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Changes in the informational content of the spread: is monetary policy becoming less effective?

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Abstract

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1 Introduction

The mild recession that hit some of the advanced economies in 2000 and 2001 revived the interest for the empirical study of economic cycles and of management of these cycles. The theoretical literature has contributed significantly to this analysis, especially by incorporating to dynamic general equilibrium models nominal frictions that generate real effects of economic policies, especially monetary policy (Clarida et al., 1999, 2002). On the empirical side, emphasis has been placed on the detection of variables that forecast the future evolution of the economy (Leamer, 2001; Estrella et al., 2003). As a consequence, monetary policy is attracting renewed attention: increased pressure is being put on monetary policymakers to anticipate economic fluctuations and smooth them accordingly. An important role of the Central Bank (CB) is therefore to gather information about current and future economic conditions so that decisions can be taken enough in advance to account for lags in policy effectiveness. Predicting economic activity is also of interest for agents in the economy: for example, the expected path of activity might help anticipate movements in key policy interest rates.

Monetary aggregates, exchange rates or discount rates have been traditionally used as predictors of future economic activity. All these direct indicators can be problematic (Davis and Fagan, 1997), so attention turned to indirect predictive variables such as term spreads of interest rates. Theoretical arguments for the predictive content of spread-type variables rely directly on the real effects of monetary policy and on the ability of the CB to carry out independent monetary policy and control interest rates. A substantial amount of research has shown that the informational content of the term spread about future output is high. However, most of this research has focused on the 1980s and early 1990s and on large developed economies such as the US, Germany and the UK. Very little research has been done on smaller or less developed economies, and, thus, there is still much to be learned from the analysis of this predictive power of term spreads.

In this paper we study the informational content of term spreads in a number of European countries belonging to the EU and in the US. We focus on whether this informational content has changed in the last two decades. More specifically, we attempt to answer the following questions:

- Do domestic spreads have information about future economic activity in a set of European nations? Has this informational content changed in the last two decades?
- If so, how has this content changed and what may be the reasons behind those changes?
- Do spreads from large countries –Germany and the US– have information about economic activity in smaller countries?
- Do other financial variables usually postulated to have predictive power add any information to that contained in term spreads?

Our findings are noteworthy. We show that term spreads indeed have had quite high predictive power in the last two decades. However, this informational content has decreased noticeably for domestic spreads in a set of countries during the 1990s, whereas it has increased in some others. The level of monetary development of the country seems to be behind this phenomenon. Additionally, the information contained in international spreads -most notably, in the US spread- has increased, though its overall explanatory power is low. We interpret these two findings as stemming from the more intense integration of the economies, which may be both facilitating the transmission of real shocks across countries –thus cycles in the different economies are more correlated– and limiting the scope for independent domestic monetary policies.

The paper proceeds as follows. Section 2 gives simple theoretical arguments for the predictive content of financial variables, with the emphasis on term spreads. Section 3 reviews the empirical strategy used to analyze changes in this predictive power in a set of nine European countries and the US. Section 4 presents the results of the analysis and Section 5 concludes the paper. Technicalities of the estimation procedures are provided in two appendices.

2 The informational Content of Financial Variables

We review in this section the arguments on which the informational content of specific financial variables hinges and provide a simple model that formalizes some of the arguments.

2.1 Domestic Term Spreads

Bernanke (1990) and Mishkin (1990) showed that term spreads, the difference between long and short term interest rates, have information about future inflation and output. Assuming no liquidity or risk differences, the expectations hypothesis posits that the spread between a long and a short-term rate reflects the difference between current and expected real rates and inflation rates. Suppose that the CB adopts a transitory expansionary monetary policy and increases money supply. This will be associated with an immediate decline in nominal and real short-term rates. However, long term rates will move down by a lesser amount, both because a current monetary expansion raises long term inflation expectations and because it will be expected that the Central Bank will revert back to a contractionary –anti-inflationary– or neutral policy in the future, with the subsequent increase in real rates. These two combined movements of short and long rates widen the spread, causing a steepening of the yield curve. Given that this was caused by an expansionary monetary policy and lower real rates, an increase in real activity is expected to follow. Thus, the larger spread would be anticipating an increase in real activity.

A simple model formalizes this argument. We summarize the behavior of an economy by using the setup in Svensson (1997) and Estrella (2005). We use an IS equation (measured in terms of the gap with respect the natural level of output, $x_t = y_t - \overline{y}_t$, where y_t is (log)output and $\overline{y}_t$ is some natural level of output)

$$x^e_{t+1} = \beta_1 x_t - \beta_2 \left(i_t - \pi^e_{t+1}\right) + \beta_3 z_t \tag{1}$$

and an expectations-augmented Phillips (AS) equation

$$\pi^e_{t+1} = \pi_t + \delta_1 x_t + \delta_2 z_t \tag{2}$$

x^e_{t+1} and π^e_{t+1} are expected values of the output gap and the inflation rate at $t+1$ conditional on information known at time t. z_t is a set of exogenous variables that may include, for example, foreign output. This last term captures, therefore, the effect of foreign conditions on future domestic output and inflation. i_t is the one-period nominal interest rate. Notice that given the setup above, both β_3 and δ_2 are positive for foreign output: an increase in foreign output will lead to higher domestic demand and therefore to higher expected output (1) and to higher expected inflation (2).

We assume that the CB uses the short term interest rate as monetary instrument and follows a reaction function:[1]

$$i_t = \alpha_1 i_{t-1} + \alpha_2 x_t + \alpha_3 \pi_t \tag{3}$$

where, given traditional preferences of the CB, α_1, α_2 and α_3 will be positive parameters (Clarida et al., 1999).

Assuming that the expectation hypothesis holds, we include a term structure equation:

$$i_{t,2} = \frac{1}{2} i_t + \frac{1}{2} i^e_{t+1} \tag{4}$$

where $i_{t,2}$ is the nominal interest rate on instruments that mature in two periods.

Defining the term spread as $s_t = i_{t,2} - i_t$, we can use the IS equation and include some additional terms:

$$\begin{aligned} x^e_{t+1} &= \beta_1 x_t + \beta_3 z_t + \beta_2 \pi^e_{t+1} - \beta_2 i_t + \frac{\beta_2}{2} i^e_{t+1} + \frac{\beta_2}{2} i_t - \frac{\beta_2}{2} i^e_{t+1} - \frac{\beta_2}{2} i_t = \quad (5) \\ &= \beta_1 x_t + \beta_3 z_t + \beta_2 \pi^e_{t+1} + \beta_2 s_t - \frac{\beta_2}{2} i^e_{t+1} - \frac{\beta_2}{2} i_t = \\ &= \beta_1 x_t + \beta_3 z_t + \beta_2 \pi^e_{t+1} + \beta_2 s_t - \frac{\beta_2}{2} (\alpha_1 i_t + \alpha_2 x^e_{t+1} + \alpha_3 \pi^e_{t+1}) - \frac{\beta_2}{2} i_t \end{aligned}$$

and then substituting for $\pi^e_{t+1} = \pi_t + \delta_1 x_t + \delta_2 z_t$ we obtain

$$x^e_{t+1} = \gamma_x x_t + \gamma_z z_t + \gamma_\pi \pi_t + \gamma_s s_t + \gamma_i i_t \tag{6}$$

where $\gamma_x = \frac{2\beta_1 + \beta_2(2-\alpha_3)\delta_1}{2+\beta_2\alpha_2}$, $\gamma_z = \frac{2\beta_3 + \beta_2(2-\alpha_3)\delta_2}{2+\beta_2\alpha_2}$, $\gamma_\pi = \frac{\beta_2(2-\alpha_3)}{2+\beta_2\alpha_2}$, $\gamma_s = \frac{2\beta_2}{2+\beta_2\alpha_2}$, $\gamma_i = -\frac{\beta_2(1+\alpha_1)}{2+\beta_2\alpha_2}$. Therefore, under reasonable assumptions the domestic term spread has predictive power over future output. This predictive power rests on

[1] A third equation usually included in the model, an LM for the money market, $m_t - p_t = \phi y_t - \gamma i_t$, becomes redundant if the CB sets the interest rate via a reaction function.

β_2 being different from zero, that is, on the real rate having a significant impact on future real activity. The signs of the predictive coefficients are unambiguously positive for the spread and most likely positive for the variables in z_t. The effects of other variables are all quite standard and intuitive. Notice the $(2 - \alpha_3)$ factor in the first three terms. If $2 < \alpha_3$, that is, if the CB fights inflation strongly, then high inflation may be unticipating lower future output –through sharp immediate increases in the real rate– and the signs of the predictive terms of both x_t and z_t could be reversed.

The above implies that the traditional result on the predictive power explicitly requires that the CB has the ability to influence economic activity via i_t ($\beta_2 \neq 0$) but the CB does not necessarily have to be explicitly targeting output stabilization (i.e. α_2 could be zero).[2] Given this, a change (reduction) in the predictive power of the spreads could come both from less effective monetary policy –lower β_2– and/or from higher preference for output stabilization –higher α_2. In the case of most European countries, it is generally agreed that their monetary policies have not shown higher preferences for output stabilization. Prior to European Monetary Unification, the German Bundesbank –traditionally known for being a strong inflation fighter that paid little attention to output– was the monetary reference for most European countries. As European integration deepened, domestic CB's followed more closely the style of the Bundesbank, and thus a higher dislike for inflation and lower preference for output stabilization would have been the natural phenomenon in the late 1980s and 1990s. As a consequence, if reductions in the predictive power are uncovered in our analysis of European countries, they should be interpreted as evidence of a reduction in the effectiveness of domestic monetary policy rather of higher preference for output management.

2.2 Other Financial Variables

• **Foreign Spreads**. Foreign spreads may be informative about future domestic activity if the domestic country's monetary policy is tied to or dependent on that of the foreign country or if foreign spreads predict future activity of countries that are significant trade partners (i.e. foreign output is included in z_t).

• **Real Exchange Rates**. Real depreciations are associated with expectations of real growth and inflation and have been frequently used by small economies as predictors of future activity (Davis and Fagan, 1997).

• **Changes in Short and Long Rates**. Estrella and Mishkin (1997) present evidence for a differing effect of movements at the two ends of the yield curve. Both a decrease in the short rate or an increase in the long rate widen the term spread. However, an increase in the long rate may be due to expectations of both a future higher real rate of interest (implying lower future activity) or of future inflation (associated with higher future activity). On the other hand, an increase in the short rate unambiguosly reflects higher current real rates and therefore lower future activity.

[2] Note that since α_2 is the coefficient for the output *gap*, this coefficient should be interpreted as a preference for output *stabilization* and not for output *growth*.

• **Monetary Policy instruments**. Monetary aggregates have been used as indicators of monetary policy stance and therefore of predictors of future output (Estrella and Mishkin, 1998). Alternatively, the discount rate of the CB (through which the monetary aggregate is affected) could be used as the observed monetary instrument, although so far the evidence in favor of this variable is weak (Estrella and Mishkin, 1997).

• **Stock Returns**. If stock prices are forward looking variables that depend on expectations of future dividends and firm profits, current returns on a stock index should be related with increased expected activity. Estrella and Hardouvelis (1991), Davis and Fagan (1997) and Estrella and Mishkin (1998) find some evidence in this respect.

Evidence on the predictive power of term spreads and other financial variables is still scarce for most European countries and so far it has focused on the US and Canada, Germany, France and the UK (Estrella and Hardouvelis, 1991; Bonser-Neal and Morley, 1997; Davis and Fagan, 1997; Estrella and Mishkin; 1997; Smets and Tsatsaronis, 1997; Bernard and Gerlach, 1998; Ahrens, 2002; McMillan, 2002, among others). Also, another aspect that has not been addressed sufficiently is the evolution of this predictive power. The paper by Estrella et al. (2003) is probably the main study of the stability over time of the predictive relationship for Germany and the US. We believe our paper gives contributes to the above literature by explicitly looking for possible changes in the predictive power of domestic spreads for a wider set of countries, and trying to identify the causes for those changes.

3 Methodology: Data and Econometric Procedure

We analyze in this section the predictive power of financial variables in nine EU countries –Belgium, France, Germany, Ireland, Italy, the Netherlands, Spain, Sweden, the UK– and the US.[3]

Tables 1 and 2 contain the main sources of our data, the measures employed for each of the variables and the range for the different measures for the ten countries. The dependent variable (a *monthly* recession indicator) ranges from 1970:1 to 2002:1. In each case we have done the analysis of the predictive power of the spreads using the longest series that included domestic and foreign spreads (German and US term spreads), and when additional variables with shorter range were included in the analysis, the sample was adjusted.

Insert Tables 1 and 2

All the variables introduced have been transformed to guarantee stationarity.

[3]Data availability reasons forced us to discard Denmark, Austria, Finland, Greece and Portugal. The main constraint has been the availability of long series of short-term interest rate data (T-bills). We opted to discard Luxembourg given that for all purposes monetary conditions in this country were parallel to those in Belgium.

In the case of interest rate changes, this is unnecessary given that they are stationary by construction. The term spreads of the different countries have been subject to unit root tests, which reject the hypothesis of a unit root at traditional confidence levels. In the case of the real exchange rate, stock prices and the monetary aggregate, all of them present evidence of unit roots and are therefore included in the analysis in terms of their logarithmic growth rate.

The equations estimated are of the form:

$$P(y_t = 1|\mathbf{x}_{t-k}) = f(\boldsymbol{\beta}_k' \mathbf{x}_{t-k}) \tag{7}$$

where y_t is a 0,1 indicator for a recession (see below) and $\mathbf{x}_{t-k}$ is a vector of lagged predictive financial variables. k will take different values in order to test predictability at different forecast horizons. We use a normal density (probit analysis) to model the probabilities $P(y_t = 1|\mathbf{x}_{t-k})$. The use of overlapping forecast horizons induces autocorrelation in the errors, and standard errors become inconsistent. Appendix A reviews the procedure used to compute correct standard errors and describes an R^2-type measure of goodness of fit.

We study the predictive power of the spread over output by using a recession indicator as dependent variable, rather than estimating directly equation (6). The reasons for this are fourfold. First, analyses with output growth or some measure of output gap (Estrella and Hardouvelis, 1991; Davis and Fagan, 1997; Hamilton and Kim, 2002) give poorer results and the parameters are not well identified. Given that recessions in developed economies are usually mild in terms of output declines, the dependent variable has little variation around its average value, especially during economic downturns. Since the spread has been found to predict better when drastic changes in output take place (Estrella and Hardouvelis, 1991) and this is seldom the case, the amplification provided by the binary variable helps detect the relationship. Also, output gaps are sensitive to the detrending method used and they do not correspond to a theoretical definition of a recession. Their statistical properties are, furthermore, those of an integrated variable, with little variation on its first difference. Second, it is unclear which is the correct detrending method that should be implemented to generate the output gap to be used in the analysis: in some sense, there seems to be a disconnect between statistical methods of detrending and the economic meaning of the output gap variable, and different measures of the output gap may yield completely different results (see, Canova 1998, 1999 among others). Third, most of the relevant empirical literature has explicitly focused on recession-indicator variables (Ahrens, 2002; Bernard and Gerlach, 1998; Estrella, 2005; Estrella and Mishkin, 1997, 1998; Estrella et al., 2003), and we intend to contribute to and complement that literature. Finally, given the different statistical properties of the variables involved –spreads are stationary whereas interest rates or inflation rates are not, or, at least, show long memory–, reduced-form equations of the form in (6) do not yield reasonable estimates of the parameters. For example, Leeper and Zha (2001) show that these equations are better estimated in their structural form in a system of equation setup, an analysis that is beyond the scope of our paper.

