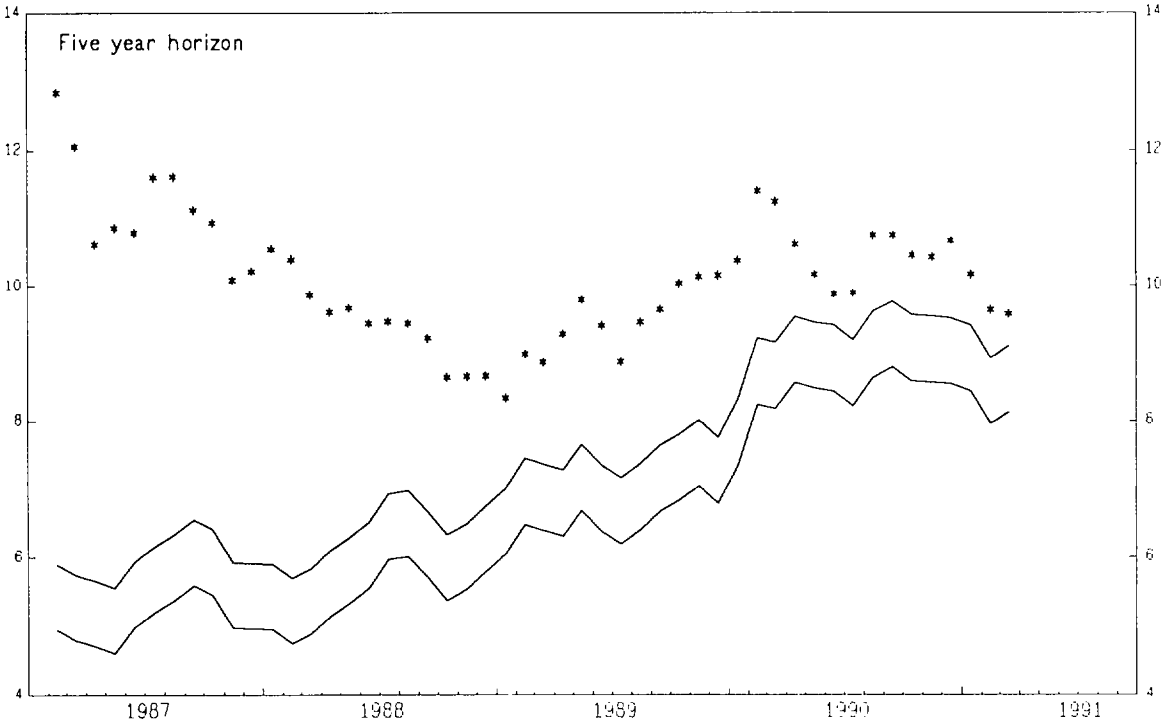


Source: IMF, International Financial Statistics.

CHART 7

Interest Rate Corridors for Ireland (in percentage points)

