Credibility and Expectations Towards Inflation and Unemployment of Belgian Businessmen and Consumers

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Recent literature on game theory formalizes more employment at the cost of more inflation and such a trade-off becomes exploitable when government resorts to surprise inflation. The attitudes of consumers and businessmen towards inflation and unemployment may be used to clarify a government’s behaviour. In this light, we address this fact by considering such attitudes as they evolved in Belgium during the 1970s and 1980s. Because of lack of most recent data this study on Belgium’s peculiar exchange rate policy only stretches from the 1970s up to the early 1990s. In order to emphasize the functioning and credibility of the exchange rate regimes, we are going to discuss expectations by forming an assessment on the economic prospect. One broad conclusion of our work is that credibility seems to have arisen only after several years of Belgium’s entering the EMS.

1. Introduction

The Bretton Woods agreement of 1944 marks the beginning of the modern system of fixed exchange rate. Since its demise in the early 1970s, the world economy has been characterized by large fluctuations observed in both nominal and real exchange rates. Additionally, persistent inflation rates were generally high enough to have ignited and exacerbated worries about the long-run performance of the main macroeconomic variables. Out of this scenario, the main questions still debated are the determinants

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of exchange rate volatility\textsuperscript{1}, the absence of any adjustment mechanism of the balance of payments along with large inflation rates associated with upward patterns of unemployment. All this prompted theoretical and empirical literature to pay close attention to whether the exchange rate regimes may have some incidence on the economy. This literature analyzes the post Bretton Woods system and the post-Snake experience when considering the European countries.

In view of these facts, the main purpose of this article is to analyze the "provoking" role of the exchange rate on economic policy by considering the responses of expectations regarding income, inflation and unemployment of Belgian consumers and businessmen through survey. Their expectations might convey significant information in assessing the important role of Belgium's exchange rate policies. Section 2 will overview the main points of the exchange regimes since 1944, and then put emphasis on the functioning of the European Monetary System (EMS) during the past decade but not considering fully the near collapse of the exchange rate mechanism (ERM) which started in September 1992 because of lack of recent data. In section 3, the ALESINA and GRILLI (1991) framework is adopted as our background model. In section 4, the survey data and econometrics are discussed in view of the COLLINS and GIAVAZZI (1991) work and section 5 gives a more detailed analysis which suggests that the "credibility" of entering the EMS took place in the mid 1980s and not much earlier as argued by Collins and Giavazzi. Some conclusions are given in the last section.

2. The International Monetary System Since Bretton Woods and the Belgian Experience

During the course of the past fifty years industrialized countries experienced more than one exchange rate mechanism. The first to emerge

\textsuperscript{1} For many researchers exchange rate volatility is an enigma. Although they have not yet found the appropriate fundamentals (MEISE, 1990), many of them may be explained by microeconomic phenomena such as noise traders and excessive speculation (ROSE, 1994).
was Bretton Woods. The second was the post 1971 flexible exchange rate. It is worth mentioning the four features of the 1960s world economy in which the following difficulties arose:

- divergent inflation rates and competitive devaluations across countries despite the fact that the system aimed at providing only occasional changes to tackle fundamental disequilibriums;
- large US external deficits;
- the international trade has grown much faster than official reserves and
- a larger private demand for gold which in turn determined a double-gold-market.

**TABLE 1: Official Gold Prices $ Per Ounce**

<table>
<thead>
<tr>
<th>Year</th>
<th>1900</th>
<th>1934</th>
<th>1971</th>
<th>1973</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>20.67</td>
<td>35</td>
<td>38</td>
<td>42.22</td>
</tr>
</tbody>
</table>

During the late 1960s the "dollar's external dilemma" as recognised by TRIFFIN (1960) became explosive². Countries were willing to replace the dollar as a reserve asset and though the Special Drawing Rights (SDR) were introduced at the Rio de Janeiro meeting (September 1969) as an additional form of international liquidity, they were supplied in 1970 just prior to the US crises of May 1971 and Nixon's mid August declaration of closing the "gold window" and ending the "benign neglect" policy of doing nothing. The Smithsonian Agreement which followed in December 1971 attempting to revive the system and the IMF's meeting in Kingston (January 1976) were the last policies of that period. Gold lost its function as a numeraire of the system and the previously pegged exchange rate collapsed to become a stable but adjustable one (see also SOLOMON, 1977, and MAES, 1991).