Our dependent variable is therefore defined as

$$y_t = \left\{ \begin{array}{c} 0 \text{ if month } t \text{ is expansionary} \\ 1 \text{ if month } t \text{ is recessionary} \end{array} \right\}$$

In order to define a month as recessionary we take the turning points in the OECD Composite Leading Indicators database. As in the case of the NBER for the US, the OECD elaborates a list of peaks and troughs of economic activity in its member countries. The specific dates of the peaks and troughs obtained, that mark the beginning and end of the recessionary phases, are listed in Table 3. Months between a peak and a trough are considered recessionary: recessions start in the month following the peak and end in the month identified as the trough.[4]

Insert Table 3

We carry out two different analyses that give complementary evidence. First we estimate predictive equations for the full sample and for two separate decades (1980s and 1990s), as an initial look at the possibility of existence of changes in the predictive relationship. We then move into an analysis where we explicitly test for the existence of structural changes and locate endogenously the moment and type of change.

4 Locating changes in the Predictive Power of Term Spreads

4.1 A simple decade by decade approach

Given the recent economic evolution of Europe and the US, and the implications of the simple model in Section 2, it seems reasonable that the predictive power of spreads may have changed significantly in the late 1980s-early 1990s. In order to explore this possibility, we first break the sample period in two subsamples, corresponding to the 1980s and 1990s and we report the results of predictive equations estimated for the two subperiods and for the complete sample. Tables 4 and 5 present the estimates of $\boldsymbol{\beta}_k$ in models with only the domestic spread and with all three spreads –domestic, German and US–, respectively. The two tables show the slope coefficients for nine different forecast horizons, Newey-West robust t-statistics and the pseudo-R^2 described in the Appendix A.[5] The

[4] Information about the OECD methodology and the complete list of turning points for the OECD members can be found at www1.oecd.org/std/licomp.htm. The results using an alternative dating of the recessions, calculated by the authors using the Bry-Boschan dating algorithm, are available upon request, although the main conclusions are unchanged.

[5] We do not comment on the different t-statistics reviewed in Appendix A. Consistent standard errors yield similar t-stats, smaller than regular QMLE t-stats. The result is robust across forecast horizons and independent variables and suggests a time structure on the errors of the model, and therefore the inconsistency of QMLE standard errors and t-statistics. This casts doubts on previous analyses that have not corrected the standard errors. In several cases the correct t-stats are in the non-rejection area whereas the QMLE are in the rejection area.

tables are divided in three panels, which correspond to the full sample and the two separate subperiods.

Insert Tables 4-5

There are some stylized facts in Tables 4 and 5 that are consistent across the board and open the way for the endogenous changepoint analysis. During the earlier years, the domestic term spread showed significant predictive power about future economic activity, mostly for short and medium horizons.[6] In contrast, in the 1990s domestic spreads seem to lose predictive power for domestic real ouput. This can be seen both in Table 4 and 5: the coefficients for the domestic spread are affected by the inclusion of the international spreads, but the results in the two tables are parallel. It is in the cases of Ireland, Italy, Sweden and, maybe, Spain, where the domestic spread still shows predictive power at short horizons. Most significantly, in Belgium, Germany, the Netherlands and the UK –where we found quite strong predictive power in the 1980s– the capacity of the domestic spread to predict recessions almost completely disappears. Note that these results split our countries into two groups, that we could call the "core" or more advanced economies (Belgium, maybe France, Germany, the Netherlands, the UK and the US) and the "periphery" (Ireland, Italy, Spain and Sweden). For the first group, domestic spreads have lost predictive power, whereas for the second group the change seems to go in the opposite direction. The results in the next section strengthen this conclusion.

Table 5 shows that in most European countries during the 1980s the German spread added predictive power: pseudo-R^2s of the models in Table 5, second panel, are significantly higher than those in Table 4 –given that the coefficients of the US spread are in general not significant, most of the increase in fit comes from the inclusion of the German spread. In other words, German spreads could be used in addition to domestic spreads in order to forecast economic activity in most European countries during the 1980s. The US spread added information in a couple of cases. In the 1990s, the results differ. First, pseudo-R^2s become much smaller, thus pointing at much less informational content of all three spreads during this decade. Domestic spreads lose their predictive power in the most advanced countries; German spreads still keep their short-horizon informational content, although in some cases –the Netherlands and the UK– this predictive power disappears; finally, the US spread becomes a significant predictor of recessions in most of the countries, usually at short to medium horizons: this is the case in Belgium, France, Ireland, Italy, Spain and Sweden, an effect that could be related to the international integration of monetary conditions across developed economies.

This is most noticeable in the case of the domestic spread, where QMLE t-stats are beyond significance levels for Germany, Ireland, Italy, the Netherlands and Spain, while the robust standard errors show that the estimates are not significantly different from zero.

[6] In some cases we observe a change in the sign of the predictive coefficients at short and long horizons: long-horizon forecasts may be picking the rebounding of the cycle after a short-lived recession (which tend to be usually shorter than 8 quarters). Countries with short recessions could experience this reversal of long-horizon predictability.

4.1.1 Other variables

Table 6 contains the pseudo-R^2s of decade-specific models that include the three spreads and one additional financial variable. We are mostly interested in how much predictive power is added by those variables so we do not elaborate on the estimated parameters, although in the few cases where there are significant effects, the signs are according to what should be expected.

Insert Table 6

Changes in the short term interest rate seem to have some predictive power at short and medium horizons. The real exchange rate contributes some additional information, always at horizons of three or four quarters and, finally, growth in the monetary aggregate also presents some predictive power, but the horizon of predictability is not uniform. It can be seen, however, that the results for alternative financial variables are in general poor and little can be gained by adding them to the predictive equations.

In view of the above evidence on the decade by decade analysis and of the lack of explanatory power of variables other than the spreads, we proceed now to locate the specific time of the changes in the predictive power, utilizing changepoint detection tests in spread-only equations.

4.2 Endogenous Structural Changepoints

Given the form of our predictive equation (7), we can put our probit estimation in a GMM framework, so that standard tests for endogenous detection of changepoints can be applied. We use the tests developed in Andrews (1993) for this purpose. Details on these tests can be found in Appendix B. We present here the results of applying the sup-W, sup-LM and sup-LR, with a trimming proportion (see Appendix B) of 15%, to two forms of the predictive equation:

$$P(y_t = 1|\mathbf{x}_{t-k}) = f(\beta_0 + \beta_1 s_{t-k}^{Dom}) \tag{8}$$

and

$$P(y_t = 1|\mathbf{x}_{t-k}) = f(\beta_0 + \beta_1 s_{t-k}^{Dom} + \beta_2 s_{t-k}^{G} + \beta_3 s_{t-k}^{US})$$

where s_{t-k}^{Dom} is the lagged domestic spread, s_{t-k}^{G} is the German spread, s_{t-k}^{US} is the US spread, and the changepoint is searched in parameter β_1. The outcome of the testing procedure is the value of the test (three, since we computed all three versions of the test), the date of the changepoint identified, if statistically significant, and the estimates of the parameter vector $\theta = (\beta_0,\ \beta_1^1,\ \beta_1^2,\ \beta_2,\ \beta_3)'$.Given the complexity of the output, we show in Table 7 the values of the tests, the estimated dates of the changepoints, and whether the change is in the direction that we are expecting (i.e. from significantly negative β_1^1 to zero β_1^2) or in other directions.[7]

[7] The complete results of parameter estimates and significance tests are available from the author upon request.

Insert Table 7

The three versions of the test tend to present a parallel evolution and yield consistent results (i.e. the three supremums usually correspond to the same observation or at least they cluster in a small neighborhood). However, the values of the tests sometimes differ, even in terms of statistical significance of the changepoint. In particular, the value of the sup-LR test seems to be subject to large distortions. The test yields very large values, usually having local maxima around the trimming points. This suggests that the sup-LR test may be too sensitive to the number of observations available on both sides of the changepoint, and therefore that it may be less advisable when the sample has relatively few datapoints. The fact that our moments are nonlinear functions may accentuate this need for larger samples of the sup-LR. On the other hand, the sup-LM test seems to be more conservative than the sup-W test, which appears to be something of a "middle ground" between the other two.

Regarding our empirical strategy, it seems that the short-term forecasting equations are more unstable: the results of the one-month forecasting equation differ quite significantly from the other four horizons tested (one to four quarters). Thus, we focus on the results for the latter, which are coherent across horizons.

We turn now to the dates of the changepoints and the direction of the changes detected in β_1. We observe a result that was advanced in the decade-by-decade analysis: the countries in our sample can be divided into two groups. The first group includes the more advanced countries.[8] In this group we find Belgium, France, Germany, the Netherlands, Sweden (more on Sweden below), the UK and the US. In all these cases, somewhere in the sample the predictive power of the domestic spread seems to disappear: all these countries present evidence of a significant break in the direction expected: β_1 changes from a negative and significant number to a number not significantly different from zero or of much smaller magnitude. The dates identified for the changepoints differ, though, so that the changes seem to be country-specific rather than region-wide. For Belgium, Germany, the Netherlands and the US the changepoint is identified in the mid 1980's, whereas for France and the UK it is identified in the early 1990's.

Sweden is a special case in this group, since here the tests tend not to agree and identify three different dates as possible changepoints. In the early 1980s a changepoint is identified that corresponds to going from no predictive power to significant predictive power in the traditional direction. A different changepoint is identified in some instances around 1992, which corresponds to the opposite effect: from regular predictive power to no power. Then, some tests detect a changepoint in 1997 in the same direction as the first one: no predictive power to regular predictive power. These results should be taken with a little caution, since the early 1990s include a period of special monetary turmoil in

[8] The word "advanced" here has to be taken in relative terms: it is clear that in the 1980s Ireland, Italy, Spain and Portugal and Greece were the least developed of the European Union.

Sweden. However, the three candidate dates detected seem to parallel events in the history of the Swedish economy, which around 1990 tried to integrate with conditions in Europe -thus losing domestic predictive power- but that later became disconnected -because of the 1992-93 exchange rate crisis and their decision to not adopt the euro- and thus went back to pre-1990 conditions. The case of Sweden, however, deserves further future attention.

The second group of countries is composed of Ireland, Italy and Spain, the three "least integrated" countries in terms of their monetary conditions. Here the results in fact seem to identify the opposite behavior: the changepoint happened in all three countries sometime around the mid 1980s (1985 for Ireland and Spain, 1989 for Italy) and it corresponds to going from no-predictive power (β_1 not significantly different from zero) to regular predictive power ($\beta_1 < 0$). In other words, the results suggest that these countries started showing the "standard" results of effective monetary policy. In these three countries, the 1980s were years of opening of financial markets, of redesigning of their monetary policies, and of the beginning of their integration with European conditions.

We interpret our results in the context of our comments in Section 2.1. Our estimation suggests that countries go through two stages as their monetary conditions develop. A country may have poor monetary mechanisms, and as it develops and deepens the monetary system, the predictive power of the spread seems to appear. As the process of integration with international monetary conditions is made more profound, domestic policy may lose power, and become effectively constrained or determined by international conditions. The increase in the predictive power of the US spread found in the previous subsection seems to be a consequence of the more intense integration –both in the real and in the monetary sides– of the European countries with the US.

Our results can be now briefly summarized. First, monetary policy has become less effective in the 1990s –at least in what real activity is concerned– as the economies have developed and integrated their financial markets, although the impact of monetary policy may be more immediate and the lags in policy effectiveness shorter. Second, a two-stage process of development seems to occur, by which countries first experience more effective monetary policy -and therefore, more predictive power in the spread given the traditional arguments- and then, as integration deepens, international monetary conditions effectively constrain domestic monetary policies and the predictive power of domestic spreads wanes. It seems that monetary conditions in the US and Germany, the references for international conditions, contain then more useful information on future output than domestic variables.[9]

Given our results that financial variables add very little to the predictive power of the domestic and foreign spreads and that this informational content of the spreads has been disappearing, the question arises whether accurate predictions can still be made. We turn to a simple exercise that presents evidence that there is still some scope for using financial variables as predictors of economic activity.

[9] This last conclusion should now read "the US" and "the Eurozone".

4.3 Out of sample forecasts: A Recession in 2001?

Even though in-sample forecasts usually yield fairly good predictions, most predictive models are found to perform quite poorly out of sample (Estrella and Mishkin, 1998). We conduct a simple exercise, although interesting in its own right, of out of sample forecasting. We reestimate our main models ('domestic spread' and 'all spreads'), using data from 1989:1 to 1999:12. Then, using the estimated parameters and the next observation of the explanatory variables we predict the value of y_t for the next period. That is, we calculate a one-step-ahead forecast of the probability of recession, using only past data, reestimate the parameters given a new datapoint and keep the recursive procedure. We are emulating the process that a policymaker would follow when forecasting future probabilities of recession, by reestimating the model every time a new datapoint is available. We continue the process until the last observation, 2001:12 and show the estimated probabilities in Figure 1. The last twenty four predictions in the graphs in Figure 1 are recursive, whereas the first 132 are in-sample. Notice that the predictions are done *without using any data on the incoming recession*, that is, if the estimated probabilities jump and accurately predict the recession is due exclusively to the past performance of the explanatory variables to predict recessions.

Insert Figure 1

In general, we see that the models that include the three spreads tended to signal the incoming economic downturn in France, Ireland, Italy, Spain, Sweden, the UK and the US. It is still the case, therefore, that in most countries the –foreign– term spreads give advanced signals about future economic activity. These signals, however, are becoming more and more short-term –the models lose accuracy at the medium and long horizons– and weaker.[10] The conclusion still holds that a forecaster could have given a prediction of the incoming recession a few quarters ahead, which confirms the predictive power, even out of sample –the interesting feature for policymakers–, of a simple three-variable model.

5 Conclusions

We have conducted an analysis on the predictive power about real economic activity of term spreads in a set of EU countries and the US. We focused on detection of changes in that predictive power in the last two decades and on trying to offer some heuristic explanations for those changes.

We showed that the informational content of both domestic and foreign term spreads has been significantly high in the past and that alternative financial variables offer little additional information. Then, we located changes in the structure of the predictive power. We found that during the 1980s it was

[10] Figure 1 shows the results only for one-quarter forecast horizons. The rest of the pictures are similar, although longer horizons show less accurate predictions. These are available upon request.

mostly domestic spreads that could be used for prediction of economic conditions in Europe whereas in the 1990s this power has been lost, and most of the information can be obtained from international spreads (Germany and the US). Also, we found that the predictive power of spreads seems to go through two stages: as the domestic financial and monetary systems develop, the spread becomes informative but a more profound integration leads to a disappearance of the predictive power of the domestic spread, usually in favor of some international spread that, in any case, seems to end up losing predictive power as well. Our results split the countries in our sample into two groups, that can be associated with these two stages, depending on the direction of the change of the predictive content detected at the changepoint. The groupings of the countries into "more" and "less" developed are, in fact, quite reasonable and imply that interesting cross-country patterns can be uncovered by further research.

Our results suggest that European economies have become more integrated with the US and among themselves during the 1990s –both in the real and in the monetary side– and that this integration may be leading to a monetary policy that is both faster in affecting the economy, but overall less effective with respect to real activity. A question that arises is the cause of this lower effectiveness: is it that the more intense international integration places constraints on domestic monetary policy or is it that monetary policy –whose effectiveness relies on the existence of nominal frictions– is less effective in developed economies where nominal rigidities are being overcome? The analysis of the determinants of policy effectiveness becomes a priority for research.