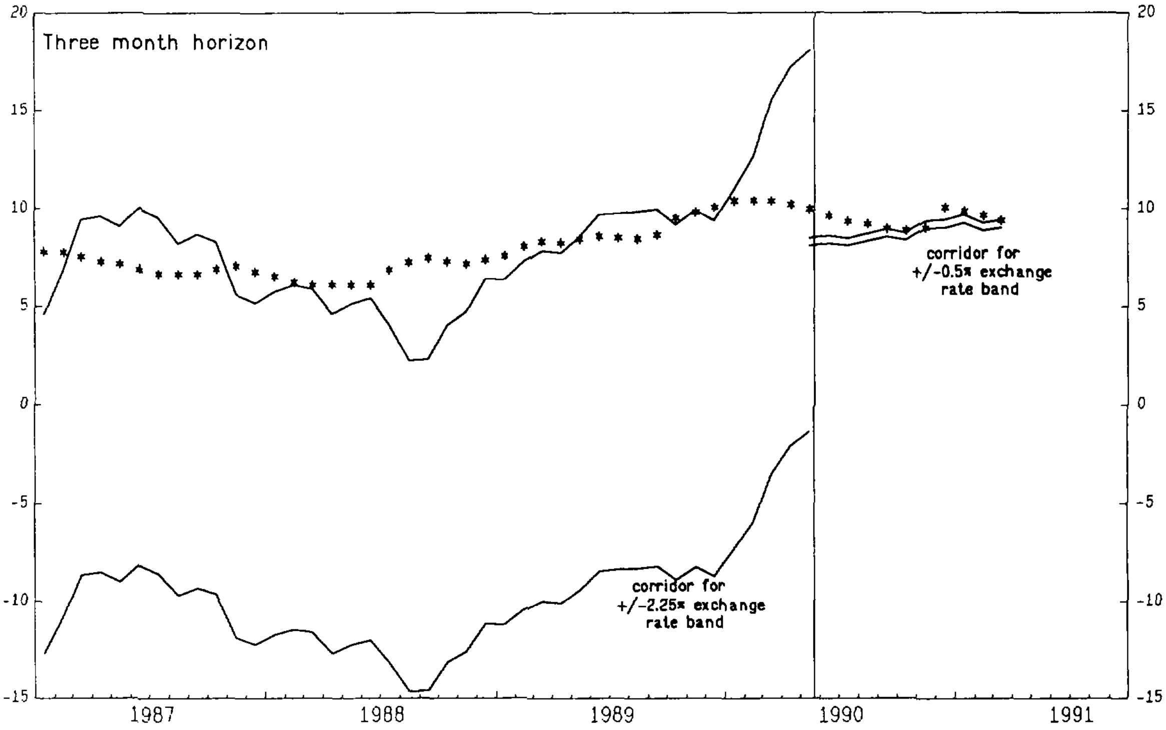


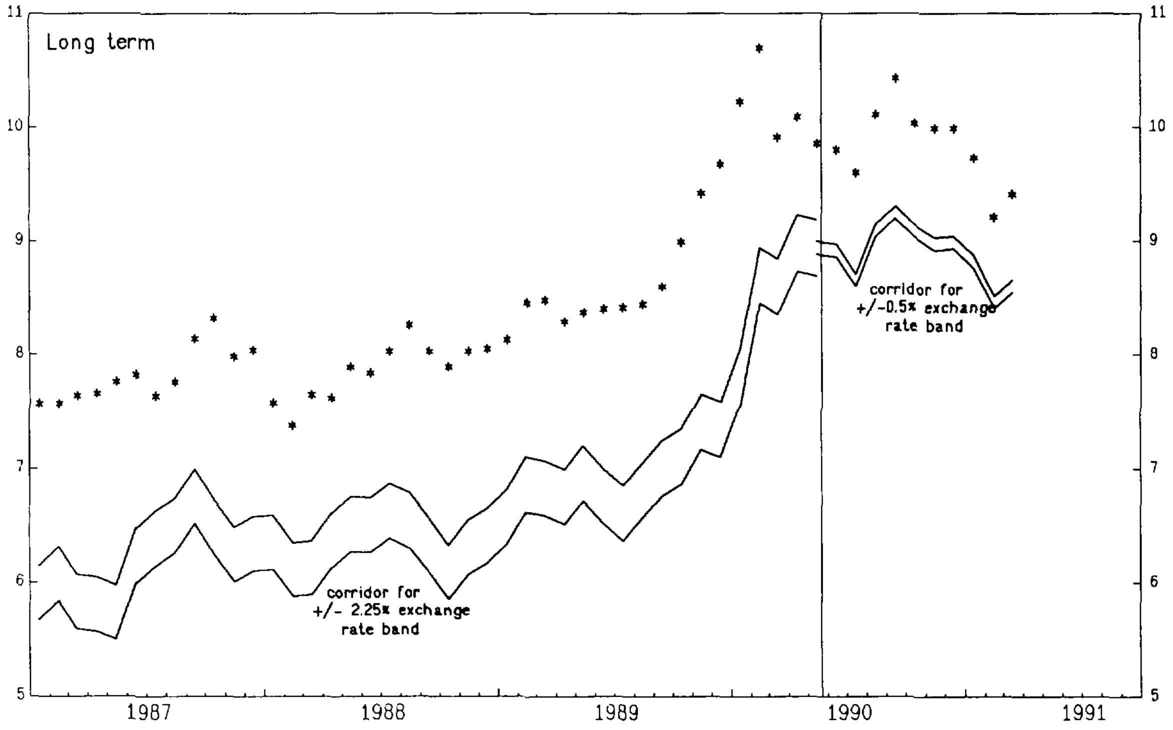


Sources: Central Bank of Ireland Quarterly Bulletin; Deutsche Bundesbank.

