The Credibility of the European Monetary System: The Role of Politics

Julia Chiriaeva
Department of Economics, University of Aarhus

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Abstract

So far the main focus in the literature devoted to currency crises has been on economic information (inflation, unemployment, trade deficits, real exchange rate overvaluation). However, the present analysis draws our attention to the role of the political factors in currency crises. By conjecturing from two types of literature (currency crises and political economy), we are able to state testable hypotheses related to the importance of political factors during currency crises episodes, which are then tested empirically. We use the cases of Denmark and France during the period 1987-1998. A two-state Markov-Switching AR(1) method with constant transition probabilities is applied in order to take into account sudden shifts in expectations that are not perfectly foreseeable and deterministic events. In our analysis, we find evidence that the self-fulfilling feature in speculations is present for Denmark and France. Furthermore, the results suggest that political factors influence the likelihood of speculative attacks, suggesting that agents do incorporate political information in their expectations.

JEL Classification: F31, F33, F41, C22

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1 Introduction

This paper is concerned with the links between politics and currency crisis, with special focus on the European experience during the 1980s and 1990s.

So far the main focus in the literature has been on economic information (inflation, unemployment, trade deficits, real exchange rate overvaluation). However, the attention in this paper is drawn to the political economy of currency crises. In a world where economic decisions are strongly interlaced with political decision processes, political factors cannot be disregarded. A number of economists like Kaminsky, Lizondo, and Reinhart (1997), Jeanne and Masson (2000) emphasize the importance of considering the political factors. Leblang and Bernhard (2000), Leblang (2002) and Chang (2001) argue that political factors play an important role in understanding the causes of speculative attacks and that currency speculators form their expectations about the policymaker’s commitment to the peg not only from information based on economic fundamentals, but also from political events and political institutions.

By focusing on the fixed exchange rate arrangements, our analysis considers two types of independently developed movements in the literature in order to shed some light on how political factors can be fitted in the theory of currency crises. The first type is an extensive literature devoted to both theoretical and empirical studies of currency crises. The second type deals with interaction between political cycles and macroeconomic policies. By conjecturing from the two types of literature, we are able to state testable hypotheses related to the importance of political factors during currency crises episodes, which are then tested empirically for Denmark and France during the period 1987-1998.

The aim of this paper is to test whether political variables affect on the likelihood of a currency crisis. This likelihood will be measured by the expected realignment of the exchange rate, calculated using the methodology of Svensson (1993). The types of effects we are interested in capturing are: whether the opportunistic behavior of the incumbent government in periods preceding elections causes inflationary pressures, which in turn result in pressure on the exchange rate market (“political business cycle” Nordhaus (1975) and Rogoff and Sibert (1988)); whether the peg would be more prone to speculative attacks around elections due to uncertainty prevailing in the market regarding the incentives of the incoming policymaker: whether the speculative attacks are more likely to occur when a left-wing party is in office (“partisan business cycle” Hibbs (1977) and Alesina (1987)); whether the likelihood of speculative attacks is higher for coalitions and minority governments than for single-party governments.

One might be tempted to use as econometric methodology a (properly specified) linear regression with the expected realignment as the endogenous variable and a set of political variables as the explanatory ones. This approach is inconvenient, however, since it ignores the self-fulfilling mechanisms that operate in currency crisis episodes. Several authors have argued that this factor was of particular importance in the episodes we will be analyzing, namely the French and Danish currency crises of the early 90s.3

Thus, when testing our hypotheses empirically we cannot ignore the fact that abrupt shifts

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1See e.g. Krugman (1979), Obstfeld (1994), Rose and Svensson (1994) and Jeanne and Masson (2000).
in expectations may also cause the crisis. Since sudden shifts in expectations are not perfectly foreseeable and deterministic events, we might apply an appropriate econometric method in order to solve the problem of unobservability. The Markov-Switching approach is intended for modelling the transition across regimes, which is governed by an unobserved state variable.

In our analysis we apply an AR(1) two-state Markov-Switching model (MS) with constant transition probabilities in order to find out whether the self-fulfilling feature was present during the EMS crisis in France and Denmark and to test the above-mentioned questions related to the role of political fundamentals. We estimate two different models: the "Macroeconomic" model contains macroeconomic fundamentals and contagious variables; while the "Macroeconomic and Political" model adds a series of political variables linked to the electoral cycle and the type of government in power.

Our results can be summarized as follows: First, we have evidence that the self-fulfilling feature in speculations is present for Denmark and France. The AR(1) Markov-Switching model is identified. The transition probabilities are significantly different from 0 and 1, and each regime is persistent. The point estimates of the state-dependent means are statistically different from each other. Furthermore, we find evidence for the persistency of exchange rate credibility in both Denmark and France.

The macroeconomic variables that appear more clearly linked to the credibility of the exchange rate are the real exchange rate (for both countries) and the rate of inflation (for Denmark). In what concerns political variables, we find an important amount of support for the hypothesis that political "shocks" have effects on exchange rate credibility for the case of France. In Denmark these variables seem to be less disruptive, which is in accordance with the different reputations of the Danish and the French political worlds. In France we find that cabinet changes, changes in the finance minister and different types of governments have all a statistically significant effect on exchange rate credibility. In Denmark none of these effects are present.

The paper is organized as follows: In the next section we introduce the countries. In section 3 we provide a brief review of the empirical literature related to the currency crises. In section 4 we introduce the definition of a crisis situation and the methodology applied in the analysis. In section 5 we present a synthesis of two types of literature (currency crises and political cycles) and propose testable hypotheses. Estimation results are presented in section 6. Finally, section 7 concludes.

2 Case study

Both the Danish krone and the French franc came under attack in 1993. In the crisis meeting over the last weekend of July 1993, the European Central Bank’s governors and finance ministers decided to widen the ERM’s bands to 15%. The cases of Denmark and France are interesting since neither country showed signs of serious macroeconomic imbalances. However, their respective currencies were targeted by speculators. The empirical investigations of Jeanne (1997), Jeanne and Masson (2000) and claims of other authors like Obstfeld and Rogoff (1995), Gros and Thygesen (1998), Eichengreen and Wyplosz (1993) assess that the French franc crisis is a typical example of a crisis in which the self-fulfilling feature in speculations plays an impor-
tant role. Furthermore, Mouratidis and Spagnolo (2003) conclude that the crises in Belgium, Denmark and France might be a combination of market expectations and bad fundamentals.