6 Appendix A: The Probit Model with Autocorrelated Errors

In the empirical analysis of Sections 3 and 4 we use a probit specification that models the probability that the economy will be in a recession as a function of a single index $\boldsymbol{\beta}'\mathbf{x}$, where $\boldsymbol{\beta}$ is a set of parameters and $\mathbf{x}$ is the set of lagged observable explanatory variables. Hereafter, we denote $\mathbf{x}_{t-k}$ the set of explanatory variables, to emphasize that they are k-period lagged values or, alternatively, that we are trying to predict the probability of a recession k periods ahead by using current information. Thus, the model is specified as

$$P(y_t = 1|\mathbf{x}_{t-k}, \boldsymbol{\beta}_k) = F(\boldsymbol{\beta}_k'\mathbf{x}_{t-k}) = F_t \tag{9}$$

where F is the cdf of the normal distribution. It follows that

$$P(y_t = 0|\mathbf{x}_{t-k}, \boldsymbol{\beta}_k) = 1 - F(\boldsymbol{\beta}_k'\mathbf{x}_{t-k}) = 1 - F_t \tag{10}$$

from where the full (log)likelihood of a sample can be constructed, given values of the observable variables $\mathbf{X}$:

$$L(y_t, ...y_1|\boldsymbol{\beta}_k, \mathbf{X}) = \sum_{\{y_t=0\}} \ln(1 - F_t) + \sum_{\{y_t=1\}} \ln(F_t) \tag{11}$$

Estimation of the parameters by QMLE is straightforward since the likelihood function is globally concave. Measures of goodness of fit have been proposed, and we use the pseudo-R^2 of Estrella (1998) which can be calculated as

$$\mathbf{R}^2 = 1 - \left(\frac{L_u}{L_c}\right)^{-\frac{2}{N}L_c} \tag{12}$$

where L_u is the value of the above (log)likelihood of the estimated (unrestricted) model, and L_c is the (log)likelihood of the model where all slope parameters have been set to zero.

Once the parameters have been estimated, forecasts of the probability of recession can be constructed. A simple k-period ahead prediction of the probability that the economy will go into a recession in the following period can be obtained by

$$\widehat{P}(y_t = 1|\mathbf{x}_{t-k}, \widehat{\boldsymbol{\beta}}_k) = F(\widehat{\boldsymbol{\beta}}_k'\mathbf{x}_{t-k}) \tag{13}$$

The k-period forecast introduces a moving average structure in the errors, which deems regular QMLE standard errors inconsistent (see Hansen and Hodrick, 1980, for continuous y_t; Poirier and Ruud, 1988, and Estrella and Rodrigues, 1998, for the binary dependent variable case). We follow the procedure of Estrella and Rodrigues (1998), that build from a GMM interpretation of the first order conditions of the QMLE estimator of the regular probit model.

In the above model, define $f_t = F_t'$, $u_t = y_t - F_t$ and $w_t^2 = 1/F_t(1 - F_t)$. The f.o.c. of the QMLE estimates of $\boldsymbol{\beta}_k$ are:

$$\sum_{t=1}^{T} u_t w_t^2 f_t \mathbf{x}_{t-k} = 0 \tag{14}$$

These equations can be seen as a non-linear least squares problem that minimizes a quadratic function of u_t^2. Under some assumptions on the distribution of $\mathbf{x}$, the estimators are consistent regardless of the structure of the errors. We can then construct a GMM estimator of the covariance matrix of these moment conditions, which would yield consistent standard errors. Define $h_t = u_t w_t^2 f_t \mathbf{x}_t$ and $h = \sum_{t=1}^{T} h_t$. Estimation in the GMM framework implies selecting the values of the elements in $\boldsymbol{\beta}_k$ that minimize $h'Wh$ for some weighting matrix W. Note that any positive definite W will produce the QMLE, given that the number of moment conditions (the derivatives of L with respect to $\boldsymbol{\beta}_k$) equals the number of parameters.

The covariance of the parameter estimates is a function of the covariance of the moments and of the derivatives of the moments with respect to the parameters. For the variance of the moments we use the sample autocovariances of h

$$\Omega_j = \frac{1}{T} \sum_{t=j+1}^{T} h_t h_{t-j}' \tag{15}$$

to construct a Newey-West type estimator

$$S = \Omega_0 + \sum_{j=1}^{m} \lambda_j \left(\Omega_j + \Omega_j' \right) \tag{16}$$

where if $\lambda_j = 1$ we have the regular estimator in Hansen (1982) and if we set $\lambda_j = 1 - \frac{j}{m+1}$ we have the Newey-West (1987) weighting scheme. With a proper selection of m this matrix is a consistent estimator of the covariance matrix of the orthogonality conditions (moments).

Given the estimates for the parameters obtained with $W = I$ (there is no asymptotic gain in using other weighting matrices) a consistent covariance matrix for the GMM estimator, is

$$V = \frac{1}{T} \left(H'H \right)^{-1} H'SH \left(H'H \right)^{-1} \tag{17}$$

where $H = \frac{1}{T} \frac{\partial h}{\partial \beta} = \frac{1}{T} \sum_t \frac{\partial h_t}{\partial \beta}$ and S is defined above.

With this correction to the standard errors, the f.o.c. of the QMLE can be used to get consistent estimates of the parameters and the correct standard errors and t-stats. We follow this procedure and compute, along with the regular QMLE standard errors, Hansen-corrected and Newey-West corrected standard errors with lag length m equal to the Newey-West rule of $m = 4(T/100)^{\frac{2}{9}}$. Estrella and Rodrigues (1998) do not find any of the two versions of the corrected standard errors to dominate the other.

7 Appendix B: Testing for endogenous changepoints in a GMM setting

The papers by Andrews (1993, 2003) provide the ideal setup for our tests for endogenous changepoints, given that our estimation is based on a set of moment conditions (14). Andrews (1993) shows how sup-Wald, sup-LM and sup-LR tests can be calculated, and provides the distribution of parameter estimates and of the tests that detect the date of the changepoint. We review briefly the tests proposed in that paper.

Given a parametric model indexed by parameters (β_t, δ_0) for $t = 1, 2, ...$, the null hypothesis of parameter stability can be expressed as:

$$H_0 : \beta_t = \beta_0, \text{ for all } t \geq 1 \text{ for some } \beta_0 \in B \subset R^p$$

whereas the form of the alternative hypothesis that we are interested in testing is:

$$H_{1T}(\pi) : \beta_t = \left\{ \begin{array}{ll} \beta_1(\pi) & \text{for } t = 1, ..., T\pi \\ \beta_2(\pi) & \text{for } t = T\pi + 1, ... \end{array} \right.$$

for some constants $\beta_1(\pi)$, $\beta_2(\pi) \in B \subset R^p$. That is, at some datapoint $T\pi + 1$ the value of the parameter of interest β changes. The parameter vector δ_0 is assumed to be constant under the null hypothesis and the alternative.

The parameter π governs the fraction of observations at which the changepoint occurs. If π were known, then traditional Wald, LM or LR tests of H_0 versus $H_{1T}(\pi)$ could be easily carried out and would be similar to Chow-type tests. We let $W_T(\pi)$, $LM_T(\pi)$ and $LR_T(\pi)$ denote those test statistics. Given that the changepoint is unknown, then one has to estimate π, a parameter that does not appear under the null. The common method used for estimation is to consider statistics of the form

$$\sup_{\pi\in\Pi} W_T(\pi), \ \sup_{\pi\in\Pi} LM_T(\pi) \text{ and } \sup_{\pi\in\Pi} LR_T(\pi)$$

where Π is a pre-specified subset of [0,1], usually suggested to be [0.15,0.85]. In other words, the test is carried out for all possible values of π except for a proportion that has been "trimmed".

Andrews' tests apply to a GMM-setup, so we define now more explicitly the framework for testing parameter constancy. Given a set of v moment conditions $\frac{1}{T}\sum_{t=1}^{T} E\left[m(w_t, \beta_0, \delta_0)\right] = 0$, where w_t contains the observed data, we define the full-sample GMM estimates of β_0 and δ_0 as

$$\widetilde{\beta}^F, \widetilde{\delta}^F = \arg\inf_{\beta,\delta} \frac{1}{T}\sum_{t=1}^{T} m\prime\widehat{\gamma}\frac{1}{T}\sum_{t=1}^{T} m$$

where $\widehat{\gamma}$ is the inverse of some estimate of the covariance matrix of the v moment conditions.

We now split the sample into $t = 1, ..., T\pi$ and $t = T\pi + 1, ...T$, where the parameter π identifies the changepoint, and assume that the β parameters differ across subsamples. The new vector of parameters is $\theta = (\beta_1', \beta_2', \delta')'$, for which two estimators may be found:

1) The full-sample GMM estimator of $\widetilde{\theta}^F = (\widetilde{\beta}^F, \widetilde{\beta}^F, \widetilde{\delta}^F)$, which is consistent under the null hypothesis of parameter constancy.

2) An unrestricted partial-sample GMM estimator, which can be defined as:

$$\widetilde{\theta}^P(\pi) = \arg\inf_{\theta} m_T(\theta, \pi)'\widehat{\gamma}(\pi) m_T(\theta, \pi)$$

where $m_T(\theta, \pi) = \frac{1}{T}\sum_1^{T\pi} \begin{pmatrix} m(w_t, \beta_1, \delta_0) \\ 0 \end{pmatrix} + \frac{1}{T}\sum_{T\pi+1}^{T} \begin{pmatrix} 0 \\ m(w_t, \beta_2, \delta_0) \end{pmatrix}$, is a set of $2v$ moment conditions.

As usual, the W, LM and LR tests are computed from the restricted (full-sample) or the unrestricted (partial-sample) estimates. In particular,

1) The *Wald* version of the test compares the unrestricted estimates of β_1 and β_2:

$$W_T(\pi) = T\left(\widehat{\beta}_1(\pi) - \widehat{\beta}_2(\pi)\right)'\left(\frac{\widehat{V}_1(\pi)}{\pi} + \frac{\widehat{V}_2(\pi)}{1-\pi}\right)^{-1}\left(\widehat{\beta}_1(\pi) - \widehat{\beta}_2(\pi)\right)'$$

where $\widehat{V}_{1,2}(\pi)$ are estimates of the variance of the v moment conditions constructed for the two subsamples formed by splitting at $T\pi$.

2) The LM version uses the restricted estimates:

$$LM_T(\pi) = \frac{T}{\pi(1-\pi)} m_{1T}(\widetilde{\theta}^F)' \widehat{V}_{LM} m_{1T}(\widetilde{\theta}^F)$$

where $\widehat{V}_{LM}$ is an expression that depends on the variance of the moment conditions and the derivatives of the moments with respect to the parameters (see Andrews 1993).

3) Finally, the Likelihood Ratio compares the value of the quadratic form at both estimates:

$$LR_T(\pi) = T m_T(\widetilde{\theta}^F, \pi)' \widehat{\gamma}(\pi) m_T(\widetilde{\theta}^F, \pi) - T m_T(\widetilde{\theta}^P, \pi)' \widehat{\gamma}(\pi) m_T(\widetilde{\theta}^P, \pi)$$

Once the tests above have been calculated for the different values of π considered after the trimming, the supremum is taken as the value of the test, and the corresponding value of π as the estimate of the changepoint. If the test shows statistical evidence of a changepoint (i.e. differing parameters across subsamples), then $\widetilde{\theta}^P = (\widetilde{\beta}_1^P, \widetilde{\beta}_2^P, \widetilde{\delta}^P)$ is taken as the estimates of the complete vector of parameters. If the test does not show evidence of a changepoint in parameters then either $\widetilde{\theta}^F$ or $\widetilde{\theta}^P$ are consistent estimates, but $\widetilde{\theta}^F$ is to be preferred.

The asymptotic distribution of the three sup-tests is the same (see Andrews, 1993), and the critical values for a change in up to twenty parameters and for different ranges of π used to construct the sup-test have been tabulated by Andrews (1993, 2003). The relevant critical values for our tests, where one parameter is assumed to change and we use a 15% trimming proportion on π, are 7.17 (10%), 8.85 (5%) and 12.35 (1%).

In principle, any of the three tests could be used and their performance in large samples should be similar. We have calculated the three versions of the test in each of our empirical applications in order to be able to provide some comments regarding the comparative performance of the three in small samples. We believe that this discussion is by itself a contribution. (See Section 4.2).

As said before, our moment conditions are the scores of the probit likelihood function, which we have presented in the previous appendix. The scores have expectation zero so the expression in (14) is equivalent to $\frac{1}{T}\sum_{t=1}^{T} E\left[u_t w_t^2 f_t \mathbf{x}_{t-k}\right] = 0$, which is all we need for the tests developed in this appendix to apply.

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Table 1

Sources of Data and Measurement

	Comments	Source
Recession Indicator	0,1 Indicator for contractionary months	OECD Composite Leading Indicators
IIP Index	SA Index of Industrial Production	OECD Main Economic Indicators
	BEL, NET	IFS of the IMF
Short-Term Rate	Interest Rate on T-Bills	IFS of the IMF
Long-Term Rate	Long Term Government Bond Yield	IFS of the IMF
German Spread	Long Term Government Bond Yield	IFS of the IMF
	minus Interest Rate on T-Bills	Global Financial Data, Inc.
US Spread	10 Yr. Government Bond Yield	Federal Reserve Bank at St. Louis
	minus Interest Rate on 3 month T-Bills	
Short-Term Rate	IRE, GER, ITA, NET	Global Financial Data, Inc.
Stock Market Index		IFS of the IMF
	SPA	Madrid Stock Exchange
	BEL,GER,UK,US	Datastream
Real Exchange Rate	Real Effective Exchange Rate	OECD Main Economic Indicators
Discount Rate		IFS of the IMF
Quantity of Money	M3; M2 (ITA and UK)	IFS of the IMF

Table 2

Ranges of the variables for the different countries

If the range of a specific explanatory variable is bigger than the range of the recession indicator, only the latter is specified

		BEL	FRA	GER	IRE	ITA	NET	SPA	SWE	UK	USA
Recession Indicator	First Obs.	01/70	01/70	01/70	01/70	01/70	01/70	01/70	01/70	01/70	01/70
	Last Obs.	01/02	01/02	01/02	12/01	01/02	12/01	01/02	01/02	12/01	01/02
IIP Index	First Obs.	01/70	01/70	01/70	01/70	01/70	01/70	01/70	01/70	01/70	01/70
	Last Obs.	01/02	01/02	01/02	12/01	01/02	12/01	01/02	01/02	12/01	01/02
Short-Term Rate	First Obs.	01/70	01/70	01/70	01/70	01/70	01/70	12/79	01/70	01/70	01/70
	Last Obs.	01/02	01/02	01/02	12/01	01/02	12/01	01/02	01/02	11/01	01/02
Long-Term Rate	First Obs.	01/70	01/70	01/70	01/70	01/70	01/70	03/78	01/70	01/70	01/70
	Last Obs.	01/02	01/02	01/02	12/01	01/02	12/01	01/02	01/02	12/01	01/02
Real Exchange Rate	First Obs.	01/70	01/70	01/70	01/70	01/70	01/70	01/70	01/70	01/72	01/70
	Last Obs.	01/02	01/02	01/02	12/01	01/02	12/01	01/02	01/02	12/01	01/02
Stock Market Index	First Obs.	01/70	01/70	01/70	01/70	01/70	01/70	01/70	01/70	01/70	01/70
	Last Obs.	01/02	01/02	01/02	12/01	01/02	12/01	01/02	01/02	12/01	01/02
Quantity of Money	First Obs.	12/79	12/77	01/70	01/80	01/75	01/70	01/70	01/70	07/82	01/70
	Last Obs.	01/02	11/01	08/01	11/01	11/01	12/01	01/02	01/02	12/01	01/02
Discount Rate	First Obs.	01/70	NA	01/70	01/70	01/70	01/70	01/70	01/70	02/75	01/70
	Last Obs.	01/02	NA	01/02	12/01	01/02	12/01	01/02	01/02	12/01	01/02

Table 3
Dates of the Peaks and Troughs identified for the 11 Countries
(OECD Composite Leading Indicators)