CHART 8

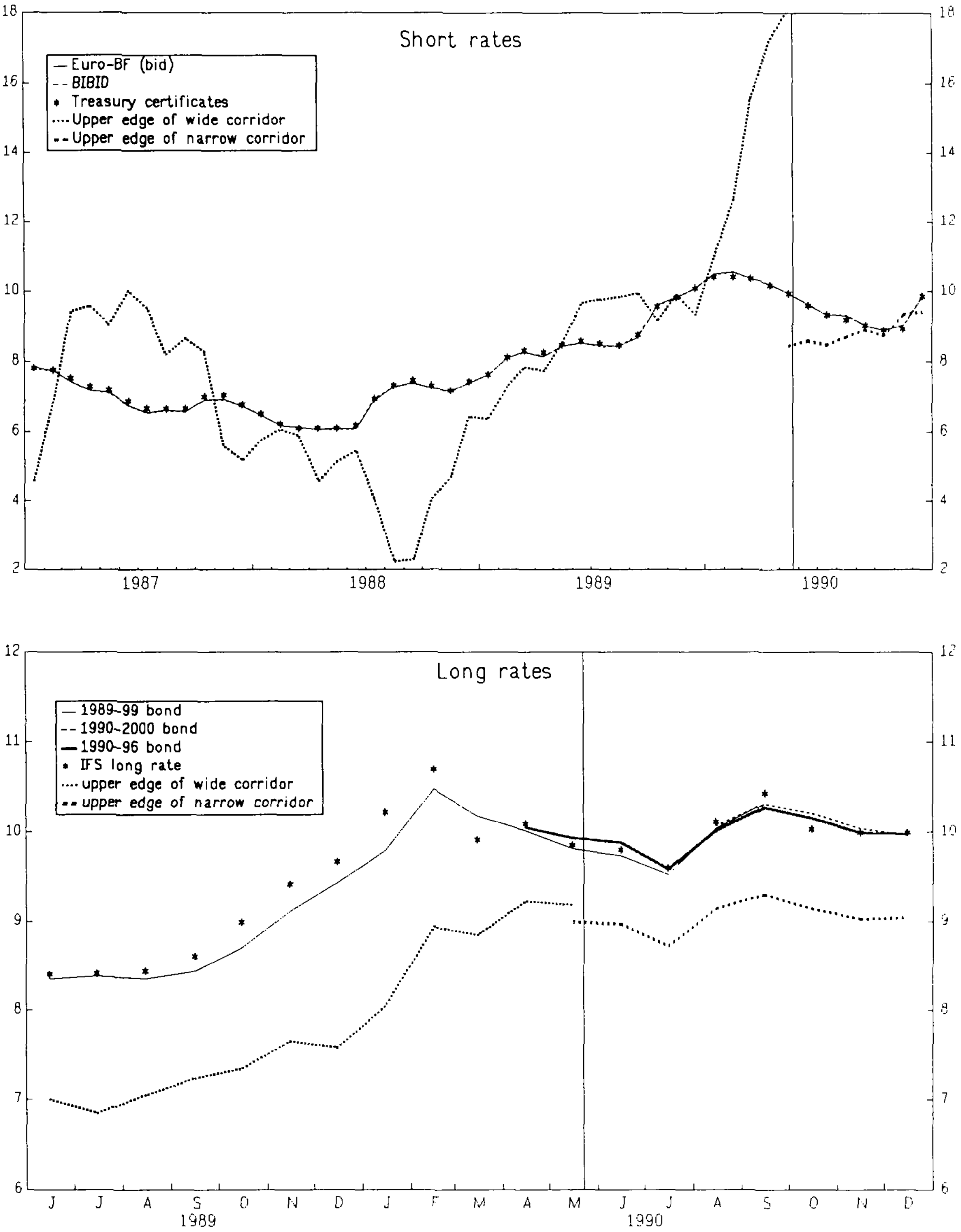
Interest Rate Corridors for Belgium
(in percentage points)





Sources: IMF, International Financial Statistics; OECD, Main Economic Indicators; Deutsche Bundesbank.