Meanwhile, some European countries embarked on some fixed exchange rate policy. Beginning in March 1972 (postponed from June 1971), the Snake became the forerunner of a joint floating exchange rate regime of six countries against the dollar (first stage of the Werner

² As the foreign official dollar holdings was going to exceed the value of the FED gold stock, the only way to prevent foreign claims to FED was to push up the dollar price of metal. But, this is turn would have worked against the functioning of Bretton Woods.
Report). It operated with mixed fortunes. Belgium and the Netherlands were the only two countries with continuing membership up to the start of the EMS. Thereafter, in 1979 the EMS was designated in a manner so as to apply the lesson learnt from previous years. Instead of using the dollar (one currency) and gold (limited supply) as the centerpiece of the system, the "ECU" (a basket of currencies) became the numeraire. Two bilateral fluctuation margins of ± 2.5% and ± 6% around the central parity were permitted, in order to let the system operate as a crawling peg for correcting divergent real exchange rates (many realignments were made during the first nine years of the EMS' inception) and to disinflate without incurring large costs. Once inflation, interest rates\(^3\) and macroeconomic conditions started to converge in the early 1990s, the system strengthened, stability improved and realignments became a rarity. Bundesbank's established reputation has provided a nominal anchor to the European system forcing every economy to adjust domestic monetary policies to this end. Only on September 14, 1992, did the first major realignment of the ERM after 1987 take place. After 5 years of genuine stability, strong speculations started against some currencies and after the suspension of the Italian lira and British pound and many realignments the situation eased off, thanks to a widening of the fluctuation band (±15%). On the whole, WEBER (1991) argued that the EMS worked during the 1980s as a bipolar system with the D-Mark as the hard currency and the French franc as the soft one at least during the first part of the 1980s.

As concerns the Belgian franc's (BEF) peculiar policy, after a close relationship with the Dutch guilder during the Snake, it entered the EMS with a rate of inflation slightly above that of Germany. A soft currency policy was started in 1982 when the BEF was devalued by 8.5% in relation to the ECU to peg to the French franc: "The devaluation constituted the accompanying measure to a reorientation of the economic policy founded on austerity, moderation of internal costs, and restoration of the profitability and competitiveness of firms" (G. QUADEN, 1991, p. 31).

\(^3\) Except for the Netherlands, where interest rates followed those of Germany for much of the 1980s, in the remaining European countries short- and long-term interest rates convergence to Germany took place only in 1990 and 1991 respectively.
Thereafter, the BEF was pegged to the hard currency supplied by the Bundesbank in order to follow a more "coherent" policy (see Weber, and Sergi, 1992) and this policy was strengthened in June 1990 via a commitment to peg the BEF very close to the D-Mark (± 0.5%), with the following potential results:

- no incentives to spring monetary surprises on the back of the Bundesbank's credibility of price stability and
- reduce the interest rate differential and the associated risk premium:
  "Lower interest rates not only contribute, but are a necessary condition for a successful reduction in the deficit and debt ratio of the public sector" (DOMBRECHT et al., 1990, p. 412). Its policy of still following the Bundesbank's policy might rest on the fact that, among others, there is a large correlation between the two domestic outputs. Some doubts about the utility of this policy were raised, though.

After this brief survey of Bretton Woods and its post-era consequences of highly volatile exchange rates, we must draw some conclusions. There are three points worth noting:

- an exchange rate management incompatible with high capital mobility of the 1960s;
- different inflation rates and fiscal policies across countries. In each case the US was an exporter of inflation and in the late 1960s Europe was forced to sustain it;
- the EMS is viewed as having helped to disinflaate during the 1980s because it would have imposed on its member countries credibility (a reduced cost in terms of unemployment from a disinflation strategy) and discipline (a raised cost of inflation from an inflationary strategy). However, the recent EMS crisis helps to understand the fact that differing inflation and interest rate strategies may collapse whatever the system of fixed exchange rate.

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4 Sergi argued that the rigid mix of monetary and fiscal policies adopted in Belgium since early 1980s may have given a rise to the ratio debt to GDP despite the country's general government primary balances in surplus since 1985.

5 See, for example, GOLDSTEIN et al. (1992).
3. Alesina and Grilli's model of central banker appointment

The events outlined above created two points of reference: the central bank's credibility to fight inflation and private sector attitudes towards inflation and income. In this section we will follow the model of Alesina and Grilli.