	BEL	FRA	GER	IRE	ITA	NET	SPA	SWE	UK	USA
Trough										11/70
Peak	07/70		05/70			06/70		07/70		
Trough	05/71	05/71	12/71	03/72	04/72	06/72	01/71	01/72	02/72	
Peak	06/74	08/74	05/73	02/74	06/74	01/74	08/74	06/74	06/73	10/73
Trough	08/75	07/75	07/75	10/75	09/75	07/75	02/76	01/76	08/75	03/75
Peak	04/76	09/76			01/77	09/76	09/78	07/76		12/78
Trough	09/77	12/77			03/78	05/78	02/79	06/78		
Peak	12/79	08/79	12/79	09/79	03/80	10/78	03/80	12/79	06/79	
Trough	12/80	03/81	09/80	12/80	09/80			11/82	05/81	07/80
Peak	02/82	12/81	10/81	09/81	01/82				05/82	07/81
Trough	12/82	07/82	11/82	04/83	05/83	12/82	08/82		11/82	12/82
Peak							03/83		01/84	
Trough									08/84	
Peak	09/85	03/85	11/85	03/85	08/84	10/84		12/84	01/85	06/84
Trough	01/87	01/87	01/87	05/86	01/87	05/86	01/86	04/86	12/85	09/86
Peak						01/87				
Trough						08/87				
Peak	08/90	01/90		07/89	12/89	12/90	03/89	04/90	09/88	01/89
Trough	08/91	04/91			04/91		03/91			03/91
Peak	02/92	12/91	02/92		09/91		12/91			07/92
Trough	11/93	08/93	07/93	01/94	12/93	12/93	04/93	04/93	05/92	08/93
Peak	02/95	03/95	12/94	12/95	12/95	02/95	12/94	04/95	09/94	01/95
Trough	08/96	01/97	02/96	09/96	12/96	12/96	12/96	10/96		01/96
Peak	02/98	05/98	03/98	02/98	10/97	01/98	02/98	12/97		11/97
Trough	02/99	04/99	02/99	05/99	05/99	12/98	05/99	08/99	02/99	12/98
Peak	12/00	11/00	05/00	02/01		06/00	02/00	06/00	08/00	06/00

http://www1.oecd.org/std/licomp.htm

Table 4
Parameters and pseudo-R2 of the model with Domestic Spread
Newey-West-corrected GMM t-stats included

		FORECASTING HORIZON								
		1Month	**1 Q**	**2 Q**	**3 Q**	**4 Q**	**5 Q**	**6 Q**	**7 Q**	**8 Q**
BELGIUM	***Full Sample***									
	Spread	**-0.100**	**-0.066**	**-0.002**	**0.026**	**0.079**	**0.081**	**0.037**	**-0.019**	**-0.055**
	t-stat	-0.733	-0.510	-0.016	0.197	0.583	0.610	0.285	-0.144	-0.403
	Pseudo R2	**0.007**	**0.003**	**0.000**	**0.001**	**0.005**	**0.005**	**0.001**	**0.000**	**0.002**
	1980:1989									
	Spread	**-0.803**	**-0.852**	**-0.401**	**-0.295**	**0.366**	**0.504**	**0.276**	**-0.108**	**-0.275**
	t-stat	-2.647	-2.197	-0.959	-0.704	0.987	1.296	0.826	-0.341	-0.876
	Pseudo R2	**0.112**	**0.123**	**0.032**	**0.018**	**0.023**	**0.043**	**0.014**	**0.002**	**0.013**
	1990:1998									
	Spread	**-0.172**	**-0.128**	**-0.075**	**-0.018**	**0.016**	**-0.005**	**-0.007**	**-0.030**	**-0.075**
	t-stat	-1.259	-0.929	-0.498	-0.125	0.117	-0.033	-0.052	-0.228	-0.553
	Pseudo R2	**0.049**	**0.029**	**0.010**	**0.001**	**0.001**	**0.000**	**0.000**	**0.002**	**0.011**
GERMANY	***Full Sample***									
	Spread	**-0.036**	**-0.059**	**-0.068**	**-0.054**	**-0.027**	**-0.029**	**-0.019**	**0.010**	**0.015**
	t-stat	-0.288	-0.479	-0.560	-0.456	-0.232	-0.245	-0.157	0.081	0.114
	Pseudo R2	**0.001**	**0.004**	**0.005**	**0.003**	**0.001**	**0.001**	**0.000**	**0.000**	**0.000**
	1980:1989									
	Spread	**-0.484**	**-0.529**	**-0.562**	**-0.567**	**-0.490**	**-0.394**	**-0.341**	**-0.176**	**-0.083**
	t-stat	-1.989	-2.257	-2.262	-2.212	-2.039	-1.862	-1.409	-0.740	-0.326
	Pseudo R2	**0.116**	**0.134**	**0.146**	**0.145**	**0.113**	**0.077**	**0.058**	**0.015**	**0.003**
	1990:1998									
	Spread	**-0.279**	**-0.250**	**-0.169**	**-0.081**	**-0.088**	**-0.122**	**-0.128**	**-0.156**	**-0.184**
	t-stat	-1.022	-0.907	-0.621	-0.329	-0.369	-0.517	-0.543	-0.629	-0.709
	Pseudo R2	**0.040**	**0.033**	**0.016**	**0.004**	**0.005**	**0.009**	**0.010**	**0.015**	**0.022**
ITALY	***Full Sample***									
	Spread	**-0.037**	**-0.056**	**-0.081**	**-0.109**	**-0.131**	**-0.070**	**-0.004**	**0.025**	**0.027**
	t-stat	-0.442	-0.719	-1.090	-1.446	-1.545	-0.888	-0.048	0.365	0.379
	Pseudo R2	**0.003**	**0.006**	**0.013**	**0.023**	**0.033**	**0.010**	**0.000**	**0.001**	**0.002**
	1980:1989									
	Spread	**0.233**	**0.241**	**0.300**	**0.303**	**0.195**	**0.143**	**0.172**	**0.212**	**0.266**
	t-stat	1.131	1.131	1.549	1.474	0.798	0.558	0.640	0.907	1.181
	Pseudo R2	**0.036**	**0.037**	**0.054**	**0.054**	**0.022**	**0.012**	**0.017**	**0.026**	**0.040**
	1990:1998									
	Spread	**-1.343**	**-0.804**	**-0.434**	**-0.488**	**-0.495**	**-0.088**	**0.177**	**0.146**	**0.068**
	t-stat	-4.055	-2.976	-1.579	-2.083	-2.480	-0.513	1.025	0.754	0.341
	Pseudo R2	**0.388**	**0.257**	**0.111**	**0.132**	**0.132**	**0.006**	**0.025**	**0.017**	**0.004**

		FORECASTING HORIZON								
		1Month	**1 Q**	**2 Q**	**3 Q**	**4 Q**	**5 Q**	**6 Q**	**7 Q**	**8 Q**
FRANCE	***Full Sample***									
	Spread	**-0.185**	**-0.257**	**-0.308**	**-0.278**	**-0.150**	**-0.007**	**0.123**	**0.182**	**0.166**
	t-stat	-1.790	-2.445	-3.026	-2.715	-1.540	-0.073	1.275	1.925	1.896
	Pseudo R2	**0.042**	**0.078**	**0.112**	**0.093**	**0.029**	**0.000**	**0.019**	**0.038**	**0.032**
	1980:1989									
	Spread	**0.082**	**-0.020**	**-0.438**	**-0.769**	**-0.300**	**0.228**	**0.124**	**-0.173**	**-0.391**
	t-stat	0.329	-0.085	-2.036	-2.668	-1.302	0.732	0.453	-0.773	-1.432
	Pseudo R2	**0.003**	**0.000**	**0.059**	**0.145**	**0.028**	**0.015**	**0.004**	**0.009**	**0.046**
	1990:1998									
	Spread	**-0.259**	**-0.227**	**-0.136**	**-0.032**	**0.037**	**0.111**	**0.151**	**0.213**	**0.221**
	t-stat	-1.761	-1.641	-1.064	-0.244	0.274	0.805	1.082	1.440	1.577
	Pseudo R2	**0.101**	**0.081**	**0.033**	**0.002**	**0.003**	**0.023**	**0.043**	**0.079**	**0.081**
IRELAND	***Full Sample***									
	Spread	**-0.184**	**-0.193**	**-0.195**	**-0.203**	**-0.193**	**-0.073**	**-0.053**	**-0.036**	**-0.015**
	t-stat	-2.656	-2.754	-2.772	-2.955	-3.066	-1.310	-0.972	-0.725	-0.330
	Pseudo R2	**0.111**	**0.120**	**0.123**	**0.131**	**0.118**	**0.035**	**0.018**	**0.008**	**0.001**
	1980:1989									
	Spread	**-0.379**	**-0.313**	**-0.061**	**0.129**	**0.370**	**0.501**	**0.456**	**0.385**	**0.252**
	t-stat	-2.687	-2.205	-0.424	0.942	2.250	2.870	1.944	1.883	1.478
	Pseudo R2	**0.146**	**0.100**	**0.004**	**0.017**	**0.113**	**0.198**	**0.186**	**0.140**	**0.066**
	1992:1998									
	Spread	**-0.339**	**-0.351**	**-0.371**	**-0.502**	**-0.276**	**-0.122**	**0.147**	**0.447**	**0.321**
	t-stat	-1.538	-1.610	-1.607	-2.006	-1.076	-0.437	0.502	1.460	1.290
	Pseudo R2	**0.107**	**0.118**	**0.117**	**0.169**	**0.050**	**0.009**	**0.013**	**0.100**	**0.059**
NETHERLANDS	***Full Sample***									
	Spread	**-0.177**	**-0.210**	**-0.187**	**-0.157**	**-0.121**	**-0.064**	**0.021**	**0.082**	**0.102**
	t-stat	-2.198	-2.509	-2.330	-2.016	-1.606	-0.847	0.273	1.053	1.307
	Pseudo R2	**0.058**	**0.079**	**0.065**	**0.047**	**0.029**	**0.008**	**0.001**	**0.014**	**0.021**
	1980:1989									
	Spread	**-0.494**	**-0.632**	**-0.662**	**-0.657**	**-0.527**	**-0.266**	**-0.021**	**0.127**	**0.172**
	t-stat	-2.459	-3.012	-3.040	-2.791	-2.376	-1.369	-0.104	0.623	0.802
	Pseudo R2	**0.166**	**0.234**	**0.247**	**0.246**	**0.179**	**0.057**	**0.000**	**0.015**	**0.028**
	1990:1998									
	Spread	**-0.193**	**-0.190**	**-0.179**	**-0.158**	**-0.138**	**-0.080**	**-0.030**	**0.016**	**0.048**
	t-stat	-1.310	-1.321	-1.269	-1.177	-0.910	-0.519	-0.193	0.104	0.307
	Pseudo R2	**0.053**	**0.053**	**0.048**	**0.038**	**0.031**	**0.011**	**0.002**	**0.001**	**0.004**

Table 4 (Continued)

Parameters and pseudo-R2 of the model with Domestic Spread

Newey-West-corrected GMM t-stats included

		FORECASTING HORIZON								
		1Month	**1 Q**	**2 Q**	**3 Q**	**4 Q**	**5 Q**	**6 Q**	**7 Q**	**8 Q**
SPAIN	***Full Sample***									
	Spread	**0.006**	**-0.019**	**-0.043**	**-0.094**	**-0.145**	**-0.216**	**-0.290**	**-0.426**	**-0.433**
	t-stat	0.062	-0.186	-0.426	-0.926	-1.459	-2.091	-2.793	-3.757	-4.020
	Pseudo R2	**0.000**	**0.001**	**0.003**	**0.013**	**0.031**	**0.063**	**0.105**	**0.188**	**0.193**
	1980:1989									
	Spread	**0.019**	**-0.033**	**-0.095**	**-0.164**	**-0.239**	**-0.345**	**-0.434**	**-0.820**	**-0.865**
	t-stat	0.197	-0.307	-0.866	-1.439	-2.046	-2.597	-3.094	-3.593	-4.013
	Pseudo R2	**0.001**	**0.003**	**0.025**	**0.069**	**0.134**	**0.229**	**0.317**	**0.583**	**0.609**
	1990:1998									
	Spread	**-0.090**	**0.114**	**0.408**	**0.464**	**0.494**	**0.391**	**0.237**	**0.233**	**0.250**
	t-stat	-0.326	0.404	1.445	1.584	1.716	1.423	0.836	0.890	0.929
	Pseudo R2	**0.003**	**0.005**	**0.053**	**0.067**	**0.076**	**0.050**	**0.019**	**0.019**	**0.022**
UK	***Full Sample***									
	Spread	**-0.182**	**-0.192**	**-0.191**	**-0.175**	**-0.138**	**-0.087**	**-0.028**	**0.003**	**0.034**
	t-stat	-2.907	-3.050	-3.083	-2.966	-2.314	-1.440	-0.443	0.052	0.525
	Pseudo R2	**0.093**	**0.103**	**0.102**	**0.088**	**0.057**	**0.024**	**0.003**	**0.000**	**0.004**
	1980:1989									
	Spread	**-0.384**	**-0.421**	**-0.382**	**-0.190**	**0.065**	**0.375**	**0.790**	**0.336**	**0.079**
	t-stat	-2.880	-3.063	-2.699	-1.352	0.394	2.211	3.831	1.955	0.465
	Pseudo R2	**0.212**	**0.226**	**0.173**	**0.045**	**0.005**	**0.120**	**0.334**	**0.093**	**0.006**
	1990:1998									
	Spread	**-0.199**	**-0.153**	**-0.074**	**-0.020**	**0.038**	**0.122**	**0.240**	**0.345**	**0.426**
	t-stat	-1.716	-1.377	-0.672	-0.174	0.327	1.015	1.864	2.560	2.968
	Pseudo R2	**0.073**	**0.045**	**0.011**	**0.001**	**0.003**	**0.033**	**0.123**	**0.234**	**0.326**

		FORECASTING HORIZON								
		1Month	**1 Q**	**2 Q**	**3 Q**	**4 Q**	**5 Q**	**6 Q**	**7 Q**	**8 Q**
SWEDEN	***Full Sample***									
	Spread	**-0.317**	**-0.370**	**-0.290**	**-0.131**	**-0.009**	**0.062**	**0.130**	**0.207**	**0.218**
	t-stat	-4.501	-5.043	-4.027	-1.880	-0.126	0.917	1.885	2.936	3.132
	Pseudo R2	**0.182**	**0.229**	**0.159**	**0.040**	**0.000**	**0.009**	**0.039**	**0.092**	**0.101**
	1980:1989									
	Spread	**-0.253**	**-0.224**	**-0.227**	**-0.166**	**-0.103**	**-0.224**	**-0.318**	**-0.141**	**0.053**
	t-stat	-1.323	-1.222	-1.213	-0.957	-0.675	-1.590	-1.989	-1.253	0.424
	Pseudo R2	**0.083**	**0.066**	**0.069**	**0.038**	**0.015**	**0.061**	**0.111**	**0.025**	**0.003**
	1990:1998									
	Spread	**-0.430**	**-0.552**	**-0.375**	**-0.057**	**0.114**	**0.245**	**0.377**	**0.349**	**0.253**
	t-stat	-2.923	-3.117	-2.498	-0.484	1.003	2.003	2.905	2.645	1.957
	Pseudo R2	**0.206**	**0.270**	**0.163**	**0.007**	**0.025**	**0.104**	**0.205**	**0.187**	**0.114**
US	***Full Sample***									
	Spread	**-0.269**	**-0.325**	**-0.292**	**-0.218**	**-0.116**	**-0.042**	**0.011**	**0.080**	**0.131**
	t-stat	-2.327	-2.710	-2.596	-1.965	-1.073	-0.396	0.109	0.794	1.219
	Pseudo R2	**0.074**	**0.106**	**0.087**	**0.050**	**0.014**	**0.002**	**0.000**	**0.007**	**0.018**
	1980:1989									
	Spread	**-0.031**	**-0.093**	**-0.065**	**-0.063**	**-0.036**	**-0.029**	**-0.070**	**-0.005**	**0.118**
	t-stat	-0.215	-0.628	-0.480	-0.431	-0.234	-0.189	-0.567	-0.040	0.854
	Pseudo R2	**0.001**	**0.012**	**0.006**	**0.006**	**0.002**	**0.001**	**0.007**	**0.000**	**0.021**
	1990:1998									
	Spread	**-0.322**	**-0.274**	**-0.144**	**-0.027**	**0.081**	**0.184**	**0.117**	**-0.030**	**-0.197**
	t-stat	-1.591	-1.335	-0.716	-0.136	0.407	0.869	0.548	-0.142	-0.954
	Pseudo R2	**0.073**	**0.055**	**0.016**	**0.001**	**0.005**	**0.024**	**0.009**	**0.001**	**0.025**