Below is a brief description of the political environment in Denmark and France, since the main focus in our analysis is on the role of political factors in currency crises.4

2.1 Denmark

The Danish form of government is a parliamentary democracy with a royal head of state. There is no fixed time between general elections, but the constitution stipulates a maximum period of four years. The prime minister has a prerogative to call an election, therefore nobody knows exactly when the election will actually take place.

In the late 1980s and early 1990s, Danish political life was characterized by weak minority governments and parliamentary instabilities. The periods of voting on the annual budget were especially tense because if a parliamentary majority is against the government’s budget proposal at the final decision, the government must either resign or call a general election. This situation can be described as an uncertain parliamentary basis. In fact, only during 1993 did the cabinet have a majority. The vote on the annual budget was one of the important events in Danish politics since the incumbent minority government had to form a coalition in order to pass the annual budget. The central parties played a pivotal role and could shift in any direction thereby contributing to uncertainty about the outcome of the vote.

2.2 France

The French government is a parliamentary democracy with a president as head of state. According to Article 8 of the French Constitution, the President of the Republic is responsible for appointing the prime minister and for terminating his or her office. In the period under consideration, general elections used to take place every 5th year, and presidential elections every 7th year.

A special feature of French politics is the so-called cohabitation, where the prime minister belongs to the opposition.

During the 80s and 90s, unemployment was persistently high and a politically sensitive question. The issue of high unemployment is always a dominant topic in the political arena. The high turnover of cabinets and the change of the composition of cabinet from right to left-wing parties indicated that the problem could not be solved in a satisfactory way for the French electorate.

3 Empirical evidence in the literature

This section briefly reviews the empirical literature devoted to the explanation of currency crises with the main focus on the EMS crisis.

4Detailed information about elections, change of cabinets, finance ministers and referendums can be found in Table 1 and Table 2.
The linear empirical models that relate the macroeconomic fundamentals to expected realignment (or devaluation probability) perform badly. Rose and Svensson (1994) were not able to identify the potential realignment until weeks preceding the EMS crisis. Furthermore, they conclude that exchange rate realignment expectations generally appear to be relatively disconnected from macroeconomic fundamentals. However, Jeanne (1997) and Jeanne and Masson (2000) show that including the possibility of multiple equilibria and modeling the shift between equilibria as a Markov process, can substantially improve the explanatory power of the empirical model.

Furthermore, Leblang and Bernhard (2000) argue that politics affect the market participants’ evaluation of a government’s commitment to maintaining the exchange peg and, in turn, the probability of a speculative attack. They analyze the effect of political uncertainty measured by the probability of a cabinet dissolution (either through an election or a cabinet collapse) on the likelihood of a speculative attack for a monthly sample of parliamentary democracies from 1970 to 1995. They conclude that an increase in political uncertainty increases the likelihood that a country’s currency will be the target of a speculative attack.5

Frieden (1999), who considers all current members of the European Union during the period 1973-1994, and Leblang and Bernhard (2000) find that speculative behavior increases in periods surrounding elections. Furthermore, Chang (2001) argues that in Denmark, Ireland and France the impact of elections on the expected rate of realignment as defined by Svensson (1993) is positive and significant, indicating that the market anticipates the incoming government to either abandon the peg or pursue policies that are incompatible with maintaining the fixed exchange regime. On the other hand Eichengreen, Rose, and Wyplosz (1995) find no evidence that elections and changes in government (which do not require elections in many systems) are related to speculative attacks in OECD countries. They conclude that political uncertainty does not seem to provoke attacks.

The evidence in the literature on the relationship between partisanship and speculative attacks is mixed. According to Frieden (1999) left-wing governments have less volatile exchange rates. However, he finds no partisan difference in depreciation rates. Chang (2001) finds that the partisanship variable is significant for Belgium, Denmark and France during the period 1979-1993, but in the case of Denmark, the partisan result runs against the conventional belief.

5However, we should be careful with interpretations of Leblang and Bernhard’s (2000) results since there is a problem with the two-step estimation procedure used in the analysis. In the first step the authors use a discrete-time hazard model with probit specification in order to estimate the probabilities that a cabinet will end at a particular time, given that the cabinet has survived to that point. In the second step these predicted probabilities serve as proxies for market expectations of periods of potential political change. The standard errors and test statistics obtained from the second step are generally invalid because they ignore the sampling variation in estimates of the first step regression. Uncertainty in the estimate should be accounted for in the second step. However, Leblang and Bernhard (2000) do not conduct the necessary adjustments, and therefore the inference from the estimated parameters is impossible.
4 Methodology

4.1 Definition of currency crisis

In our analysis we define a currency crisis as a period when a measure of the expected realignment of the exchange rate is high. The measure of the expected realignment that we will be using is the one developed by Svensson (1993) using a so-called "drift adjustment" method. This method can be applied to countries whose exchange rate is allowed to fluctuate within a band. Since this was the case for both Denmark and France during the EMS, the methodology is suitable for them. Based on the uncovered interest rate parity condition, this method calculates the expected realignment as the difference between the interest rate differential between the home country and the anchor country (Germany) and the expected depreciation within the band (see Chiriaeva (2004) for details).

4.2 Markov-Switching with constant transition probabilities

We would like to draw attention to the estimation procedure applied in this analysis before introducing a set of economic and political fundamentals that might help explain the realignment expectations.

The important shortcoming of the estimation of the linear model, which relates the fundamentals to expected realignment, is that it ignores the possibility that shifts in expectations may also cause a crisis. However, sudden shifts in expectations are not perfectly foreseeable and deterministic events. Therefore, we should apply an appropriate econometric method to solve the problem of unobservability. The Markov-Switching approach is intended for modelling the transition across regimes, which is governed by an unobserved state variable.