In the minimization of the loss function the following underlying assumptions arise. E is the expected operator. The squared format implies that policy-markers take care of deviations of income and inflation from their optimal values (i.e., a fully employed economy and zero inflation). In our loss function k is assumed to be greater than one in order to emphasize that current income is at a level much lower than desired\(^6\).

\[
L(Y, \Pi) = \frac{1}{2} E \left\{ \alpha \left( Y_t^n - kY_t \right)^2 + (\Pi_t)^2 \right\}.
\]

(1)

The income behaviour on the economy is represented by a standard expectational Phillips curve (we assume that \(Y_t^n = 0\)):

\[
Y_t = (\Pi_t - \Pi_t^C) + \varepsilon_t, \quad \varepsilon_t \sim \left(0, \sigma^2_{\varepsilon}\right)
\]

where an economy is described as moving away from zero income level only when there is unexpected inflation\(^7\). Since wage setters are aware of this fact, they discount it when forming expectations. The time consistent inflation policy is computed in a context of rational expectations by inserting the Phillips curve into the loss function, taking the first order condition with respect to inflation:

\[
\Pi_t^{TC} = \alpha kY_t - \frac{\alpha}{\alpha + 1} \varepsilon_t.
\]

(3)

where the first term of <3> is the inflation bias (i.e., the average inflation

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6 What drives policy-makers to make this assumption are distortions in the labour market, trade unions power and distortionary taxes.

7 When inflation is fully anticipated there is no excess demand and current income is at its natural level. To deviate from this process, the expected rate of inflation must not be fully forecasted and passed on to the current inflation rate.
is greater than zero) and the second term is the optimal inflation policy (time inconsistent), which would eliminate the inflation bias without inhibiting the stabilization policy. The income level associated with the time consistent inflation policy will be:

\[
Y_t = \frac{1}{1+\alpha} e_t.
\]

and it delineates the time inconsistent policy. If central banks attempt to spread the job market, inflation rates will show an upward bias and the stabilization program will result into complete failure.

To make it a useful tool for our research, the voters' preferences towards central bankers are specified. Since it is believed voters behave rationally, a governor who is committed to minimize the loss function will prevail. The first order condition of the loss function implicitly indicates what type of central banker would be chosen by the median voter \((\alpha^m)\). The new loss function which makes use of time consistent inflation and income is written as:

\[
\min_{\alpha} \frac{1}{2} E \left[ (\alpha k Y_t - \frac{\alpha}{1+\alpha} e_t)^2 + \alpha^m \left( \frac{1}{1+\alpha} e_t - k Y_t \right)^2 \right].
\]

and the implicit choice of voters will be:

\[
\alpha k Y^2_t - \frac{\sigma^2_e}{(1+\alpha)^3} (\alpha^m - \alpha) = 0
\]

What matters in (6) is the variance of real shocks and the preferences of the governor chosen by the median voter. It is worth mentioning that \(\alpha\) must be positive (if \(\alpha=\alpha^m\), the left hand side of (6) is positive whereas if \(\alpha=0\) it will be negative). The presence of a positive \(\alpha\) would imply a governor who is not totally conservative but then too conservative for the liking of the median voter. Following Alesina and Grilli we show that as \(\alpha^m\) and \(\alpha^2\) increase (i.e., when the median voter cares even more about output and output becomes more volatile), it follows that voters choose in
equilibrium a less conservative governor. By taking the total differential of (6) we obtain:

\( \frac{\delta \alpha}{\delta \sigma^2_e} = \frac{\left( \alpha^m - \alpha \right)}{(1+\alpha)^3 \left[ kY_t^2 + \sigma^2_e \left( 1+\alpha^m + 2(\alpha^m - \alpha) \right) (1+\alpha)^4 \right]} > 0 \) 

since, \( \alpha^m > \alpha \), then

\( \frac{\delta \alpha}{\delta \alpha^m} = \frac{\sigma^2_e}{(1+\alpha)^3 \left[ kY_t^2 + \sigma^2_e \left( 1+\alpha^m + 2(\alpha^m - \alpha) \right) (1+\alpha)^4 \right]} > 0 \)

Most noticeable, is the trade-off between inflation (average) and the output's variance which explains why the above approach is useful for our work:

\( \sigma^2_y = \frac{\sigma^2_e}{(1+\alpha)^2} \).