Table 5

Parameters and pseudo-R2 of the model with Domestic, German and US Spreads

Newey-West-corrected GMM t-stats included

		FORECASTING HORIZON								
		1Month	**1 Q**	**2 Q**	**3 Q**	**4 Q**	**5 Q**	**6 Q**	**7 Q**	**8 Q**
BELGIUM	***Full Sample***									
	Domestic	**-0.052**	**-0.020**	**0.045**	**0.077**	**0.136**	**0.142**	**0.082**	**-0.001**	**-0.060**
	t-stat	-0.373	-0.148	0.338	0.558	0.979	1.032	0.614	-0.006	-0.425
	German	**-0.195**	**-0.197**	**-0.207**	**-0.212**	**-0.227**	**-0.218**	**-0.160**	**-0.062**	**0.021**
	t-stat	-1.536	-1.488	-1.595	-1.710	-1.938	-2.000	-1.436	-0.556	0.187
	US	**0.083**	**0.045**	**-0.062**	**-0.112**	**-0.111**	**-0.140**	**-0.110**	**-0.066**	**-0.039**
	t-stat	0.830	0.423	-0.547	-1.024	-1.018	-1.249	-1.001	-0.629	-0.417
	Pseudo R2	**0.053**	**0.045**	**0.043**	**0.051**	**0.060**	**0.062**	**0.035**	**0.008**	**0.004**
	1980:1989									
	Domestic	**-0.776**	**-0.907**	**-0.348**	**-0.224**	**0.747**	**1.105**	**0.503**	**-0.104**	**-0.297**
	t-stat	-2.330	-2.218	-0.767	-0.481	1.726	2.530	1.328	-0.297	-0.859
	German	**-0.274**	**-0.470**	**-0.524**	**-0.594**	**-0.707**	**-0.450**	**-0.123**	**-0.073**	**0.062**
	t-stat	-1.015	-1.834	-2.289	-2.156	-2.486	-1.952	-0.521	-0.297	0.231
	US	**0.093**	**0.234**	**0.127**	**0.132**	**0.138**	**-0.158**	**-0.147**	**0.018**	**0.013**
	t-stat	0.617	1.409	0.774	0.846	0.828	-0.985	-0.809	0.093	0.089
	Pseudo R2	**0.140**	**0.207**	**0.133**	**0.147**	**0.191**	**0.177**	**0.059**	**0.004**	**0.016**
	1990:1998									
	Domestic	**0.217**	**0.588**	**0.861**	**0.667**	**0.542**	**0.047**	**-0.131**	**-0.360**	**-0.563**
	t-stat	0.824	2.141	2.271	2.137	1.836	0.154	-0.606	-1.201	-1.636
	German	**-0.892**	**-1.681**	**-2.118**	**-1.497**	**-0.985**	**0.091**	**0.488**	**0.792**	**0.872**
	t-stat	-1.760	-3.040	-2.626	-2.325	-1.621	0.149	0.981	1.226	1.182
	US	**-0.242**	**-0.460**	**-0.608**	**-0.337**	**0.037**	**0.343**	**0.446**	**0.321**	**-0.032**
	t-stat	-0.927	-1.814	-2.267	-1.273	0.122	1.130	1.604	1.032	-0.102
	Pseudo R2	**0.105**	**0.210**	**0.236**	**0.116**	**0.074**	**0.043**	**0.060**	**0.048**	**0.067**
GERMANY	***Full Sample***									
	Domestic	**-0.050**	**-0.081**	**-0.102**	**-0.081**	**-0.047**	**-0.043**	**-0.025**	**0.007**	**0.018**
	t-stat	-0.406	-0.666	-0.853	-0.697	-0.401	-0.354	-0.203	0.057	0.133
	German									
	t-stat									
	US	**-0.118**	**-0.182**	**-0.256**	**-0.208**	**-0.178**	**-0.146**	**-0.068**	**-0.034**	**0.033**
	t-stat	-1.068	-1.645	-2.220	-1.906	-1.528	-1.243	-0.620	-0.340	0.323
	Pseudo R2	**0.016**	**0.038**	**0.072**	**0.048**	**0.034**	**0.023**	**0.005**	**0.001**	**0.001**
	1980:1989									
	Domestic	**-0.579**	**-0.564**	**-0.513**	**-0.601**	**-0.436**	**-0.302**	**-0.329**	**-0.091**	**-0.068**
	t-stat	-2.243	-2.266	-1.872	-2.223	-1.856	-1.478	-1.199	-0.355	-0.264
	German									
	t-stat									
	US	**0.125**	**0.046**	**-0.070**	**0.048**	**-0.073**	**-0.120**	**-0.015**	**-0.104**	**-0.019**
	t-stat	0.779	0.312	-0.482	0.321	-0.405	-0.637	-0.081	-0.678	-0.134
	Pseudo R2	**0.130**	**0.136**	**0.151**	**0.147**	**0.118**	**0.092**	**0.058**	**0.028**	**0.004**
	1990:1998									
	Domestic	**-0.367**	**-0.244**	**-0.014**	**0.275**	**0.443**	**0.237**	**-0.046**	**-0.302**	**-0.524**
	t-stat	-1.184	-0.756	-0.043	0.899	1.526	0.862	-0.164	-1.069	-1.647
	German									
	t-stat									
	US	**-0.131**	**0.009**	**0.243**	**0.548**	**0.817**	**0.573**	**0.134**	**-0.234**	**-0.534**
	t-stat	-0.496	0.032	0.756	1.649	2.479	2.106	0.455	-0.789	-1.818
	Pseudo R2	**0.048**	**0.033**	**0.040**	**0.107**	**0.185**	**0.103**	**0.016**	**0.034**	**0.113**

		FORECASTING HORIZON								
		1Month	**1 Q**	**2 Q**	**3 Q**	**4 Q**	**5 Q**	**6 Q**	**7 Q**	**8 Q**
FRANCE	***Full Sample***									
	Domestic	**-0.126**	**-0.211**	**-0.262**	**-0.218**	**-0.084**	**0.063**	**0.196**	**0.221**	**0.166**
	t-stat	-1.230	-2.022	-2.496	-2.089	-0.857	0.635	1.849	2.129	1.756
	German	**-0.250**	**-0.201**	**-0.160**	**-0.164**	**-0.169**	**-0.157**	**-0.190**	**-0.124**	**-0.024**
	t-stat	-2.116	-1.750	-1.484	-1.599	-1.594	-1.435	-1.632	-1.051	-0.201
	US	**-0.051**	**-0.030**	**-0.063**	**-0.163**	**-0.189**	**-0.154**	**-0.069**	**0.032**	**0.047**
	t-stat	-0.485	-0.285	-0.564	-1.440	-1.808	-1.412	-0.624	0.289	0.453
	Pseudo R2	**0.097**	**0.112**	**0.133**	**0.133**	**0.081**	**0.040**	**0.050**	**0.053**	**0.035**
	1980:1989									
	Domestic	**0.320**	**0.163**	**-0.345**	**-0.681**	**-0.264**	**0.231**	**0.142**	**-0.384**	**-0.721**
	t-stat	1.410	0.652	-1.551	-2.489	-1.057	0.687	0.415	-1.025	-2.577
	German	**-0.324**	**-0.432**	**-0.536**	**-0.263**	**-0.038**	**-0.001**	**-0.059**	**-0.003**	**0.401**
	t-stat	-1.300	-1.699	-1.986	-1.156	-0.157	-0.004	-0.226	-0.011	1.311
	US	**-0.133**	**0.036**	**0.212**	**0.054**	**-0.050**	**0.045**	**0.144**	**0.330**	**0.106**
	t-stat	-0.931	0.241	1.149	0.334	-0.309	0.240	0.802	1.802	0.595
	Pseudo R2	**0.093**	**0.075**	**0.164**	**0.167**	**0.033**	**0.017**	**0.026**	**0.100**	**0.129**
	1990:1998									
	Domestic	**-1.715**	**-1.553**	**-0.655**	**-0.244**	**-0.115**	**0.046**	**0.359**	**0.838**	**1.529**
	t-stat	-2.968	-3.198	-2.322	-0.872	-0.412	0.159	1.143	2.280	3.715
	German	**2.094**	**1.950**	**0.778**	**0.312**	**0.349**	**0.379**	**-0.301**	**-1.172**	**-2.485**
	t-stat	2.152	2.303	1.481	0.605	0.632	0.644	-0.486	-1.697	-3.634
	US	**-0.791**	**-0.704**	**-0.392**	**-0.184**	**0.078**	**0.428**	**0.157**	**-0.109**	**-0.454**
	t-stat	-2.759	-2.630	-1.445	-0.695	0.284	1.514	0.559	-0.366	-1.335
	Pseudo R2	**0.369**	**0.341**	**0.156**	**0.032**	**0.013**	**0.076**	**0.071**	**0.183**	**0.312**
IRELAND	***Full Sample***									
	Domestic	**-0.132**	**-0.119**	**-0.118**	**-0.151**	**-0.155**	**-0.050**	**-0.033**	**-0.029**	**-0.016**
	t-stat	-1.836	-1.678	-1.632	-2.019	-2.197	-0.975	-0.651	-0.589	-0.336
	German	**-0.149**	**-0.224**	**-0.290**	**-0.306**	**-0.258**	**-0.256**	**-0.209**	**-0.116**	**-0.048**
	t-stat	-0.995	-1.436	-1.783	-1.866	-1.647	-1.907	-1.597	-0.883	-0.359
	US	**-0.025**	**-0.110**	**-0.288**	**-0.519**	**-0.523**	**-0.398**	**-0.331**	**-0.258**	**-0.180**
	t-stat	-0.238	-0.996	-2.370	-3.893	-3.209	-2.678	-2.514	-2.397	-1.765
	Pseudo R2	**0.124**	**0.158**	**0.232**	**0.354**	**0.347**	**0.213**	**0.149**	**0.084**	**0.038**
	1980:1989									
	Domestic	**-0.379**	**-0.396**	**0.016**	**0.210**	**0.507**	**0.659**	**0.534**	**0.366**	**0.201**
	t-stat	-2.636	-2.864	0.109	1.428	2.641	3.721	2.547	1.963	1.210
	German	**-1.134**	**-1.936**	**-1.435**	**-0.910**	**-0.737**	**-0.582**	**-0.307**	**0.104**	**0.329**
	t-stat	-4.150	-4.718	-3.516	-3.331	-2.972	-2.326	-1.147	0.348	1.028
	US	**0.349**	**0.619**	**0.290**	**-0.033**	**-0.009**	**0.012**	**-0.168**	**-0.367**	**-0.288**
	t-stat	1.777	2.140	1.379	-0.215	-0.054	0.078	-1.298	-2.392	-1.906
	Pseudo R2	**0.448**	**0.634**	**0.508**	**0.349**	**0.323**	**0.328**	**0.287**	**0.251**	**0.148**
	1992:1998									
	Domestic	**0.493**	**0.919**	**0.666**	**-0.818**	**-0.832**	**-1.132**	**-1.843**	**-3.828**	**-1.141**
	t-stat	1.443	2.647	1.884	-2.153	-1.890	-2.512	-2.967	-3.871	-2.448
	German	**-1.700**	**-2.580**	**-2.607**	**-1.315**	**0.945**	**2.120**	**4.029**	**8.507**	**2.648**
	t-stat	-2.605	-3.723	-4.010	-1.754	1.312	2.474	3.049	4.992	3.480
	US	**-0.800**	**-1.693**	**-2.411**	**-2.844**	**-0.842**	**0.454**	**2.107**	**5.446**	**1.795**
	t-stat	-2.021	-3.515	-5.216	-4.688	-1.572	0.983	2.889	4.938	3.146
	Pseudo R2	**0.341**	**0.511**	**0.608**	**0.656**	**0.426**	**0.373**	**0.558**	**0.800**	**0.454**

Table 5 (Continued)

Parameters and pseudo-R2 of the model with Domestic, German and US Spreads

Newey-West-corrected GMM t-stats included

		FORECASTING HORIZON								
		1Month	**1 Q**	**2 Q**	**3 Q**	**4 Q**	**5 Q**	**6 Q**	**7 Q**	**8 Q**
ITALY	***Full Sample***									
	Domestic	**-0.026**	**-0.050**	**-0.084**	**-0.123**	**-0.152**	**-0.086**	**-0.011**	**0.023**	**0.028**
	t-stat	-0.300	-0.614	-1.088	-1.657	-1.937	-1.142	-0.153	0.339	0.386
	German	**-0.168**	**-0.179**	**-0.240**	**-0.289**	**-0.281**	**-0.232**	**-0.176**	**-0.089**	**-0.014**
	t-stat	-1.439	-1.505	-1.986	-2.422	-2.449	-2.160	-1.653	-0.833	-0.126
	US	**0.189**	**0.134**	**0.025**	**-0.077**	**-0.126**	**-0.153**	**-0.122**	**-0.047**	**0.004**
	t-stat	1.837	1.278	0.234	-0.721	-1.133	-1.314	-1.071	-0.433	0.045
	Pseudo R2	**0.070**	**0.060**	**0.072**	**0.103**	**0.114**	**0.078**	**0.043**	**0.011**	**0.002**
	1980:1989									
	Domestic	**0.165**	**0.090**	**0.073**	**0.003**	**-0.160**	**-0.073**	**0.098**	**0.297**	**0.556**
	t-stat	0.833	0.431	0.353	0.010	-0.480	-0.223	0.291	1.002	1.988
	German	**-0.279**	**-0.472**	**-0.632**	**-0.717**	**-0.694**	**-0.363**	**-0.082**	**0.186**	**0.541**
	t-stat	-0.992	-1.742	-1.668	-1.861	-1.848	-1.063	-0.261	0.562	1.481
	US	**0.347**	**0.382**	**0.422**	**0.423**	**0.277**	**0.063**	**-0.055**	**-0.098**	**-0.178**
	t-stat	1.994	1.828	1.862	2.323	1.607	0.367	-0.338	-0.593	-1.358
	Pseudo R2	**0.138**	**0.164**	**0.217**	**0.228**	**0.151**	**0.047**	**0.026**	**0.040**	**0.118**
	1990:1998									
	Domestic	**-0.877**	**-0.452**	**0.001**	**-0.107**	**-0.461**	**-0.158**	**0.057**	**-0.104**	**-0.225**
	t-stat	-2.320	-1.906	0.005	-0.394	-1.788	-0.720	0.248	-0.427	-0.898
	German	**-0.650**	**-0.652**	**-0.958**	**-0.861**	**-0.109**	**0.124**	**0.242**	**0.511**	**0.543**
	t-stat	-1.344	-1.581	-2.584	-2.361	-0.253	0.342	0.661	1.404	1.426
	US	**-0.423**	**-0.510**	**-0.719**	**-0.815**	**-0.354**	**-0.084**	**-0.003**	**-0.005**	**-0.184**
	t-stat	-1.311	-1.868	-2.727	-2.603	-0.950	-0.271	-0.011	-0.015	-0.546
	Pseudo R2	**0.444**	**0.327**	**0.261**	**0.266**	**0.172**	**0.023**	**0.049**	**0.119**	**0.188**
SPAIN	***Full Sample***									
	Domestic	**0.077**	**0.054**	**0.032**	**-0.040**	**-0.120**	**-0.253**	**-0.401**	**-0.741**	**-0.653**
	t-stat	0.725	0.465	0.276	-0.367	-1.137	-2.203	-2.911	-4.210	-4.496
	German	**-0.388**	**-0.351**	**-0.280**	**-0.130**	**0.048**	**0.240**	**0.349**	**0.559**	**0.423**
	t-stat	-2.282	-2.013	-1.584	-0.765	0.284	1.331	1.730	2.446	2.124
	US	**-0.111**	**-0.151**	**-0.220**	**-0.195**	**-0.187**	**-0.159**	**-0.036**	**0.068**	**0.035**
	t-stat	-0.933	-1.283	-1.949	-1.726	-1.707	-1.406	-0.304	0.567	0.280
	Pseudo R2	**0.089**	**0.084**	**0.085**	**0.058**	**0.067**	**0.115**	**0.157**	**0.266**	**0.241**
	1980:1989									
	Domestic	**-0.002**	**-0.053**	**-0.097**	**-0.153**	**-0.197**	**-0.317**	**-0.474**	**-1.344**	**-1.248**
	t-stat	-0.014	-0.453	-0.849	-1.395	-1.725	-2.278	-2.962	-3.970	-3.917
	German	**-0.810**	**-0.815**	**-0.731**	**-0.520**	**-0.170**	**0.115**	**0.081**	**0.414**	**0.328**
	t-stat	-2.812	-2.460	-2.119	-1.721	-0.612	0.408	0.308	1.631	1.369
	US	**0.187**	**0.173**	**0.074**	**0.019**	**-0.111**	**-0.156**	**0.057**	**0.341**	**0.269**
	t-stat	1.089	0.945	0.480	0.147	-0.829	-1.159	0.420	2.146	1.573
	Pseudo R2	**0.230**	**0.238**	**0.225**	**0.186**	**0.169**	**0.249**	**0.325**	**0.676**	**0.668**
	1990:1998									
	Domestic	**0.200**	**0.584**	**1.062**	**0.708**	**0.633**	**0.284**	**-0.134**	**-0.067**	**0.157**
	t-stat	0.544	1.553	2.447	1.644	1.494	0.756	-0.325	-0.174	0.486
	German	**-0.568**	**-0.770**	**-0.924**	**-0.401**	**-0.206**	**0.104**	**0.435**	**0.400**	**0.156**
	t-stat	-1.419	-1.934	-2.150	-0.942	-0.471	0.261	1.041	1.012	0.463
	US	**-0.597**	**-0.703**	**-0.651**	**-0.326**	**-0.132**	**-0.019**	**0.069**	**0.144**	**0.104**
	t-stat	-2.727	-3.291	-2.659	-1.354	-0.552	-0.085	0.329	0.694	0.495
	Pseudo R2	**0.159**	**0.196**	**0.232**	**0.124**	**0.088**	**0.053**	**0.053**	**0.050**	**0.030**