Following the literature on Markov-Switching models (see e.g. Hamilton (1989), Hamilton (1990) and Hamilton (1994)), the transition across states is assumed to follow a Markov chain, such that the probability of being in one state in period $t$, $S_{t-1}$ only depends on the last period’s state, $S_{t-1}$. We assume that $S_t \in \{H, L\}$. $S_t = H$ corresponds to the state where the credibility of the peg is high (the expected realignment is low), whereas $S_t = L$ corresponds to the state where the credibility of the peg is low (the expected realignment is high). Then the transition probability $\Pr(S_t = H | S_{t-1} = L)$ gives the probability that state $L$ will be followed by state $H$.

The motivation for using a two-state regime-switching model comes from the works of Engel and Hakkio (1996) and Dahlquist and Gray (2000). Engel and Hakkio (1996) show that exchange rates in the EMS can be described by a mixture of two distributions. They conclude that a model that can describe how the exchange rate process switches between two distributions is appropriate. Motivated by the fact that exchange rates are related to the interest rate differences via interest rate parity, Dahlquist and Gray (2000) use the work of Engel and Hakkio (1996) as the basis for a nonparametric test for outliers. They provide a statistical motivation for a two-state regime-switching model of interest rates for the EMS countries during the period 1980-1998.\footnote{The sample of countries includes Belgium, Denmark, France, Germany, Italy and Netherlands.} Since changes in short-term interest rates capture a
measure of realignment expectations, we argue that a regime-switching model with two states would be appropriate for our analysis.

We collect the transition probabilities in a transition matrix $P$,

\[
P = \begin{bmatrix}
  \Pr(S_t = H | S_{t-1} = H) = p & \Pr(S_t = H | S_{t-1} = L) = (1 - q) \\
  \Pr(S_t = L | S_{t-1} = H) = (1 - p) & \Pr(S_t = L | S_{t-1} = L) = q
\end{bmatrix}.
\]

We argue that countries that experienced high pressure on the exchange market in the prior month would be more likely to have that attack continue in the current month. Therefore, we model expected realignment as an autoregressive process of order one (AR(1)) with a regime-dependent mean, whereas the conditional variance is assumed to be constant. Moreover, the coefficients of the explanatory variables are restricted to be identical under the two regimes.\(^7\)

The model is defined as follows,

\[
cred_t - \mu_{s_t} = \phi \left( cred_{t-1} - \mu_{s_{t-1}} \right) + x_t' \beta + u_t
\]

for $j = H, L$.

The parameters of interest to be estimated are $\mu_H, \mu_L, p, q, \phi, \beta$, and $\sigma$.

We can also derive the probability that the unobserved regime responsible for a given observation was regime $j$. This inference takes the form of a conditional probability (filter probability) that the analyst assigns to the possibility that the $t$th observation was generated by regime $j$ based on data obtained through date $t$ and based on the knowledge of the population parameters. The filter probability is,\(^8\)

\[
\Pr(S_t = j | Y_t, \mu_H, \mu_L, p, q, \phi, \beta, \sigma),
\]

where $Y_t = (cred_t, cred_{t-1}, x_t)$ is a vector containing all observations obtained through date $t$.

Furthermore, we can also compute smoothed inferences about the regime at date $t$ based on data through the entire sample and on the knowledge of the population parameters. We use the algorithm developed by Kim (1993).\(^9\) The smoothed probability is,

\[
\Pr(S_t = j | Y_T, \mu_H, \mu_L, p, q, \phi, \beta, \sigma),
\]

where $Y_T$ is a vector containing full sample information.

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\(^7\) We are aware of the restrictiveness of the above-stated assumptions. However, in this analysis we choose to proceed with the simple specification as a benchmark model. A more complete model where the conditional variance and coefficients of the explanatory variables are state-dependent is left for future research.

\(^8\) The derivation of the optimal inference can be found in Hamilton (1994).

\(^9\) The basis for Kim’s (1993) algorithm can be found in Hamilton (1994).
5 Currency crises and political cycles

This section attempts to integrate the theoretical aspects of the literature devoted to explaining currency crises and the theoretical aspects of the literature that integrates political cycles with macroeconomic policies.

Below we present two sets of economic policies: characterized by economic feasibility and one by political feasibility. The first set corresponds to the policies that are consistent with a fixed exchange rate regime, and the second set corresponds to economic policies motivated by political considerations. We argue that in the situation where economically feasible policies coincide with politically feasible policies, the likelihood of the crisis decreases, and in the situation with tension between the economically and politically feasible policies, the likelihood of the crisis increases. Finally, we present different hypotheses related to the role of political factors in crises.

5.1 Currency crisis

First, we would like to collect prescriptions for how to reduce the likelihood of the crisis situation from different currency crises theories. This set of economic prescriptions will form a so-called economic feasibility set, since those policies are considered feasible in (or consistent with) the environment of a fixed exchange rate regime.

The first generation currency crises models (see e.g. Krugman (1979), Flood and Garber (1984)) suggest that in order to avoid a speculative attack, fiscal and monetary policies should be consistent with the fixed exchange rate regime. The fiscal expansion financed by money creation is not consistent with a fixed exchange rate in the long run. Another argument emphasizing the importance of the management of fiscal policy is suggested by Andersen and Chiriaeva (2003). The authors, focusing on short-run stabilization, argue that the stance of fiscal demand management policies may be crucial for the credibility of a fixed exchange rate policy since it can be seen as an indirect commitment to the exchange rate peg.

According to the second generation crises models (see e.g. Obstfeld (1994)), crises occur as a result of the interaction between rational private economic actors and a policymaker that pursues well-defined policy goals. If economic agents expect the government to devalue or abandon the currency peg, they will seek to exchange the domestic for the foreign currency as soon as possible. Eventually, the central bank will run out of foreign reserves and will be forced to devalue. These crises are self-fulfilling in the sense that expectations of devaluations are ex post satisfied by devaluation, and they are very difficult to predict. The economy can initially be in an equilibrium consistent with a fixed exchange rate regime, but a sudden shift in expectations may lead to changes in policies that result in a collapse of the exchange rate regime, thereby justifying the agent’s expectations. In order to decrease the likelihood of the speculative attack the authorities should ensure that the state of fundamentals would not make an economy vulnerable to the self-fulfilling attacks. This can be done by, for example, appointing a conservative central bank director with high aversion to inflation.