CHART 9
BELGIUM
Interest Rate Corridors With Alternative Rates



Sources: Datastream; IFS: International Financial Statistics; and OECD: Main Economic Economic indicators.

interest rate uncertainty high. Hence, for a given supply of those securities, the risk premium contracts. 1/

Other factors may also come into play in the analysis of the observed patterns. It is possible that the relative thinness of Belgian capital markets may have imparted an upward bias on both short-term and long-term interest rate differentials vis-à-vis Germany. 2/ This bias (or liquidity premium) would tend to rise temporarily when world markets become more volatile, as has been the case after the advent of the crisis in the Persian Gulf. Also, and not least, one might argue that the apparent long-run credibility gap is less the reflection of a lack of trust in monetary steadfastness than the manifestation of lingering doubts regarding fiscal policy, including the treatment of State bonds. Rescheduling operations of public debt held by the banks, at below market rates, such as those that were undertaken in the late 1980s in Belgium may thereby turn out, in the longer run, to involve costs that outweigh short-run budgetary savings.

As a last interesting though fairly academic exercise, one can compute the expected devaluation rates associated with various horizons. Two assumptions are sufficient here: first, uncovered interest parity (UIP) is accepted as a reasonable rule of thumb; 3/ second, the stochastic process for devaluations is thought of as Poisson, i.e., such an event is likely to occur with a constant probability λ per unit of time. Then the expected rate of depreciation d (in percent per unit of time) equals the instantaneous probability of a devaluation times its size g (in percent):

$$(6) \qquad d = \lambda g$$

UIP allows one to empirically measure d for various horizons as:

$$(7) \qquad d_t^n = \frac{1+i_t^n}{1+i_t^{*n}} - 1 \simeq i_t^n - i_t^{*n}$$

1/ The result obtains only if supply is less responsive than demand to these risk parameters. In the case of France, Davanne et al. (1990) claim that supply is more rigid than demand, due to stock inertia, and therefore that some leveling of the term structure has seemingly occurred as monetary policy became increasingly credible.

2/ In this instance as well, the modernization now under way should progressively lower the bias.

3/ In general, UIP does not hold, see e.g., the recent survey by Froot and Thaler (1990). However, Svensson (op. cit., p. 5) argues that for narrow target zones UIP still constitutes a good approximation.

Identifying d, one can infer λ for a given g, and vice-versa. Moreover, the expected time span until the next devaluation, given the latter's assumed magnitude, is $1/\lambda$. 1/

For example, looking at three-month rates, one can deduce that:

-- for a 2 point interest rate differential (March 1990 situation), and an assumed 5 percent devaluation, the market expects the latter with a probability of 2/5 = 40 percent per year; equivalently, the expected time up to the next devaluation is two and a half years;

-- if the same differential shrinks to 1 point (as it did by mid-1990), the probability drops to 20 percent and the expected time doubles to five years;

-- if it contracts to 1/2 point (as it did by the end of the third quarter of 1990), the odds become 10 percent and the expected period of tranquility ten years; and so on.

The inferred evolution of expectations reflects a dramatic improvement in credibility within a single semester. But this development follows a sharp deterioration in the second half of 1989, illustrating the volatility of expectations. At any rate, given the rather contrived nature of this exercise, too literal an interpretation of these estimates would be unwarranted.

IV. The Determinants of Credibility Gaps

Due to data limitations, it is not possible to perform regression analysis on Belgium only. Quarterly series for output and fiscal variables in particular are not readily available. Moreover, given the regime shift that occurred around 1983 in the actual functioning of the ERM (which lost much of its accommodating stance), use of earlier data is undesirable since it would blur the significance of the resulting coefficients and accompanying statistics. Therefore, yearly panel data are employed here, covering the period 1983-1989 and for Belgium, the Netherlands, Denmark, Ireland, France, Italy and, by virtue of its "shadow ERM" status, Austria.

Ideally, it would have been desirable to purge the interest rates used so as to work with non tax-distorted credibility gaps. In practice, this has not been feasible. However, for a number of countries, the bias implied by the utilization of raw series might well be of second order, as Chart 9 suggested for Belgium. Furthermore, for the sake of computational ease, the measure selected here as a proxy for the credibility gap is the traditional interest rate differential rather than the distance between the upper edge

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1/ Note that in this instance we ignore the distinction between the central ERM parity and the limits associated with the band.

of the corridor and the domestic rate. This, however, should not affect the thrust of the results. 1/ Except for the two fiscal indicators and for the current account, monthly data were averaged for each calendar year. The main results, derived by ordinary least squares, are summarized in Table 1.