		FORECASTING HORIZON								
		1Month	**1 Q**	**2 Q**	**3 Q**	**4 Q**	**5 Q**	**6 Q**	**7 Q**	**8 Q**
NETHERLANDS	***Full Sample***									
	Domestic	**-0.160**	**-0.195**	**-0.126**	**-0.040**	**0.037**	**0.155**	**0.271**	**0.310**	**0.266**
	t-stat	-1.415	-1.603	-1.140	-0.393	0.355	1.414	2.310	2.666	2.350
	German	**-0.028**	**-0.020**	**-0.112**	**-0.224**	**-0.306**	**-0.420**	**-0.450**	**-0.405**	**-0.294**
	t-stat	-0.176	-0.125	-0.746	-1.561	-2.006	-2.544	-2.561	-2.381	-1.781
	US	**-0.052**	**-0.121**	**-0.233**	**-0.256**	**-0.271**	**-0.324**	**-0.263**	**-0.159**	**-0.088**
	t-stat	-0.482	-1.090	-1.920	-2.124	-2.279	-2.782	-2.407	-1.400	-0.775
	Pseudo R2	**0.060**	**0.092**	**0.111**	**0.112**	**0.115**	**0.142**	**0.127**	**0.099**	**0.064**
	1980:1989									
	Domestic	**-0.293**	**-0.444**	**-0.428**	**-0.417**	**-0.254**	**0.029**	**0.193**	**0.240**	**0.240**
	t-stat	-1.175	-1.629	-1.579	-1.495	-0.925	0.110	0.713	0.968	0.943
	German	**-0.784**	**-0.810**	**-0.745**	**-0.613**	**-0.346**	**-0.123**	**0.055**	**0.066**	**-0.050**
	t-stat	-2.534	-2.622	-2.353	-1.783	-1.057	-0.390	0.170	0.221	-0.170
	US	**0.209**	**0.205**	**0.088**	**0.007**	**-0.172**	**-0.389**	**-0.385**	**-0.223**	**-0.068**
	t-stat	1.121	1.114	0.481	0.041	-1.195	-2.658	-2.732	-1.457	-0.476
	Pseudo R2	**0.307**	**0.371**	**0.366**	**0.335**	**0.244**	**0.179**	**0.121**	**0.064**	**0.035**
	1990:1998									
	Domestic	**0.546**	**-0.003**	**-0.568**	**-1.016**	**-2.860**	**-2.016**	**-1.605**	**-1.025**	**-0.542**
	t-stat	1.092	-0.005	-0.882	-1.406	-5.050	-3.300	-2.424	-1.996	-1.104
	German	**-1.354**	**-0.381**	**0.639**	**1.435**	**4.345**	**3.225**	**2.713**	**1.848**	**0.986**
	t-stat	-1.638	-0.408	0.629	1.278	4.913	3.278	2.399	2.042	1.099
	US	**-0.009**	**-0.077**	**-0.107**	**-0.170**	**-0.504**	**-0.236**	**-0.111**	**-0.003**	**-0.089**
	t-stat	-0.031	-0.247	-0.333	-0.547	-1.620	-0.745	-0.351	-0.011	-0.292
	Pseudo R2	**0.108**	**0.059**	**0.067**	**0.122**	**0.352**	**0.235**	**0.177**	**0.094**	**0.041**
SWEDEN	***Full Sample***									
	Domestic	**-0.285**	**-0.368**	**-0.312**	**-0.139**	**-0.007**	**0.074**	**0.151**	**0.242**	**0.230**
	t-stat	-3.615	-3.995	-3.315	-1.679	-0.089	0.965	1.856	2.758	2.727
	German	**-0.145**	**-0.098**	**-0.119**	**-0.173**	**-0.197**	**-0.197**	**-0.163**	**-0.160**	**-0.084**
	t-stat	-1.176	-0.755	-0.975	-1.508	-1.727	-1.637	-1.226	-1.112	-0.603
	US	**-0.061**	**-0.210**	**-0.342**	**-0.351**	**-0.403**	**-0.423**	**-0.355**	**-0.289**	**-0.233**
	t-stat	-0.609	-1.831	-2.713	-3.028	-3.496	-3.687	-3.227	-2.633	-2.162
	Pseudo R2	**0.200**	**0.268**	**0.256**	**0.165**	**0.162**	**0.179**	**0.166**	**0.183**	**0.155**
	1980:1989									
	Domestic	**-0.262**	**-0.213**	**-0.243**	**-0.154**	**-0.070**	**-0.216**	**-0.357**	**-0.150**	**0.057**
	t-stat	-1.845	-1.469	-1.511	-1.182	-0.662	-1.759	-2.188	-1.410	0.465
	German	**-1.174**	**-1.164**	**-1.039**	**-0.893**	**-0.559**	**-0.182**	**0.169**	**0.260**	**0.152**
	t-stat	-3.853	-4.146	-3.398	-2.854	-2.112	-0.744	0.554	0.852	0.517
	US	**0.147**	**0.081**	**-0.053**	**-0.084**	**-0.202**	**-0.329**	**-0.363**	**-0.263**	**-0.139**
	t-stat	0.864	0.463	-0.284	-0.496	-1.362	-2.242	-2.472	-1.779	-1.032
	Pseudo R2	**0.478**	**0.477**	**0.465**	**0.387**	**0.268**	**0.231**	**0.222**	**0.094**	**0.024**
	1990:1998									
	Domestic	**-0.539**	**-1.480**	**-1.751**	**-0.207**	**0.021**	**0.216**	**0.476**	**0.446**	**0.347**
	t-stat	-2.137	-4.043	-4.550	-1.168	0.120	1.002	1.818	1.760	1.589
	German	**0.117**	**1.120**	**1.852**	**0.032**	**0.041**	**-0.031**	**-0.269**	**-0.258**	**-0.352**
	t-stat	0.282	1.962	2.924	0.076	0.092	-0.060	-0.499	-0.514	-0.753
	US	**-0.403**	**-0.909**	**-1.198**	**-0.581**	**-0.314**	**-0.167**	**-0.076**	**-0.063**	**-0.263**
	t-stat	-2.028	-3.802	-3.769	-2.531	-1.422	-0.692	-0.301	-0.253	-1.021
	Pseudo R2	**0.287**	**0.579**	**0.610**	**0.184**	**0.084**	**0.118**	**0.213**	**0.194**	**0.145**

Table 5 (Continued)

Parameters and pseudo-R2 of the model with Domestic, German and US Spreads

Newey-West-corrected GMM t-stats included

		FORECASTING HORIZON								
		1Month	**1 Q**	**2 Q**	**3 Q**	**4 Q**	**5 Q**	**6 Q**	**7 Q**	**8 Q**
UK	***Full Sample***									
	Domestic	**-0.175**	**-0.189**	**-0.206**	**-0.195**	**-0.155**	**-0.107**	**-0.048**	**-0.017**	**0.012**
	t-stat	-2.462	-2.517	-2.704	-2.687	-2.175	-1.557	-0.691	-0.239	0.162
	German	**0.064**	**0.090**	**0.154**	**0.174**	**0.185**	**0.175**	**0.139**	**0.113**	**0.074**
	t-stat	0.519	0.702	1.235	1.492	1.558	1.411	1.080	0.866	0.581
	US	**-0.276**	**-0.339**	**-0.339**	**-0.301**	**-0.331**	**-0.255**	**-0.144**	**-0.079**	**0.023**
	t-stat	-2.651	-3.081	-2.713	-2.394	-2.675	-2.316	-1.385	-0.730	0.212
	Pseudo R2	**0.164**	**0.206**	**0.221**	**0.194**	**0.185**	**0.117**	**0.044**	**0.020**	**0.008**
	1980:1989									
	Domestic	**-0.430**	**-0.457**	**-0.413**	**-0.214**	**0.098**	**0.482**	**1.647**	**0.459**	**0.093**
	t-stat	-2.945	-3.096	-2.881	-1.486	0.608	2.345	3.797	2.295	0.508
	German	**-0.553**	**-0.456**	**-0.330**	**-0.128**	**0.300**	**0.652**	**1.379**	**0.675**	**0.230**
	t-stat	-1.811	-1.660	-1.360	-0.518	1.162	2.492	2.957	2.257	0.842
	US	**0.072**	**0.039**	**0.109**	**0.116**	**-0.129**	**-0.197**	**-0.124**	**-0.115**	**0.071**
	t-stat	0.391	0.248	0.926	0.778	-0.853	-1.270	-0.570	-0.665	0.570
	Pseudo R2	**0.320**	**0.303**	**0.212**	**0.058**	**0.044**	**0.252**	**0.639**	**0.240**	**0.053**
	1990:1998									
	Domestic	**-0.341**	**-0.275**	**-0.206**	**-0.184**	**-0.104**	**-0.030**	**0.179**	**0.456**	**0.709**
	t-stat	-1.837	-1.508	-1.197	-1.173	-0.646	-0.161	0.965	2.476	3.032
	German	**0.772**	**0.828**	**1.043**	**1.244**	**1.311**	**1.631**	**1.263**	**0.338**	**-0.434**
	t-stat	2.064	2.085	2.392	3.005	3.481	3.792	2.856	0.893	-1.031
	US	**0.032**	**-0.042**	**-0.057**	**0.023**	**0.041**	**0.230**	**0.081**	**-0.485**	**-0.887**
	t-stat	0.134	-0.157	-0.190	0.074	0.127	0.593	0.219	-1.368	-2.365
	Pseudo R2	**0.239**	**0.267**	**0.339**	**0.388**	**0.412**	**0.472**	**0.444**	**0.415**	**0.456**

		FORECASTING HORIZON								
		1Month	**1 Q**	**2 Q**	**3 Q**	**4 Q**	**5 Q**	**6 Q**	**7 Q**	**8 Q**
US	***Full Sample***									
	Domestic	**-0.294**	**-0.358**	**-0.315**	**-0.228**	**-0.123**	**-0.047**	**0.009**	**0.080**	**0.132**
	t-stat	-2.337	-2.746	-2.669	-2.028	-1.123	-0.439	0.092	0.791	1.218
	German	**-0.323**	**-0.328**	**-0.299**	**-0.217**	**-0.170**	**-0.117**	**-0.042**	**-0.001**	**0.021**
	t-stat	-2.542	-2.670	-2.702	-2.133	-1.663	-1.103	-0.380	-0.013	0.188
	US	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**
	t-stat	--	--	--	--	--	--	--	--	--
	Pseudo R2	**0.162**	**0.192**	**0.161**	**0.091**	**0.041**	**0.015**	**0.002**	**0.007**	**0.018**
	1980:1989									
	Domestic	**0.280**	**0.108**	**0.082**	**-0.008**	**-0.018**	**-0.054**	**-0.217**	**-0.164**	**0.010**
	t-stat	1.524	0.608	0.548	-0.047	-0.112	-0.315	-1.537	-1.174	0.069
	German	**-0.960**	**-0.685**	**-0.526**	**-0.194**	**-0.060**	**0.082**	**0.457**	**0.542**	**0.418**
	t-stat	-3.015	-2.189	-1.868	-0.738	-0.246	0.316	1.603	1.924	1.563
	US	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**
	t-stat	--	--	--	--	--	--	--	--	--
	Pseudo R2	**0.279**	**0.182**	**0.116**	**0.022**	**0.003**	**0.004**	**0.094**	**0.117**	**0.093**
	1990:1998									
	Domestic	**-0.609**	**-0.496**	**-0.248**	**-0.050**	**0.130**	**0.296**	**0.206**	**-0.013**	**-0.300**
	t-stat	-2.939	-2.311	-1.158	-0.235	0.568	1.219	0.891	-0.053	-1.225
	German	**-0.746**	**-0.600**	**-0.321**	**-0.078**	**0.150**	**0.283**	**0.198**	**0.037**	**-0.221**
	t-stat	-2.648	-2.010	-1.124	-0.280	0.530	0.995	0.724	0.128	-0.716
	US	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**
	t-stat	--	--	--	--	--	--	--	--	--
	Pseudo R2	**0.228**	**0.166**	**0.054**	**0.003**	**0.014**	**0.053**	**0.023**	**0.001**	**0.042**

Table 6

Pseudo-R2 of the Modelsl with alternative variables:
All Models contain the domestic spread; Results of the R^2 for the Model with the domestic spread
only are included for comparision purposes