However, economic feasibility alone cannot ensure that we can avoid crisis situations. We cannot ignore the influence of political factors on the likelihood of speculative attacks, since economic decisions are highly interacting with political decision processes. Hence, political
factors should be integrated in the currency crises models. In the following, we will collect economic decisions motivated by political considerations to form a so-called political feasibility set of economic policies and explain how they interact with economically feasible policies. The main focus will be on political business cycle and partisan business cycle literature. Policies that will help decrease the likelihood of crisis have to satisfy both economic and political feasibility. Following the theory we propose different hypotheses related to the role of political factors in crises that are then tested empirically.

5.2 Macroeconomic variables used

Following the above reviewed empirical and theoretical work, the macroeconomic variables that we will include as explanatory factors in our analysis are the following (a detailed description of the variables can be found in the appendix):

- The real exchange rate
- An industrial production index
- The CPI inflation rate
- The trade balance
- The lagged value of the Exchange Market Pressure (EMP) index of Eichengreen, Rose, and Wyplosz (1995), defined as:

\[ EMP_{it} = \frac{\% s_{it}}{\sigma_{is}} + \frac{\Delta (\delta_{it})}{\sigma_{i\delta}} - \frac{(\% \Delta r_{it} - \% \Delta r_Gt)}{\sigma_{ir}} \]

- A weighted average of the EMP indexes for the main trading partners (among the EU countries) of each country, where the weights are the trade shares of each trading partner.
- Two dummy variables for the referendums held on Denmark and France on the Maastricht Treaty in 1992.

The first three variables are measured as deviations from the German values, since Germany constituted the anchor economy in the EMS. Thus, a change in any economic variable of country "i" would signal an increase (or decrease) in the likelihood of a currency crisis if the evolution of this variable is not compatible with the one observed in Germany. The lagged EMP index is included to take into account the past pressure on the exchange market. We would like to test for the amount of persistency in this market, to know to which extent today’s belief in a given currency are dictated by the beliefs held yesterday. The Markov-Switching model already includes an AR(1) term to take into account this phenomena, but the EMP index measures aspects of speculative pressure that are not present in the lagged endogenous variable. It

\[ ^{10}s_{it} \] denotes the nominal exchange rate (the price of a currency in the anchor country in 's currency at time t), \( \delta_{it} \) denotes the interest rate difference of maturity \( \tau \), and \( r_{it} \) denotes foreign reserves.
includes all the variables that are potentially affected in an attack, not only the interest rate but also the international reserves and the exchange rate itself.

The last two variables are included to take into account the contagious effect that might exist among EMS members. The average of trading partners’ EMP index allows us to test whether devaluation pressures on the exchange markets of close countries increase the likelihood of devaluation pressure on the domestic exchange market. The dummies on the Maastricht Treaty referendums signal the commitment of each country to comply with the Maastricht criteria, which include exchange rate stability. The result of these referendums might affect not only the market of the country where the referendum was held. Since the adoption of the treaty required a consensual position of all EU members, a referendum in one country could affect exchange markets in all European countries. The Danish referendum rejected the Maastricht treaty, while the French one was favorable to it; both by a very small margin. We would therefore expect a negative effect on the credibility of the exchange rate in both Denmark and France following the Danish referendum. The effect should go in the opposite direction with the French referendum.

5.3 Synthesis

5.3.1 Electoral cycle

The traditional approach based on the work of Downs (1957) assumes that the only goal of policymakers is to remain in office. As a result, in an environment with two parties, both parties propose identical electoral programs to their voters and conduct the same policies if elected. In other words, full convergence of policies results from electoral competition. One of the most important macroeconomic applications of this approach is the "political business cycle" of Nordhaus (1975). He argued that towards the end of the period in office of any type of incumbent policymaker, one would observe inflationary expansions, followed by a recession at the beginning of the next legislature.

According to the theory of Nordhaus (1975), we should observe inflationary expansions before elections. The inflationary pressures in turn affect the incentive of political authorities to deviate from the fixed exchange rate regime.\footnote{In Andersen and Chiriaeva (2003) the incentives underlying nominal exchange rate determination may depend on the development of domestic inflation, since it affects the real exchange rate. Therefore, in the rest of this paper when referring to inflationary pressures, we also implicitly refer to the incentives to deviate from the fixed exchange rate policy, which in turn increases the likelihood of speculative attacks.} Hence, in the period preceding elections, we would expect upward pressure on the exchange rate market. Thus, we can formulate the following hypothesis:

\[ H_1 : \text{the incumbent party behaves opportunistically in the period preceding elections, thereby causing inflationary pressures, which in turn result in pressure on the exchange rate market.} \]

The political dummy used is:
Chapter 3

\[ ELE\_PRE = \begin{cases} 
1 & \text{in the 12 months preceding a parliamentary election} \\
& \text{and in the election month,} \\
0 & \text{otherwise.}
\end{cases} \]

The theory of Nordhaus (1975) was criticized because of its non-rational and backward-looking voting rules assumptions. Rogoff and Sibert (1988) present a model in which voters are rational, but observe the characteristic of the policymakers with a lag. The characteristic of the policymaker is a level of competence defined as the ability to provide public goods efficiently. Close to elections, in order to improve the chances of election, policymakers have an incentive to appear more efficient than they really are. One way to signal competence is to reduce income taxes. However, if taxes do not cover expenses then the residual is financed by a distorting seigniorage tax. In equilibrium, during election periods, incumbent cabinets of intermediate ability cheat the most, whereas the least competent incumbent does not cheat. Hence, for the incumbent government of intermediate ability, equilibrium income taxes are too low, and seigniorage is too high before elections, which leads to higher inflation after elections.\(^{12}\) Thus, we can formulate the following hypothesis:\(^{13}\)

\[ H_2 : \text{pre-electoral manipulation of monetary and fiscal policy instruments} \]
\[ \quad \text{results in an upward jump in the post-electoral inflation level thereby creating} \]
\[ \quad \text{a tense situation on the exchange rate market.} \]