The short-run equation features the three month interest rate differential as the dependent variable. The fiscal variables--gross public debt and general government primary budget deficit 2/ minus their German counterparts--are normalized by output (GNP/GDP). The other explanatory variables include the consumer price inflation differential vis-à-vis Germany, measured as the yearly average of the differential percentage drift over the last 12 months; a dummy variable set to one when a hard currency policy is being followed (on a pro rata temporis basis for the year of introduction) and to zero otherwise; 3/ and the recent short-run volatility of the deutsche mark exchange rate, measured by the coefficient of variation for the last 12 months, averaged over each calendar year. 4/

1/ This choice may matter somewhat in the short-term case because up to early 1990 the exchange rate of the Belgian franc vis-à-vis the deutsche mark had systematically wandered in the lower regions of the band (i.e., was relatively weak), which suggests that the pure interest differential is a downward biased measure of the credibility gap defined earlier on.

2/ The primary deficit was selected on the grounds that it represents a more appropriate measure of the current stance of fiscal policy than the interest-inclusive deficit and that the interest payments component is to a large extent already reflected in the debt variable.

3/ The presence of some of the key fundamentals among the right-hand side variables implies that the dummy does not capture much of the anterior convergence of economic performance required for the hard currency policy move to be credible.

4/ The use of OLS is clearly second or even third best here, since errors in variables due to the use of proxies (such as current inflation differentials for anticipated inflation) as well as simultaneous equation biases plague the regressions. Instrumental variable estimation might improve the quality of the results.

Table 1. Main Panel Data Regression Results

	Dependent variables	
	Short-run differential	Long-run differential
Gross public debt Ratio differential	0.009 (1.51)	0.006 (0.98)
Primary budget deficit Ratio differential	0.084 (1.49)	0.068 (1.07)
Consumer price inflation Differential	0.900 (11.62)	0.820 (9.29)
Hard currency dummy	-1.449 (3.03)	-1.516 (2.90)
Short-run exchange rate Volatility	7.171 (1.48)	
Constant term	1.496 (3.40)	1.286 (2.58)
Number of observations	44 1/	49
R-squared	0.93	0.87
Durbin-Watson	1.01 2/	0.94 2/

Sources: IMF, International Financial Statistics; OECD, Economic Outlook; and staff calculations.

Variable definitions and sources are given in the text and in the appendix. The absolute values of the t-statistics are shown in parentheses and all differentials are expressed in percentage points.

1/ The number of observations is lower for Austria and Denmark than for the other countries in the sample, due to the absence of data for the years 1983-84 and 1983-85, respectively.

2/ The Durbin-Watson statistic is not directly interpretable in this context. Its low value nevertheless points to substantial positive first order autocorrelation, which was not adjusted for.

All the estimated coefficients show the expected signs, but the t-statistics are relatively low in some cases due to a high degree of multicolinearity. The public debt ratio affects the interest rate differential significantly but modestly: a literal (and somewhat incorrect) interpretation of its coefficient implies that reducing the 1989 Belgian ratio (131 percent) say by half would reduce the credibility gap by about 59 basis points. The stance of fiscal policy also seems to exert some influence: according to the estimated coefficient, the large reduction of the primary deficit in Belgium between 1983 and 1988 (by 6 percent of GNP) would have resulted in a 50 basis points cut in the interest rate differential. The inflation gap translates into an almost equivalent (0.90 to 1) interest rate differential, as the traditional real interest rate equalization proposition would predict. Finally, short-run volatility as an additional indicator of risk does also contribute to explain the credibility gap. On average, however, the latter stands at 4.21 percent in the sample, while the mean of the volatility indicator is 0.0206 (with a standard deviation of 0.0342), indicating that on average short-run volatility accounts for only 15 basis points of the credibility gap. 1/

It may be noted that adding the external current account ratio on the right hand side showed this variable to enter with the expected negative sign but in a statistically nonsignificant fashion. Also, replacing the instantaneous hard currency dummy by a cumulative one designed to embody the accretion of policy credibility as time passes (with geometrically declining weights for each additional year) did not significantly alter the regression outcomes.