		FORECASTING HORIZON								
		1Month	**1 Q**	**2 Q**	**3 Q**	**4 Q**	**5 Q**	**6 Q**	**7 Q**	**8 Q**
BELGIUM	***1980:1989***									
	Change - Long rate	**0.145**	**0.209**	**0.158**	**0.172**	**0.197**	**0.198**	**0.059**	**0.038**	**0.059**
	Change - Short rate	**0.221**	**0.217**	**0.160**	**0.147**	**0.224**	**0.178**	**0.059**	**0.008**	**0.024**
	Money Growth	**0.149**	**0.213**	**0.136**	**0.147**	**0.204**	**0.178**	**0.059**	**0.010**	**0.018**
	Real Exchange Rate	**0.149**	**0.208**	**0.133**	**0.147**	**0.215**	**0.208**	**0.059**	**0.004**	**0.019**
	Stock Returns	**0.140**	**0.207**	**0.139**	**0.155**	**0.194**	**0.180**	**0.069**	**0.011**	**0.032**
	Discount Rate	**0.154**	**0.207**	**0.134**	**0.151**	**0.209**	**0.177**	**0.059**	**0.021**	**0.023**
	1990:1998									
	Change - Long rate	**0.108**	**0.249**	**0.304**	**0.119**	**0.092**	**0.064**	**0.090**	**0.059**	**0.076**
	Change - Short rate	**0.116**	**0.253**	**0.239**	**0.154**	**0.085**	**0.051**	**0.063**	**0.048**	**0.096**
	Money Growth	**0.115**	**0.210**	**0.287**	**0.243**	**0.154**	**0.067**	**0.061**	**0.067**	**0.069**
	Real Exchange Rate	**0.123**	**0.216**	**0.319**	**0.235**	**0.107**	**0.054**	**0.066**	**0.062**	**0.087**
	Stock Returns	**0.106**	**0.216**	**0.268**	**0.189**	**0.080**	**0.043**	**0.064**	**0.048**	**0.069**
	Discount Rate	**0.152**	**0.213**	**0.250**	**0.128**	**0.080**	**0.049**	**0.066**	**0.050**	**0.079**
	1980:1989									
GERMANY	Change - Long rate	**0.154**	**0.141**	**0.155**	**0.148**	**0.129**	**0.118**	**0.063**	**0.038**	**0.004**
	Change - Short rate	**0.189**	**0.151**	**0.189**	**0.148**	**0.131**	**0.106**	**0.087**	**0.040**	**0.004**
	Money Growth	**0.140**	**0.140**	**0.152**	**0.147**	**0.131**	**0.093**	**0.059**	**0.028**	**0.010**
	Real Exchange Rate	**0.150**	**0.203**	**0.219**	**0.196**	**0.136**	**0.113**	**0.119**	**0.159**	**0.151**
	Stock Returns	**0.130**	**0.136**	**0.167**	**0.193**	**0.146**	**0.120**	**0.063**	**0.033**	**0.006**
	Discount Rate	**0.132**	**0.138**	**0.151**	**0.151**	**0.119**	**0.092**	**0.090**	**0.146**	**0.134**
	1990:1998									
	Change - Long rate	**0.111**	**0.135**	**0.065**	**0.107**	**0.248**	**0.124**	**0.016**	**0.034**	**0.121**
	Change - Short rate	**0.130**	**0.073**	**0.045**	**0.116**	**0.336**	**0.164**	**0.024**	**0.036**	**0.122**
	Money Growth	**0.069**	**0.071**	**0.137**	**0.145**	**0.233**	**0.105**	**0.020**	**0.084**	**0.122**
	Real Exchange Rate	**0.058**	**0.070**	**0.107**	**0.188**	**0.192**	**0.122**	**0.018**	**0.056**	**0.174**
	Stock Returns	**0.054**	**0.038**	**0.041**	**0.110**	**0.189**	**0.122**	**0.019**	**0.035**	**0.113**
	Discount Rate	**0.058**	**0.033**	**0.050**	**0.144**	**0.251**	**0.131**	**0.021**	**0.034**	**0.135**
ITALY	***1980:1989***									
	Change - Long rate	**0.184**	**0.214**	**0.263**	**0.246**	**0.153**	**0.047**	**0.026**	**0.040**	**0.127**
	Change - Short rate	**0.170**	**0.189**	**0.232**	**0.242**	**0.153**	**0.047**	**0.034**	**0.049**	**0.134**
	Money Growth	**0.148**	**0.174**	**0.218**	**0.229**	**0.152**	**0.051**	**0.028**	**0.058**	**0.204**
	Real Exchange Rate	**0.152**	**0.195**	**0.222**	**0.229**	**0.190**	**0.102**	**0.102**	**0.061**	**0.129**
	Stock Returns	**0.168**	**0.196**	**0.223**	**0.231**	**0.151**	**0.047**	**0.033**	**0.065**	**0.167**
	Discount Rate	**0.179**	**0.191**	**0.262**	**0.279**	**0.154**	**0.052**	**0.039**	**0.059**	**0.144**
	1990:1998									
	Change - Long rate	**0.452**	**0.338**	**0.276**	**0.269**	**0.190**	**0.034**	**0.067**	**0.173**	**0.203**
	Change - Short rate	**0.497**	**0.346**	**0.272**	**0.271**	**0.194**	**0.113**	**0.084**	**0.132**	**0.188**
	Money Growth	**0.444**	**0.330**	**0.265**	**0.280**	**0.172**	**0.032**	**0.073**	**0.125**	**0.232**
	Real Exchange Rate	**0.447**	**0.330**	**0.275**	**0.266**	**0.174**	**0.024**	**0.049**	**0.119**	**0.215**
	Stock Returns	**0.449**	**0.356**	**0.262**	**0.273**	**0.172**	**0.064**	**0.069**	**0.124**	**0.188**
	Discount Rate	**0.454**	**0.328**	**0.262**	**0.285**	**0.212**	**0.127**	**0.059**	**0.119**	**0.193**

		FORECASTING HORIZON								
		1Month	**1 Q**	**2 Q**	**3 Q**	**4 Q**	**5 Q**	**6 Q**	**7 Q**	**8 Q**
FRANCE	***1980:1989***									
	Change - Long rate	**0.097**	**0.090**	**0.188**	**0.176**	**0.047**	**0.017**	**0.026**	**0.100**	**0.129**
	Change - Short rate	**0.101**	**0.093**	**0.240**	**0.176**	**0.046**	**0.018**	**0.026**	**0.110**	**0.149**
	Money Growth	**0.093**	**0.080**	**0.165**	**0.168**	**0.035**	**0.018**	**0.031**	**0.102**	**0.131**
	Real Exchange Rate	**0.111**	**0.101**	**0.198**	**0.192**	**0.045**	**0.030**	**0.029**	**0.103**	**0.135**
	Stock Returns	**0.094**	**0.075**	**0.165**	**0.175**	**0.057**	**0.030**	**0.058**	**0.107**	**0.136**
	Discount Rate	--	--	--	--	--	--	--	--	--
	1990:1998									
	Change - Long rate	**0.370**	**0.347**	**0.171**	**0.038**	**0.032**	**0.088**	**0.081**	**0.184**	**0.365**
	Change - Short rate	**0.377**	**0.341**	**0.191**	**0.046**	**0.027**	**0.118**	**0.118**	**0.258**	**0.313**
	Money Growth	**0.369**	**0.353**	**0.172**	**0.052**	**0.031**	**0.106**	**0.079**	**0.184**	**0.320**
	Real Exchange Rate	**0.369**	**0.375**	**0.201**	**0.079**	**0.020**	**0.077**	**0.072**	**0.184**	**0.317**
	Stock Returns	**0.369**	**0.358**	**0.160**	**0.033**	**0.013**	**0.076**	**0.073**	**0.184**	**0.332**
	Discount Rate	--	--	--	--	--	--	--	--	--
	1980:1989									
IRELAND	Change - Long rate	**0.454**	**0.635**	**0.511**	**0.350**	**0.324**	**0.330**	**0.296**	**0.265**	**0.168**
	Change - Short rate	**0.466**	**0.636**	**0.514**	**0.367**	**0.359**	**0.351**	**0.297**	**0.252**	**0.161**
	Money Growth	**0.448**	**0.632**	**0.503**	**0.342**	**0.332**	**0.332**	**0.295**	**0.247**	**0.155**
	Real Exchange Rate	**0.450**	**0.652**	**0.508**	**0.349**	**0.325**	**0.328**	**0.291**	**0.255**	**0.189**
	Stock Returns	**0.452**	**0.634**	**0.508**	**0.354**	**0.355**	**0.328**	**0.287**	**0.267**	**0.149**
	Discount Rate	**0.457**	**0.637**	**0.524**	**0.385**	**0.377**	**0.339**	**0.288**	**0.260**	**0.186**
	1992:1998									
	Change - Long rate	**0.345**	**0.535**	**0.618**	**0.672**	**0.440**	**0.383**	**0.558**	**0.806**	**0.534**
	Change - Short rate	**0.343**	**0.530**	**0.777**	**0.783**	**0.427**	**0.393**	**0.570**	**0.803**	**0.469**
	Money Growth	**0.341**	**0.516**	**0.644**	**0.671**	**0.447**	**0.379**	**0.560**	**0.800**	**0.456**
	Real Exchange Rate	**0.355**	**0.514**	**0.625**	**0.661**	**0.469**	**0.421**	**0.592**	**0.818**	**0.481**
	Stock Returns	**0.342**	**0.513**	**0.615**	**0.656**	**0.431**	**0.373**	**0.563**	**0.800**	**0.458**
	Discount Rate	**0.378**	**0.574**	**0.722**	**0.814**	**0.479**	--	--	--	--
NETHERLANDS	***1980:1989***									
	Change - Long rate	**0.311**	**0.371**	**0.370**	**0.336**	**0.248**	**0.184**	**0.123**	**0.093**	**0.038**
	Change - Short rate	**0.352**	**0.377**	**0.366**	**0.335**	**0.264**	**0.218**	**0.126**	**0.064**	**0.043**
	Money Growth	**0.312**	**0.375**	**0.370**	**0.337**	**0.249**	**0.188**	**0.141**	**0.080**	**0.050**
	Real Exchange Rate	**0.310**	**0.376**	**0.369**	**0.335**	**0.269**	**0.210**	**0.127**	**0.088**	**0.055**
	Stock Returns	**0.309**	**0.371**	**0.367**	**0.335**	**0.248**	**0.184**	**0.122**	**0.066**	**0.077**
	Discount Rate	**0.347**	**0.371**	**0.367**	**0.342**	**0.262**	**0.199**	**0.155**	**0.080**	**0.035**
	1990:1998									
	Change - Long rate	**0.197**	**0.174**	**0.134**	**0.237**	**0.361**	**0.267**	**0.213**	**0.133**	**0.171**
	Change - Short rate	**0.124**	**0.079**	**0.075**	**0.125**	**0.353**	**0.240**	**0.185**	**0.149**	**0.080**
	Money Growth	**0.109**	**0.061**	**0.068**	**0.137**	**0.354**	**0.235**	**0.177**	**0.104**	**0.041**
	Real Exchange Rate	**0.111**	**0.079**	**0.072**	**0.133**	**0.357**	**0.236**	**0.193**	**0.098**	**0.062**
	Stock Returns	**0.111**	**0.061**	**0.074**	**0.122**	**0.387**	**0.242**	**0.180**	**0.096**	**0.043**
	Discount Rate	**0.121**	**0.070**	**0.068**	**0.129**	**0.361**	**0.262**	**0.231**	**0.156**	**0.045**

Table 6 (Continued)

Pseudo-R2 of the Modelsl with alternative variables:
All Models contain the domestic spread; Results of the R^2 for the Model with the domestic spread
only are included for comparision purposes

		FORECASTING HORIZON								
		1Month	**1 Q**	**2 Q**	**3 Q**	**4 Q**	**5 Q**	**6 Q**	**7 Q**	**8 Q**
SPAIN	***1980:1989***									
	Change - Long rate	**0.240**	**0.256**	**0.226**	**0.187**	**0.180**	**0.249**	**0.329**	**0.729**	**0.724**
	Change - Short rate	**0.271**	**0.245**	**0.230**	**0.199**	**0.207**	**0.271**	**0.398**	**0.723**	**0.698**
	Money Growth	**0.232**	**0.242**	**0.228**	**0.187**	**0.175**	**0.253**	**0.325**	**0.680**	**0.671**
	Real Exchange Rate	**0.231**	**0.241**	**0.243**	**0.209**	**0.178**	**0.256**	**0.342**	**0.679**	**0.669**
	Stock Returns	**0.234**	**0.251**	**0.234**	**0.186**	**0.169**	**0.250**	**0.347**	**0.682**	**0.668**
	Discount Rate	**0.234**	**0.250**	**0.254**	**0.206**	**0.186**	**0.270**	**0.352**	**0.707**	**0.653**
	1990:1998									
	Change - Long rate	**0.169**	**0.223**	**0.307**	**0.172**	**0.108**	**0.059**	**0.056**	**0.050**	**0.061**
	Change - Short rate	**0.206**	**0.310**	**0.376**	**0.213**	**0.116**	**0.053**	**0.053**	**0.051**	**0.061**
	Money Growth	**0.161**	**0.196**	**0.239**	**0.126**	**0.088**	**0.061**	**0.059**	**0.056**	**0.030**
	Real Exchange Rate	**0.167**	**0.205**	**0.252**	**0.168**	**0.121**	**0.057**	**0.054**	**0.086**	**0.034**
	Stock Returns	**0.167**	**0.220**	**0.264**	**0.138**	**0.089**	**0.066**	**0.055**	**0.050**	**0.032**
	Discount Rate	**0.221**	**0.336**	**0.345**	**0.261**	**0.118**	**0.062**	**0.053**	**0.077**	**0.123**
UK	***1980:1989***									
	Change - Long rate	**0.320**	**0.304**	**0.213**	**0.065**	**0.045**	**0.260**	**0.643**	**0.316**	**0.107**
	Change - Short rate	**0.324**	**0.306**	**0.213**	**0.105**	**0.076**	**0.347**	**0.640**	**0.318**	**0.107**
	Money Growth	**0.623**	**0.406**	**0.122**	**0.030**	**0.204**	**0.375**	**0.741**	**0.342**	**0.328**
	Real Exchange Rate	**0.329**	**0.317**	**0.223**	**0.061**	**0.051**	**0.252**	**0.640**	**0.309**	**0.119**
	Stock Returns	**0.320**	**0.303**	**0.215**	**0.058**	**0.071**	**0.254**	**0.640**	**0.240**	**0.053**
	Discount Rate	**0.320**	**0.304**	**0.212**	**0.070**	**0.049**	**0.287**	**0.645**	**0.242**	**0.054**
	1990:1998									
	Change - Long rate	**0.252**	**0.276**	**0.341**	**0.412**	**0.420**	**0.473**	**0.478**	**0.465**	**0.502**
	Change - Short rate	**0.256**	**0.272**	**0.340**	**0.388**	**0.412**	**0.486**	**0.459**	**0.424**	**0.465**
	Money Growth	**0.240**	**0.268**	**0.340**	**0.389**	**0.415**	**0.476**	**0.451**	**0.416**	**0.495**
	Real Exchange Rate	**0.241**	**0.267**	**0.339**	**0.388**	**0.417**	**0.479**	**0.473**	**0.442**	**0.458**
	Stock Returns	**0.241**	**0.267**	**0.339**	**0.390**	**0.412**	**0.475**	**0.450**	**0.416**	**0.460**
	Discount Rate	**0.239**	**0.267**	**0.342**	**0.388**	**0.412**	**0.474**	**0.446**	**0.415**	**0.456**