The political dummy used is:

\[ ELE\_POST = \begin{cases} 
1 & \text{in the 12 months following a parliamentary election} \\
& \text{and in the election month,} \\
0 & \text{otherwise.}
\end{cases} \]

Furthermore, elections that for example result in a new cabinet generate uncertainty regarding the exchange rate policy because the preferences of the new government are unknown, and even if the incumbent government continues in office its objectives may change due to varying political and institutional constraints. According to Andersen and Risager (1988), even if the policymaker announces "stable prices" as its main goal, some time should pass before the announcement is considered credible, and the realignment expectations adjust in accordance. Hence, in an environment of uncertainty about the incentives of the incoming policymaker, the investors might form a precautionary readjustment of their expectations. The third hypothesis is formulated as follows:

\(^{12}\) Alesina and Roubini (1992) test the implications of Rogoff and Sibert (1988) for all OECD countries that were democracies during the period 1960-1987. The results of their analysis confirm that the upward jump in inflation occurs after elections.\(^{13}\) We are aware that devaluation of the nominal exchange rate can also be considered as opportunistic behavior before elections, since the policymaker by devaluing can improve the competitiveness of the domestically produced goods on the international market and reduce unemployment, thereby increasing the likelihood of being elected. However, the devaluation can also make the policymaker unpopular. In our analysis we assume that the policymaker would prefer to avoid devaluation.
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$H_3$: the peg is more prone to speculative attack around elections due to uncertainty prevailing in the market regarding the incentives of the incoming policymaker.

The dummy is defined as follows,

$$ELECTION = \begin{cases} 
1 & \text{in the month of the parliamentary election,} \\
0 & \text{otherwise.} 
\end{cases}$$

We would also like to capture the uncertainty associated with the change of cabinet when it is not caused by general elections. The motivation for incorporating cabinet instability is comparable to the motivation for using elections.

$H_4$: cabinet instability increases the likelihood of speculative attacks.

The dummy used is:

$$CABINET = \begin{cases} 
1 & \text{in the month of the change of cabinet,} \\
0 & \text{otherwise.} 
\end{cases}$$

The expected sign of all political dummies defined above is positive.

### 5.3.2 Partisanship

In the partisan models, different political parties represent the interests of different constituencies. The partisan composition will serve as a signal to economic agents about the preferences of policymakers regarding unemployment and inflation. Hibbs (1977) presents a model of "partisan theory" based upon non-rational expectations of the economic agents. The implications of his model are that left-orientated parties are more averse to unemployment and less averse to inflation than right-wing parties. As a result, inflation should be permanently higher and unemployment permanently lower when a left-wing party is in office than if a right-wing party is in office.

In a game-theoretic model Alesina (1987) analyzes the interaction around elections between two parties with distinct policy objectives concerning inflation and unemployment. He assumes that wagesetters are rational and forward-looking, and that the probability of electoral outcomes is exogenously determined. Furthermore, it is assumed that individual policymakers

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$^{14}$Alesina and Tabellini (1988) provide an extensive survey of the literature that establishes the links between political institutions and macroeconomic outcomes with particular emphasis on credibility problems. Credibility problems arise in the situation when the policymaker, after the announcement of the optimal policy rules and once the public has chosen a specific course of action based on the announcement, has an incentive to deviate from the optimal policies.

$^{15}$Alesina (1988) conducts the same analysis with a policy variable treated as an arbitrary policy objective and where the distribution of the electoral outcomes is endogenously determined. The main conclusions of the paper are in line with the results of Alesina (1987).
are completely identified with their party; i.e. partisanship signals type of elected policymaker. According to Alesina (1987) a leftist cabinet will have a higher inflation rate than a right-wing cabinet for two reasons: 1) the optimal inflation rate is higher for the left-wing party, since it believes in higher government spending and is more willing to finance its deficits by monetary expansions; 2) the time-consistent rate of inflation is higher than the optimal rate, since the left-wing party has an incentive to promote growth by generating unexpected inflation. Thus, in the discretionary equilibrium, there is too much volatility in policymaking.

Furthermore, when there are elections every period, Alesina (1987) shows that when the binding commitment is available, sufficiently farsighted parties can avoid macroeconomic fluctuations by choosing cooperative policies, defined as intermediate policies between the two polarized most preferred policies. By following cooperative policies, both parties are better off, and this in turn implies less disruption when the change in cabinet occurs. The important feature of the cooperative equilibrium is that the chosen policy depends on the popularity level of the parties. The cooperative policies will be closest to the preferred policies of the party that is most likely to be elected.

However, if no binding commitment exists, the cooperative policies are not time-consistent, since once elected each party has an incentive to deviate from the cooperative equilibrium and play its preferred policies in the short run. In the case when both parties do not heavily discount the future, reputational considerations can help mitigate the problem of time inconsistency. Furthermore, it is easier to satisfy the sustainability condition when both parties are equally likely to be elected. Otherwise, if one party has few chances of being elected, it would be better off once it has been elected deviating from a cooperative equilibrium. In summary, the achievement of convergence in macroeconomic policies requires that policymakers care about the future (farsighted), and that policymakers with different preferences have similar chances of being elected.16

In order to make the model of Alesina (1987) more applicable to the European experience, we should slightly modify it by introducing additional features, namely participation in the EMS and the prospects of becoming a member of the EMU. The convergence criteria of the Maastricht Treaty were designed to ensure exchange rate stability by protecting the European Union from threats of inflation, which may arise from government budget deficits. Hence, in the case of the EMS, we expect the convergence in macroeconomic policies in different countries, following the ratification of the convergence criteria of the Maastricht Treaty.