The postulated long-run relation is essentially identical to the one embedded in the short-run equation, except that short-run exchange rate volatility is excluded, since it should be of no consequence for distant horizons. 2/ Long-run interest differentials vis-à-vis Germany are used here, the horizon varying between 3 1/2 and 10 or more years.

The statistical degree of significance of the fiscal variables weakens markedly compared to the short-run results, whereas the CPI inflation differential and the commitment to a hard currency policy retain roughly the same relevance. Should one nevertheless accept the fiscal coefficients at their face value, one would note that the impact of a tighter budget in a given year on the long-run interest differential equals four fifths of the impact on the short-run differential. 3/ A drop of the public debt ratio by half would shrink the long-term interest differential by 39 basis

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1/ For Belgium, volatility dropped from 0.0143 to 0.0034 over the sample period, i.e., well below the panel mean.

2/ Indeed, its tentative inclusion empirically supported this conjecture.

3/ Buffel (1990) reports much higher estimates--ranging from 18 to 41 basis points--for the impact of a 1 percent reduction in the budget deficit to GNP ratio on long-term interest rates.

points. Incidentally, Ledward (1990) claims that in Belgium, "bond yields are unlikely to fall as far as in France--a premium over German yields, of around 60 basis points, is justified on account of the Belgian government's much larger government debt" (p.15). In this regard, it is worth noting that, according to the long-run equation, a fall in the Belgian debt ratio to the French level would lower yields in Belgium by about 50 basis points , which is remarkably close to Ledward's estimate. 1/

If in practice capital mobility is not perfect and if national real money supplies are fixed, one would expect higher real output growth in one of the sample countries, for a given pace of German output expansion, to increase the interest rate differentials. Indeed, if this variable is added to the list of explanatory variables in either equation it has a significantly positive coefficient, while the rest of the equation coefficients remain roughly unchanged: each percentage point of real GNP/GDP growth above the German level raises the short- and long-term interest rate differentials, respectively, by 20 and 33 basis points.

Since fiscal indicators are found to be important, it is worth asking whether the results are sensitive to their definition. Replacing the gross public debt ratio by its net counterpart does not affect the order of magnitude nor the degree of significance of the coefficients in either equation. Refining the measure of the stance of fiscal policy by using some of the forward-looking indicators computed by Chouraqui et alii (1990) leaves the coefficient associated with public debt roughly unchanged and lowers the one pertaining to the hard currency policy somewhat (by 0.2 to 0.3), without affecting the assessment of the impact of inflation differentials or short-run exchange rate volatility.

Possible extensions of this type of regression analysis could include the investigation of the impact of the maturity and currency composition of public debt. The expectation is that a high share of long-term debt denominated in domestic currency entails a large exposure to a potential future inflation levy, and is hence associated with a high risk premium. Two problems would however arise: first, the share of long-term debt and of domestic currency debt in total public liabilities is clearly endogenous, insofar as only a "credible" government can afford to issue mostly long-term paper, implying a negative correlation instead of a positive one; second, it is less the term structure than the nature of the interest rate (fixed versus variable) that matters here. In brief, one should not expect very

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1/ It must be stressed however that: (a) the standard error associated with the coefficient in the long-run equation is larger than customarily tolerated; (b) such a dramatic fall in the debt ratio could not be brought about without a pronounced and sustained drop in the primary budget deficit, implying that the reasoning on partial effects cannot be accepted uncritically; and (c) the above treatment of panel data is no doubt a very crude one.

meaningful results from the incorporation of a summary statistic such as the share of long-term liabilities in total public debt.

Lastly, it might in principle seem preferable to test a reduced form equation derived from some structural macro-model rather than to conduct an elementary and conventional set of regressions of the specie presented here. But such an approach, while not devoid of heroism, is likely to substitute a wider range of uncertainties and questionable assumptions to the somewhat ad hoc nature of the specification selected here.