(9) has to be interpreted as follows, as \( \alpha \) goes to 0 clearly \( \sigma^2_y \) goes to \( \sigma^2_e \), thus it implies that no stabilization at all can be achieved if we set \( \alpha = 0 \) even if the inflation is totally eliminated. In the European context, voters' preferences might influence the attitudes of domestic central bankers. This can be done directly by appointing a conservative governor, or to enter the ERM of the EMS as pegging leads to commitment to the strongest foreign central bank policy which is more conservative and credible. Out of this scenario, two points must be clarified. First, the most conservative European national bank is the Bundesbank. It follows that if the private sector wants a more conservative monetary policy it will choose that of the Bundesbank. Secondly, as European union gets closer voters' preferences have to influence the European central banker too. To explain this point, for example voters' preferences may shift so as to influence the domestic central bankers to behave more conservatively. Whereas the selection of attitudes is rather simple in a closed economy
framework, it is not so in the current European integration of deep regional disequilibriums. The private sector now must observe variance and covariance of domestic and foreign income and real shocks too. These facts complicate the task of judging pros and cons of joining a monetary union (i.e., a monetary policy dictated by a foreign monetary authority) because it would depend on the differences of patterns in output variance and correlation. The larger the difference in output variance and the lower the correlation between domestic and average European output, the higher the potential cost of tying the hands to a foreign conservative central bank along with a common monetary policy. In this light, our task will be that of establishing some links, if any, between the exchange rate policy as followed by the Banque Nationale de Belgique and the attitudes of Belgian consumers and businessmen towards unemployment and inflation.

4. The Surveys Data and our Econometric Approach

Some empirical studies have recently found that through the use of survey data much information about future events has been generated and this has helped policy-makers to make important economic decisions. DOKKO and EDELSTEIN (1989), ENGLANDER and STONE (1989) along with ZARNOWITZ (1992) bein three examples, but in this article the Collins and Giavazzi paper is adopted. However, many believe that we do not have to pay attention to surveys because expectations are not

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8 Their paper concerns the functioning of the EMS. They make use of households survey data (three times a year during the months of January, May and October over the period of June 1974-May 1990) published in various supplements (B) of the European Economy. Their findings are summarized in the following way. A general shift in attitudes of caring most about inflation than about unemployment is detected. In Italy a lower concern about unemployment started before the EMS came into operation unlike the French experience in which a similar shift in attitudes occurred only during the EMS. In Germany, Belgium, the Netherlands and Ireland the shifts in concerns about unemployment have been unsynchronized: in Germany the evidence stemmed from the mid 1980s whereas, in the remaining countries the shifts occurred earlier. In Denmark, a general concern about inflation increased in the mid 1970s and decreased in the mid 1980s. They conclude: "Shifts in attitudes about unemployment relative to inflation can help to explain the success of the EMS increased convergence of monetary policies and inflationary performance among members" (p. 22).
always strongly informative about the future. The controversy centers on the fact that the respondents may not come into possession of relevant economic knowledge and experience to give an accurate forecast especially when considering consumers. In this article, the above criticism is avoided by using a wide dataset concerned with the state of opinion of chief executives (they should be the most informed and this helps to overcome cyclical and structural disturbances) and consumers (they should be the least informed). Moreover, our methodology makes use of various frequency data. They are available quarterly (business surveys) and monthly (consumers and business surveys) over three different periods of time: 1982q2-1992q3, 1986m1-1992m8 and 1968m10-1992m7 respectively.

Surveys are carried out by the Banque Nationale de Belgique on the basis of the European Commission's harmonized questionnaires. Respondents were asked to answer the following questions:

**Business Surveys**

*Industry surveys*

1) Production expectations for the months ahead : up, unchanged, down? (PRE)

2) Selling price expectations for the months ahead : up, unchanged, down? (PE)

3) Employment expectations for the months ahead : up, unchanged, down? (EE)

**Building Survey**

4) Employment expectations for the months ahead : up, unchanged, down? (BSEE)

**Consumers Surveys**

5) How do you think the general economic situation in this country will develop over the next 12 months? Get a lot better, get a little better, stay the same, get a little worse, don't know. (CYE)
6) Comparison with what is happening now, do you think that in the next 12 months: there will be a more rapid increase in prices, prices will increase at the same rate, prices will increase at a slower rate, prices will stay about the same, prices will fall slightly, don't know? (CPE)