Despite the lack of analytical proof, we argue that the cooperative equilibrium is easier to sustain when convergence criteria are imposed on the country, thereby reducing the admissible set of policies. There might be an equilibrium where the cooperative policies coincide with or support the convergence policies imposed by the Treaty on the members of the EMS. This can be valid in situations where the policymakers are farsighted, and the benefits of participation in the EMS are higher than short-term gains from following preferred policies. The introduction of the monetary union might make the cooperative equilibrium easier to sustain. Therefore,

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16 Alesina (1987) extends his analysis by allowing cabinets to last several periods. Since the punishment for deviating from the cooperative equilibrium is farther in the future, both parties would have a stronger incentive to deviate once they have been elected. He concludes that the farther away the next elections, the more different are the policies of two parties.
during the period after the ratification of the Maastricht Treaty, we do not expect partisanship to play any role in agents’ devaluation expectations. As a result, implications of conventional partisan theory are tested below in the period preceding the ratification of the convergence criteria.

\[ H_5 : \text{the likelihood of crisis is higher when the left wing is in office than with right-wing governments in the period preceding the ratification of the convergence criteria of the Maastricht Treaty.} \]

The political dummy is defined as follows:

\[
PARTISAN = \begin{cases} 
1 & \text{if a left-wing government is in office, including the month of the change of government in the period before the ratification;} \\
-1 & \text{if a right-wing government is in office, including the month of the change of government in the period before the ratification;} \\
0 & \text{otherwise.}
\end{cases}
\]

The expected sign of the \( PARTISAN \) is positive.

### 5.3.3 Type of government and other political factors

In the literature that deals with how electoral rules and forms of government influence fiscal policy, it is emphasized by political scientists that majoritarian parliamentary systems are more likely to produce a single-party majority government, whereas proportional parliamentary electoral systems are more likely to produce coalition and minority governments.\(^{17}\) Furthermore, Austen-Smith (2000) shows that proportional systems imply higher taxation and overall spending than under majoritarian systems, and Kontopoulous and Perotti (1999) emphasize that coalition governments have higher government spending than single-party governments due to a bigger common-pool problem in fiscal policy.\(^{18}\) In an empirical study of 80 democracies over the 1990-98 period Persson and Tabellini (2004) support the theoretical results. Hence, there is an established link between type of government and fiscal policies. However, since fiscal policy is also crucial for the credibility of an exchange rate peg,\(^{19}\) this leads to the link between type of government and credibility of the peg. Hence, under coalitions and minority governments, we will expect higher pressures on the exchange rate market than under the single-party cabinet.

The hypothesis is formulated as follows:\(^{20}\)

\(^{17}\)References to the literature dealing with the effect of constitutional rules on fiscal policy can be found in Persson and Tabellini (2004).

\(^{18}\)Milesi-Ferretti, Perotti, and Rostagno (2002) also predict that the proportional rule leads to higher overall spending.

\(^{19}\)See Andersen and Chiriaeva (2003).

\(^{20}\)Consult the appendix for the definition of the dummy.
Chapter 3

$H_6$: the likelihood of speculative attacks is higher under coalitions and minority governments than under a single-party government.

Finally we would like to analyze how changing the finance minister affects the behavior of the financial markets. If the finance minister is unsuccessful in ensuring the credibility of the exchange rate policy, then his resignation can be considered as a desire to solve the existing problems. Therefore, we would expect a decrease in the speculative pressure following a change of the finance minister.

In the specific case of Denmark, we would like to test whether an uncertain parliamentary basis adds to the pressure on the exchange rate market, since the failure to pass an annual budget could potentially lead to the resignation of the incumbent government and the arrival of the new one. If the market participants are uncertain about the future course of government’s policy, there is a higher likelihood of speculative attacks. Furthermore, we would also like to test whether in the case of France the period of cohabitation is characterized by higher pressure on the exchange rate market: indeed, disagreements about economic policy between the president and the prime minister can contribute to greater uncertainty on the financial markets and thereby increase the likelihood of speculative attacks.²¹

6 Estimation

In this section we estimate two types of model for both France and Denmark in order to study the economic and political determinants of the credibility of their exchange rate regimes. Both types of model assume a Markov-Switching dynamic with constant transition probabilities, but they differ in the explanatory variables included. In the first one ("Macroeconomic model") we will include the macroeconomic and contagious variables that we presented before: the real exchange rate, the inflation rate, an industry production index, the trade deficit, the lagged values of the credibility and EMP indexes and the dummies for referendums in each country.²² The second model ("Political model") will add to these initial set of regressors all political variables defined in the preceding section.

We use monthly observations during the period February 1987 to September 1998 (140 observations).

²¹ A detailed description of the political variables can be found in the appendix.
²² The endogenous variable and the macroeconomic variables were tested for unit root by applying the Augmented Dickey-Fuller test. Our tests reject non stationarity for all of them except the series of Danish industrial production. However, this rejection seems to be related to the relatively short time interval for which our series are available. If we look at the Figure 1, where we have plotted the Danish industrial production with respect to the German one, we see no clear sign of non stationarity. The series is decreasing during the early 80s, then it increases until the mid-90s and finally it stays constant. It is reasonable to think that in the following years we would not see an explosion of the series. As a result, the econometric analysis is conducted in levels. Furthermore, in order to avoid problems of simultaneous bias, the macroeconomic fundamentals are lagged by one month, thereby assuming that sequential exogeneity holds.
Table 3 summarizes our results for the two countries. A positive sign implies that the variable in question increases the expected realignment. Thus, a positive sign denotes a negative effect on exchange rate credibility. The first two columns concern the estimates for Denmark while the last two ones concern French estimates. The first thing to notice is that the parameters of the Markov-Switching model are well identified in all cases, in the sense that the two conditional means $\mu_H$ and $\mu_L$ are different from each other and the transition probabilities are statistically different from 0 and 1. Furthermore, the informal test of the Markov-Switching model against a linear model for all estimated specifications points in favour of the Markov-Switching model.

A second result that is apparent is the high degree of persistency in our endogenous variable. The lagged value of the expected realignment has a large and highly significant parameter in all the regressions. This result is further confirmed by the lagged value of the EMP index, which is just an alternative, broader measure of the situation in the exchange market. This variable is also statistically significant in all four regressions.