		FORECASTING HORIZON								
		1Month	**1 Q**	**2 Q**	**3 Q**	**4 Q**	**5 Q**	**6 Q**	**7 Q**	**8 Q**
SWEDEN	***1980:1989***									
	Change - Long rate	**0.491**	**0.477**	**0.477**	**0.392**	**0.293**	**0.244**	**0.242**	**0.110**	**0.025**
	Change - Short rate	**0.481**	**0.481**	**0.465**	**0.401**	**0.268**	**0.232**	**0.244**	**0.159**	**0.030**
	Money Growth	**0.485**	**0.488**	**0.466**	**0.387**	**0.275**	**0.231**	**0.222**	**0.096**	**0.026**
	Real Exchange Rate	**0.480**	**0.490**	**0.477**	**0.403**	**0.274**	**0.279**	**0.263**	**0.151**	**0.103**
	Stock Returns	**0.494**	**0.482**	**0.501**	**0.430**	**0.283**	**0.252**	**0.245**	**0.105**	**0.027**
	Discount Rate	**0.488**	**0.480**	**0.465**	**0.419**	**0.285**	**0.257**	**0.242**	**0.121**	**0.024**
	1990:1998									
	Change - Long rate	**0.303**	**0.579**	**0.611**	**0.196**	**0.088**	**0.146**	**0.240**	**0.211**	**0.169**
	Change - Short rate	**0.433**	**0.619**	**0.623**	**0.184**	**0.104**	**0.166**	**0.242**	**0.197**	**0.145**
	Money Growth	**0.287**	**0.579**	**0.619**	**0.204**	**0.093**	**0.125**	**0.219**	**0.197**	**0.147**
	Real Exchange Rate	**0.300**	**0.633**	**0.611**	**0.198**	**0.090**	**0.127**	**0.230**	**0.221**	**0.154**
	Stock Returns	**0.288**	**0.610**	**0.650**	**0.198**	**0.099**	**0.123**	**0.219**	**0.194**	**0.145**
	Discount Rate	**0.294**	**0.580**	**0.625**	**0.211**	**0.123**	**0.145**	**0.220**	**0.198**	**0.145**
US	***1980:1989***									
	Change - Long rate	**0.383**	**0.195**	**0.117**	**0.024**	**0.025**	**0.020**	**0.118**	**0.126**	**0.110**
	Change - Short rate	**0.311**	**0.182**	**0.120**	**0.034**	**0.019**	**0.007**	**0.096**	**0.118**	**0.098**
	Money Growth	**0.334**	**0.221**	**0.127**	**0.029**	**0.046**	**0.040**	**0.201**	**0.156**	**0.095**
	Real Exchange Rate	**0.282**	**0.193**	**0.120**	**0.057**	**0.056**	**0.033**	**0.136**	**0.130**	**0.107**
	Stock Returns	**0.280**	**0.183**	**0.125**	**0.035**	**0.014**	**0.043**	**0.104**	**0.122**	**0.096**
	Discount Rate	**0.301**	**0.193**	**0.147**	**0.067**	**0.058**	**0.026**	**0.113**	**0.118**	**0.094**
	1990:1998									
	Change - Long rate	**0.288**	**0.213**	**0.058**	**0.003**	**0.017**	**0.075**	**0.050**	**0.041**	**0.046**
	Change - Short rate	**0.282**	**0.171**	**0.062**	**0.022**	**0.058**	**0.073**	**0.025**	**0.002**	**0.050**
	Money Growth	**0.233**	**0.168**	**0.060**	**0.039**	**0.038**	**0.090**	**0.026**	**0.002**	**0.044**
	Real Exchange Rate	**0.232**	**0.167**	**0.063**	**0.005**	**0.016**	**0.053**	**0.023**	**0.001**	**0.048**
	Stock Returns	**0.241**	**0.195**	**0.057**	**0.006**	**0.021**	**0.055**	**0.024**	**0.005**	**0.042**
	Discount Rate	**0.253**	**0.170**	**0.079**	**0.014**	**0.021**	**0.055**	**0.028**	**0.020**	**0.044**

Table 7

Results of the Andrews-type tests for endogenous changepoint in β_1

Critical Values are 7.17 (10%), 8.85 (5%) and 12.35 (1%); Boldface indicates a significant break at the 5% level

		Domestic spread only - Forecast Horizons														
Country	**Test**	**One month**			**One quarter**			**Two quarters**			**Three quarters**			**Four quarters**		
		Value	Date	Change	Value	Date	Change	Value	Date	Change	Value	Date	Change	Value	Date	Change
Belgium	LM	5.4	Jan-95	1	4.37	Nov-94	1	2.66	Jun-93	1	2.69	Nov-95	3	2.58	Aug-95	3
	W	**9.8**	**Apr-89**	1	**9.77**	**Dec-83**	1	**10.94**	**Dec-83**	1	8.79	Dec-83	1	6.68	Dec-83	1
	LR	**26.3**	**Jul-96**	3	**17.8**	**May-96**	3	**15.8**	**Dec-83**	1	**28.79**	**Dec-83**	1	**13.46**	**Dec-83**	1
France	LM	2.07	Dec-96	3	2.49	Oct-96	3	5.89	Feb-93	1	8.83	Nov-92	1	7.81	Aug-92	1
	W	7.58	Dec-96	3	6.43	Oct-96	3	7.54	Jan-93	1	**13.4**	**Nov-92**	1	**10.1**	**Sep-92**	1
	LR	**15.04**	**Dec-96**	3	**16.19**	**Oct-96**	3	**9.59**	**Feb-93**	1	**71.48**	**Dec-83**	1	**14.96**	**Aug-92**	1
Germany	LM	3.15	Nov-94	1	3.8	Sep-94	1	4.88	Jun-94	1	5.71	Mar-94	1	6.28	Mar-97	1
	W	6.25	Oct-85	1	**9.55**	**Aug-85**	1	**9.49**	**Jun-85**	1	8.56	Mar-85	1	**20.15**	**Mar-97**	1
	LR	**14.98**	**Oct-85**	1	**60.83**	**Aug-85**	1	**107.75**	**May-85**	1	**196.6**	**Feb-85**	1	**30.3**	**Mar-97**	1
Ireland	LM	2.86	Nov-95	1	2.94	Apr-87	3	6.4	Apr-87	3	**10.87**	**Apr-87**	3	**10.33**	**Apr-87**	3
	W	2.98	Nov-95	1	5.47	Jun-96	3	**14.4**	**Mar-96**	3	**11.54**	**Feb-87**	3	**16.52**	**Oct-83**	3
	LR	**15.98**	**Mar-83**	1	**9.66**	**Jun-96**	3	**130.69**	**Mar-96**	3	**57.43**	**Dec-95**	3	**55.55**	**Jun-83**	3
Italy	LM	7.44	Nov-89	3	7.41	Sep-89	3	6.99	Feb-92	3	8.12	Mar-89	3	6.03	Dec-88	3
	W	**20.3**	**Nov-89**	3	**17.1**	**Oct-89**	3	**19.27**	**Jun-93**	3	**13.32**	**Mar-92**	3	8.6	May-97	3
	LR	**23.74**	**Nov-89**	3	**56.8**	**May-98**	3	**1459**	**Mar-98**	3	**517**	**Nov-97**	3	**389**	**Sep-97**	3
Netherlands	LM	6.33	Jan-95	1	6.83	Nov-94	1	6.8	Aug-94	1	6.53	May-94	1	5.72	Oct-83	1
	W	8.51	Jan-95	1	**9.31**	**Nov-94**	1	8.7	Apr-84	1	**25.2**	**Jan-84**	1	**22.4**	**Jan-83**	1
	LR	**27.89**	**Jul-83**	3	**46.7**	**Jul-84**	1	**60.38**	**Apr-84**	1	**162.8**	**Jan-84**	1	**174.8**	**Oct-83**	1
Spain	LM	**8.98**	**Dec-85**	3	5.15	Oct-85	3	3.17	Jul-85	3	3.8	Jun-88	1	5.6	Jun-87	1
	W	**29.04**	**Dec-85**	3	**20.2**	**Oct-85**	3	**15.8**	**Jul-85**	3	**13.4**	**Apr-85**	3	**11.6**	**Feb-97**	1
	LR	**43.6**	**Dec-85**	3	**33.9**	**Dec-83**	1	**29.8**	**Dec-83**	1	**18.2**	**Dec-83**	1	**21.3**	**Feb-97**	1
Sweden	LM	2.84	Mar-95	1	3.7	Mar-83	2	4.33	Feb-83	2	5.31	Jul-92	1	**9.39**	**Apr-92**	1
	W	7.55	Mar-83	2	**13.1**	**Sep-97**	1	7.83	Feb-83	2	4.72	Mar-97	1	**10.59**	**Dec-96**	1
	LR	**9.54**	**Mar-83**	2	**37.18**	**Nov-97**	1	**11.36**	**Feb-83**	2	4.54	Jul-92	1	**36.6**	**Dec-96**	1
UK	LM	**13.6**	**Aug-94**	1	**14.5**	**Jun-94**	1	**14.4**	**Mar-94**	1	**13.08**	**Dec-93**	1	**12.44**	**Sep-93**	1
	W	**30.7**	**Aug-94**	1	**35.02**	**Jun-94**	1	**41.25**	**Mar-94**	1	**43.95**	**Dec-93**	1	**33.19**	**Sep-93**	1
	LR	**69.3**	**Aug-94**	1	**78.8**	**Jun-94**	1	**96.96**	**Mar-94**	1	**108.7**	**Dec-93**	1	**138**	**Sep-93**	1
US	LM	6.96	Aug-86	3	5.32	Jun-86	3	3.98	Mar-86	3	2.53	Sep-83	1	2.9	Jun-83	1
	W	6.46	Aug-86	3	5.96	Jun-93	3	4.79	Jul-95	3	3.94	Sep-83	1	5.24	Jun-83	1
	LR	6.17	Aug-93	3	5.87	Jun-93	3	3.98	Jul-95	3	4.77	Sep-83	1	7.31	Jun-83	1

Change: Is the change in the parameter consistent with the reduction of the predictive power of the spread?

1. Predictive power of the domestic spread lost at changepoint
2. Predictive power of the domestic spread gained at changepoint
3. No change in direction of predictive power

Table 7 (continued)

Results of the Andrews-type tests for endogenous changepoint in β_1

Critical Values are 7.17 (10%), 8.85 (5%) and 12.35 (1%); Boldface indicates a significant break at the 5% level

		Domestic spread only - Forecast Horizons														
Country	**Test**	**One month**			**One quarter**			**Two quarters**			**Three quarters**			**Four quarters**		
		Value	Date	Change	Value	Date	Change	Value	Date	Change	Value	Date	Change	Value	Date	Change
Belgium	LM	4.26	Jan-95	1	3.55	May-96	3	4.71	Feb-96	3	4.92	Nov-95	3	4.94	Aug-95	3
	W	**11.6**	**Jul-98**	3	**18.25**	**Jun-85**	1	**16.36**	**Mar-85**	1	**34.53**	**Feb-83**	1	**16.71**	**Sep-84**	1
	LR	**45.23**	**Jul-98**	3	**55.62**	**Jun-85**	1	**59.1**	**Mar-85**	1	**1268**	**Dec-84**	1	**178**	**Dec-83**	1
France	LM	3.6	Dec-96	3	3.82	Oct-96	3	2.88	Jul-96	3	6.25	Mar-81	1	6.6	Aug-92	1
	W	**15.8**	**Dec-96**	3	**17.9**	**Oct-96**	3	**10.23**	**Sep-84**	1	**44.51**	**Mar-84**	1	**11.66**	**Feb-84**	1
	LR	**25.6**	**Dec-96**	3	**37.2**	**Oct-96**	3	**55.34**	**Sep-84**	1	**1326**	**Jul-83**	1	**78.12**	**Feb-84**	1
Germany	LM	2.33	Nov-94	1	2.89	Aug-85	1	4.25	Jun-94	1	6.24	Oct-92	1	6.83	Mar-97	1
	W	**11.7**	**Jan-96**	3	**12.35**	**Aug-85**	1	**15.94**	**May-85**	1	**14.38**	**May-97**	1	**34.73**	**Mar-97**	1
	LR	**21.66**	**Jan-96**	3	**56.93**	**Aug-85**	1	**394**	**May-85**	1	**352**	**Feb-85**	1	**242**	**Nov-84**	1
Ireland	LM	3.31	Nov-95	1	2.29	Nov-97	3	4.56	Aug-97	2	8.53	Apr-87	2	**10.22**	**Jun-87**	2
	W	6.03	Nov-95	1	7.94	Oct-97	3	**37.99**	**Mar-96**	2	**16.33**	**Dec-95**	2	**17.63**	**May-83**	2
	LR	**19.52**	**Aug-96**	3	**86.67**	**Mar-83**	1	**565**	**Aug-97**	2	**199**	**Dec-97**	2	**57.8**	**Jan-83**	2
Italy	LM	4	Nov-89	2	3.89	Sep-89	2	5.1	Mar-98	2	4.68	Mar-89	2	3.18	Dec-88	2
	W	**16.67**	**Nov-89**	2	**13.87**	**Sep-89**	2	**21.1**	**Mar-98**	2	**27.28**	**Dec-97**	2	**33.73**	**Oct-97**	2
	LR	**15.04**	**Nov-89**	2	**51.99**	**May-98**	2	**1175**	**Mar-98**	2	**504**	**Dec-97**	2	**328**	**Oct-97**	2
Netherlands	LM	3.65	Jan-95	2	3.92	Nov-94	1	4.28	Aug-94	1	4.78	Jan-84	1	5.1	Oct-83	1
	W	**22.4**	**Nov-96**	2	**23.7**	**Jul-84**	1	**23.33**	**Apr-84**	1	**46.1**	**Feb-83**	1	**30.26**	**Oct-83**	1
	LR	**193**	**Jul-84**	1	**445**	**Jul-84**	1	**582**	**Apr-84**	1	**788**	**Feb-83**	1	**1066**	**Oct-83**	1
Spain	LM	3.99	Dec-85	2	2.5	Dec-83	1	2.84	Dec-83	1	2.9	Jun-87	1	3.95	Jun-87	1
	W	**47.8**	**Nov-85**	2	**72.38**	**Dec-83**	1	**35.4**	**Jul-85**	2	**34.63**	**Mar-85**	2	**42.3**	**Dec-84**	2
	LR	**145**	**Dec-85**	2	**654**	**Dec-83**	1	**196.6**	**Dec-83**	1	**107.8**	**Apr-85**	2	**179.8**	**Jan-85**	2
Sweden	LM	4.8	Mar-95	1	3.62	Jan-95	1	3.54	Oct-94	1	3.7	Jul-92	1	7.6	Apr-92	1
	W	6.1	Mar-95	1	**17.8**	**Aug-96**	3	**9.86**	**Feb-83**	2	**11**	**Jul-92**	1	**20.25**	**Jun-97**	2
	LR	**356**	**Nov-84**	3	**254**	**Sep-84**	3	**222**	**Feb-83**	2	**14.6**	**Jul-92**	1	**101**	**Dec-96**	2
UK	LM	**15.2**	**Aug-94**	1	**15.34**	**Jun-94**	1	**14.81**	**Mar-94**	1	**13.7**	**Dec-93**	1	**13.41**	**Sep-93**	1
	W	**35.01**	**Aug-94**	1	**34.9**	**Jun-94**	1	**36.6**	**Mar-94**	1	**36.7**	**Nov-93**	1	**28.4**	**Aug-93**	1
	LR	**147**	**Aug-94**	1	**141**	**Jun-94**	1	**172.5**	**Mar-94**	1	**163.9**	**Dec-93**	1	**165**	**Sep-93**	1
US	LM	**10.33**	**Aug-86**	3	7.83	Jun-86	2	5.4	Mar-86	2	2.7	Sep-83	1	2.81	Jun-83	1
	W	**17.7**	**Aug-86**	3	**11.42**	**Jun-86**	2	**11.3**	**Dec-83**	1	**17.2**	**Sep-83**	1	**12.44**	**Jun-83**	1
	LR	**20.02**	**Dec-95**	2	**13.2**	**Oct-95**	2	**29.5**	**Dec-83**	1	**39**	**Sep-83**	1	**17.83**	**Jun-83**	1

Change: Is the change in the parameter consistent with the reduction of the predictive power of the spread?

1. Predictive power of the domestic spread lost at changepoint
2. Predictive power of the domestic spread gained at changepoint
3. No change in direction of predictive power

Figure 1
One-quarter ahead forecasts of model with domestic spread (dashed line)
and model with three spreads (solid line)
Forecasts are in-sample until 1999:12 (vertical line) and recursive out-of-sample from 2000:1