V. Final Conjectures

The preceding exercise suggests that, ceteris paribus, the adoption of a hard currency policy is likely to reduce interest rate differentials vis-à-vis Germany by as much as 1.1 to 1.5 points. Actual developments in Belgian capital markets since May 1990 would tend to broadly confirm this prediction at the short end of the term spectrum. The path followed by long term interest rates has apparently been less in line with the above regression estimates, although disentangling the effects of the "franc fort" policy from those of German Economic, Monetary and Social Union, of the Gulf crisis and of financial reforms in Belgium is difficult.

As regards the sustainability of hard currency policies in the countries studied above, it is interesting to note that according to the latest report of the European Commission on Economic and Monetary Union (1990), Belgium, Luxembourg, as well as the Netherlands, Denmark and Ireland have achieved a degree of convergence in terms of inflation and cost trends sufficient to now proceed to EMU. In this perspective, a hard currency policy is hence deemed sustainable.

Finally, it is at times argued that the very success of hard currency strategies could over time make it more difficult for those countries that do not explicitly adhere to them to achieve anti-inflationary credibility, non-(full)-commitment being increasingly interpreted as a desire to retain monetary sovereignty. In this respect, Belgium may now be one step ahead of some of the other small ERM economies.

Data Sources and Definitions

Exchange rates: monthly averages of daily quotes; Source: IMF, International Financial Statistics.

Interest rates:

Austria: -- 3-month term: Termingeld, 3 month offered rate, monthly average of daily quotes, available on a monthly basis since January 1987, Source: Mitteilungen des Direktoriums der Oestereichischen Nationalbank, table 2-12; VIBOR (Vienna Interbank Offered Rate), from June 1, 1989 onward, monthly average of daily quotes, Source: Oesterreichische Nationalbank, Statistisches Monatsheft, table 5.2. -- long term: government bond yield, all paper outstanding, including bonds benefitting from tax privileges; Source: IMF: IFS.

Belgium: -- 3 month term: rate on three months Treasury certificates; Source: OECD Main Economic Indicators. -- long term: weighted average yield to maturity of all 5 to 8 percent bonds issued after December 1962 with more than 5 years to maturity; Source: IMF: IFS. -- 5 to 6 year bond: OLO 1/ # 245 (1990-96), weekly data; Source: Datastream. -- 10 year bonds: OLO # 239 (1989-99) and 247 (1990-2000), weekly data; Source: Datastream.

Denmark: -- 3 month term: inter-bank interest rate, end-of-period; Source: Danmarks Nationalbank Monetary Review. -- long term: effective interest rate on 10-year government bonds, end-of-period; Source: Danmarks Nationalbank Monetary Review.

France: -- 3 month term: PIBOR (Paris Interbank Offered Rate); Source: Banque de France, Bulletin Trimestriel, table 35. -- long term: yield on long term government bonds (TME); Source: Banque de France, Bulletin Trimestriel, table 38.

Germany: -- 3 month term: average of daily quotations reported by banks for three-monthly interbank deposit rates; Source: IMF: IFS. -- n year term (n = 3 1/2 , 5 or 10 depending on the case under consideration): estimated yield of n year maturity bonds, end-of-period; Source: Statistical Supplements to the Monthly Reports of the Deutsche Bundesbank, Series 2, table 8d.

Ireland: -- 3 month term: average interbank rate; Source: Central Bank of Ireland Quarterly Bulletin, table B2. -- 5 year term: representative yield on government securities with 5 years to maturity (secondary market yields since February 1989, estimation before); Source: Central Bank of Ireland Quarterly Bulletin, table B2.

1/ OLO stands for obligations linéaires, which constitute appropriate benchmark paper. Indeed, these bonds come without any call features, are issued in large volumes for each line and are free of the withholding tax (précompte).

Italy: -- 3 month term: three month interbank rate; Source: IMF: IFS.
--long term: secondary market yield on fixed coupon government bonds, with an average maturity of about 3 1/2 years; Source: IMF: Current Economic Indicators, table 12.

Netherlands: -- 3 month term: AIBOR (Amsterdam Interbank Offered Rate); Source: Nederlandsche Bank, Kwartaalbericht, table 9.2. -- long term: weighted average true yield to maturity of the three most recent government bond issues with an average original life of at least 10.5 years; Source: IMF: IFS.

Regressors:

Fiscal variables are taken from the OECD Economic Outlook or, for the alternative measures, from Chouraqui et alii (1990).

Consumer price series are extracted from the IMF International Financial Statistics.

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