We will now review the results for our macroeconomic variables. We notice that the real exchange rate is significant in three of the four regressions and that its effect is the one we expected: an overvalued real exchange rate is associated with larger expected depreciations of the exchange rate, i.e. with lower credibility. Inflation has also a negative effect on credibility, but this is only visible in the case of Denmark. The rest of the macroeconomic variables do not show significant coefficients and their sign can differ between our two countries.

The dummy for the Danish referendum is not significant in any regression, while the one for the French referendum is not significant for Denmark but is significant for the case of France. Columns 2 and 4 present the results for our "Political model". A likelihood ratio test shows that this model explains the data better for the case of France but not for the case of Denmark. This points to the view that political factors have been more intrusive in the economic area in the French case than in the Danish case. This well might be the case given that the larger size and status of France in the Union gives this country more room for modifying Europe’s policies, in particular the commitment to the exchange rate stability. This result also correspond well with a certain idea of the French political world, as a more instable environment where the government’s commitment to a given policy is less certain than what could be expected in a country like Denmark.

Our results show that changes in the cabinet composition, the removal of the finance minister, and the type of the government are all statistically significant for France but not for Denmark. It would seem that all these types of changes are not perceived as possible threats to the established economic policies in Denmark, as is the case in France.

Concerning the "political business cycle" hypotheses ($H_1$ and $H_2$), they are rejected for both countries. Actually, we find that the period before an election is associated with higher,

---

23 A detailed description of the models and the estimation details are provided in the appendix.

24 A formal test is complicated by the fact that several parameters (for example the transition probabilities) are unidentified under the null hypothesis if a single regime (see e.g. Hansen (1996)). Hence, it is not correct simply to compare Likelihood Ratio (LR) statistics to a $\chi^2(1)$. By following a conservative approach, we allow the 3 extra degrees of freedom and compare LR statistics to a $\chi^2(4)$. P-values of the tests are reported in Table 3.

25 Note that for the type of the government the effect is the opposite of what we had expected.
and not lower, credibility in both countries; while the period following an election shows also higher credibility in the case of Denmark. It doesn’t seem that investors expect large abuses from the part of politicians during their last year in power. The partisan variable is not significant for France and only significant at the 10% level for Denmark. Finally, and perhaps a bit surprisingly, the two political variables that are proper to each one of our two countries ("budget" for Denmark and "cohabitation" for France) are not significant.

Figure 3 illustrates for both countries the estimated filter and smoothed probabilities of being in the low credibility state during which the likelihood of devaluation is high. There are several shifts between the states that took place over the considered period. There were some pressures in late 1992 and early 1993 in Denmark and France, which most likely can be related to the general EMS crisis. Finland, Sweden and Norway have abandoned their pegs to ECU, United Kingdom and Italy left the Exchange Rate Mechanism in September 1992. There is also a shift to the high pressure state in July 1993, reflecting the speculative attack on the Danish krone and the French franc. After the widening of the bands, investors remained skeptical about the Danish exchange rate policy for the next 3 years. In March 1995 France experienced a shift in relation to the devaluations in Portugal and Spain.

As a result we might conclude that the models perform relatively well with respect to identification of periods of high pressure (low credibility).

7 Concluding remarks

So far the main focus in the literature devoted to currency crises has been on economic information (inflation, unemployment, trade deficits, real exchange rate overvaluation). However, the present analysis draws our attention to the role of the political factors in currency crises. By conjecturing from the two types of literature (currency crises and political economy), we are able to state testable hypotheses related to the importance of political factors during currency crises episodes, which are then tested empirically. We use the cases of Denmark and France during the period 1987-1998. A two-state Markov-Switching AR(1) method with constant transition probabilities is applied in order to take into account sudden shifts in expectations that are not perfectly foreseeable and deterministic events.

In our analysis, we find evidence that the self-fulfilling feature in speculations is present for Denmark and France.

Furthermore, we do find some evidence for the importance of the political factors for the credibility of the fixed exchange rate. In particular, the credibility of the French exchange rate seems to be affected in a noticeable way by several political factors like changes in the cabinet, changes in the finance minister and the type of the government. The fact that we do not find these same effects in Denmark tells us that a solid reputation of stability can be built over time and that in this case investors will be confident that new ministers or new type of governments will not put into question some basic fundamentals of good governance.

We realize that there might be some ad hoc ness in the way the political variables has been defined. More theoretical research is needed in order to improve our understanding of the interaction between credibility of the fixed exchange rate arrangements and political factors, which in turn can improve empirical studies.
A Macroeconomic and political variables

A.1 Macroeconomic variables

*Expected realignment:* For derivation of the expected realignment we have used daily observations of 3-month interest bid rates for Euro-Krone, Euro-Franc and Euro-Mark during the period 13/03/1979-31/12/1998. The series were provided by BIS. The data on the daily observations of the exchange rates are obtained from Datastream. The central parities for the period 02/01/1990-13/03/1998 are obtained from Datastream, whereas the lacking observations were found in (Ungerer, Hauvonen, Lopez-Claros, and Mayer (1990), Table 4). With all this data we construct daily observations of the expected realignment by applying the methodology of Svensson (1993).

*Short term interest rate spreads* are the monthly averages of the daily observations of 3-month interest bid rates.

*The real effective exchange rate* based on relative normalized unit labor costs in manufacturing was obtained from IFS (mnemonic .REUZF...1995=100, seasonally adjusted). The series were transformed by taking the difference between a natural logarithm of the domestic and German value.

*Total reserves minus gold* were obtained from IFS (mnemonic .1L.DZF...).

*Consumer price index* was obtained from IFS (mnemonic ...ZF...1995=100). After finding the annual inflation we have subtracted the domestic inflation from German inflation rate.

*Industrial production index* (IFS mnemonic ..CZF... 1995=100, seasonally adjusted). The series were transformed by taking a difference between natural logarithm of domestic and German value.

*Trade balance* series (net trade) were collected from IFS (mnemonic ..OXT$14B , mill. dollars, seasonally adjusted). The exchange rate (end of period) was used to transform the series from dollars to local currency. Quarterly GDP series in local currency were obtained from IFS (mnemonic ...99B..ZF..., seasonally adjusted). The ratio of net trade relative to GDP was constructed (where the monthly GDP series were approximated by quarterly values divided by 3).

*Contagious variable* is defined as the weighted sum of the EMP index of the trading partners among the EU countries. The weights were obtained from "Method of calculating effective exchange rates and indicators of competitiveness by M. Durand", OECD Department of Economics and Statistics, Working papers #29, February 1986.

A.2 Political variables

\[
\text{TYPE} = \begin{cases} 
1 & \text{Single Party Government} \\
2 & \text{Minimal Winning Coalition} \\
3 & \text{Surplus Coalition} \\
4 & \text{Single Party Minority Government} \\
5 & \text{Multi Party Minority Government} 
\end{cases}
\]

\[
\text{FINANCE} = \begin{cases} 
1 & \text{in the month of the change of finance minister} \\
0 & \text{otherwise} 
\end{cases}
\]
Chapter 3

\[
BUDGET = \begin{cases} 
1 & \text{in the months of negotiations about annual budget (August and September) during the periods of minority governments} \\
0 & \text{otherwise}
\end{cases}
\]

\[
COHABITATION = \begin{cases} 
1 & \text{in the period of cohabitation in the period preceding the ratification of the convergence criteria of the Maastricht Treaty.} \\
0 & \text{otherwise}
\end{cases}
\]

B Models

<table>
<thead>
<tr>
<th>Model 1: Macroeconomic</th>
<th>Model 2: Macroeconomic and Political</th>
</tr>
</thead>
<tbody>
<tr>
<td>Expected Realignment(lag)</td>
<td>All Model 1 variables</td>
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<td>EMP (lag)</td>
<td>CABINET (lag)</td>
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<td>Real Exchange Rate (lag)</td>
<td>ELECTION (lag Denmark)</td>
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<tr>
<td>Industry (lag)</td>
<td>ELE_POST</td>
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<td>Trade deficit (lag)</td>
<td>PARTISAN (lag)</td>
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<td>German Unification</td>
<td>FINANCE (lag)</td>
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<td>Referendum (local)</td>
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<td>Referendum (foreign)</td>
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<td>EMP-EU</td>
<td>COHABITATION (France)</td>
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</tbody>
</table>

C Estimation

The non-linear estimation procedure is very sensitive to the outliers in the data. Therefore, we control by dummies for outliers defined as observations lying outside two sample standard deviations of the sample mean. Furthermore, in order to ease the estimation procedure with respect to the choice of the initial values, we choose to normalize the expected realignment series by the highest observation during the considered period. By doing that, we ensure that \( y_t \in [-1, 1] \), and at the same time we preserve the variation in the data.

The program written in GAUSS is a modified version of Kim and Nelson (1999)’s program written for an AR(4) model with a two-state Markov-Switching mean based on Hamilton (1989)’s filter and Kim (1994)’s smoothing. In the optimization procedure we use the General Nonlinear Optimization library (optmum.src) and the Broyden-Fletcher-Goldfarb-Shanno (BFGS) optimization method, which is extremely effective, with excellent convergence properties even for ill-behaved problems and is among the most widely used of the gradient methods. The convergence tolerance for the gradient of estimated coefficients is set to 1e-5 and the maximum number of iterations is 1e+5.

The set of the initial parameters is drawn from a uniform distribution. The choice of the range of the uniform distribution is guided either by the linear model estimations or by intuition. Each time we run the program, we draw 50 random sets of initial values and then determine the maximum likelihood value for each set, then the maximum value of the maximums is saved.
and treated as the maximum likelihood estimates. We do it at least 10 times to be sure that each time we converge to the same maximum.

References


Chapter 3


Figure 1: Denmark

Source: Datastream, IFS
Figure 2: France

Source: Datastream, IFS
Figure 3: Inference, Denmark and France, 1987-1998, Political Model

Denmark: Probabilities of Being in the Low Credibility State

France: Probabilities of Being in the Low Credibility State

Source: Own estimates
### Table 1: Political data, Denmark

#### 1.A

<table>
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<tr>
<th>Election to Parliament</th>
<th>Cabinet Change</th>
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Social Democrats/Socialdemokratiet (S)
Liberal Party/Venstre (V)
Conservative People’s Party/Konservative Folkeparti (KF)

Source: *European Journal of Political Research*, Homepage of Folketinget, Statistik tvaaroversigt
1.B

<table>
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<th>Period</th>
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1.C

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Table 2: Political data, France

2.A

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Sources:
- European Journal of Political Research
- Homepage of Assemblée Nationale.
### 2.B

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### 2.C

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<td>Right President and Left Government</td>
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<th>Variables</th>
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<th>France Political</th>
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<td>0.0394</td>
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<td></td>
<td>(0.0285)</td>
<td>(0.0415)</td>
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<td>-0.0554***</td>
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<td></td>
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<td>(0.0205)</td>
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<td>-0.0161</td>
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<td>(0.0169)</td>
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<tr>
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<td>0.0005</td>
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<td></td>
<td>(0.0266)</td>
<td>(0.0195)</td>
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<td>-0.2352***</td>
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<td>(0.0417)</td>
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<td>COHABITATION</td>
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| Standard Error    | 0.0562        | 0.0551            | 0.0672      | 0.0612           |
|                   | (0.0035)      | (0.0033)          | (0.0043)    | (0.0036)         |
| Likelihood        | 171.05        | 176.72            | 148.01      | 159.44           |
| Likelihood Linear | 150.75        | 153.56            | 123.02      | 128.9            |
| Regression Spec. Test | [0.00]**   | [0.00]**          | [0.00]**    | [0.00]**         |
| LR-test: Linear vs. MS | [0.00]**   | [0.00]**          | [0.00]**    | [0.00]**         |

a) Two-state Markov-Switching AR(1) model with state-dependent mean of the endogenous variable and FTP. *, ** and *** correspond to 10%, 5% and 1% level of significance respectively.

b) Dummies which control for outliers are included in estimation (significant at 1% level for Denmark and France, not reported).

c) Lag is used only for Denmark.