7) How do you think the level of unemployment in the country will change over the next 12 months? Will it increase sharply, increase slightly, remain the same, fall slightly, fall sharply, don't know? (CUE)

Business surveys refer to total industry without food, drink and tobacco. There were advantages of not using total industry surveys: firstly, total industry data is available on a shorter basis and secondly, our historical record is, in fact, very close to that of total industry. Thus, by obtaining all the properties of total industry surveys, we have the opportunity to work with as many data points as possible. Building survey data refers to employment expectations only. It is used as a "proxy" in providing monthly expectations for industry employment starting in the late 1960s.

For each question, two sets of results are given, designated "=" and "b", respectively and the following equations hold:

\[
(\text{"+"}) = 50 - \frac{(\text{"="}) - (\text{"b"})}{2}
\]

and

\[
(\text{"-"}) = 50 - \frac{(\text{"="}) + (\text{"b"})}{2}
\]

where:

"=" represents answers under the heading "unchanged", or "normal" or "sufficient";

"b" represents the net balance of positive over negative responses, where "up" or "above normal" or "more than sufficient" are counted as positive responses;

"+" is the percentage of positive answers (e.g., "higher", "above normal");

"-" negative answers (e.g., "lower", "below normal").
The following interpretations are given:

i) if inflation expectations are close to 50, it means the prices are expected to stay about the same as in the past;

ii) if unemployment expectations enter with a positive sign, people would expect more unemployment; the opposite applies to employment expectations.

The use of survey data poses two questions: are expectations biased? And is survey data useful in testing whether the EMS has functioned as a credible system as it is in the objective of this study?

**TABLE 2 : Average Unemployment and Expected Unemployment and Employment**

<table>
<thead>
<tr>
<th>Date</th>
<th>Unemployment</th>
<th>Expected Unemployment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1968m10-1992m7(a)</td>
<td>(7.1)</td>
<td>-8.7*</td>
</tr>
<tr>
<td>1972m1-1992m7</td>
<td>(8.3)</td>
<td>-10.8</td>
</tr>
<tr>
<td>1979m1-1992m7</td>
<td>(10.0)</td>
<td>-16.1</td>
</tr>
<tr>
<td>1982m1-1992m7</td>
<td>(10.5)</td>
<td>-14.8</td>
</tr>
<tr>
<td>1986m1-1992m7</td>
<td>(9.5)</td>
<td>-2.5</td>
</tr>
<tr>
<td>1982q2-1992q3(a)</td>
<td>(10.5)</td>
<td>-10.3**</td>
</tr>
<tr>
<td>1986q1-1992q3</td>
<td>(9.5)</td>
<td>-6.2</td>
</tr>
<tr>
<td>1986m1-1992m8(b)</td>
<td>(9.5)</td>
<td>23.0***</td>
</tr>
</tbody>
</table>

Notes: a : Business surveys.
b : Consumers surveys.
* : Expected employment of the construction sector.
** : Employment expectations of businessmen.
*** : Employment expectations of consumers.

**TABLE 3 : Average Inflation and Expected Inflation**

<table>
<thead>
<tr>
<th>Date</th>
<th>Inflation</th>
<th>Expected Inflation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1968m10-1992m7(a)</td>
<td>(5.4)</td>
<td>18.5*</td>
</tr>
<tr>
<td>1972m1-1992m7</td>
<td>(5.9)</td>
<td>19.1</td>
</tr>
<tr>
<td>1979m1-1992m7</td>
<td>(4.6)</td>
<td>16.3</td>
</tr>
<tr>
<td>1982m1-1992m7</td>
<td>(4.1)</td>
<td>13.7</td>
</tr>
<tr>
<td>1986m1-1992m7</td>
<td>(2.3)</td>
<td>7.2</td>
</tr>
<tr>
<td>1982q2-1992q3(a)</td>
<td>(4.1)</td>
<td>14.1*</td>
</tr>
<tr>
<td>1986q1-1992q3</td>
<td>(2.3)</td>
<td>8.3</td>
</tr>
<tr>
<td>1986m1-1992m8(b)</td>
<td>(2.3)</td>
<td>27.3**</td>
</tr>
</tbody>
</table>

Notes: a : Business surveys.
b : Consumers surveys.
* : Expected inflation of businessmen.
** : Expected inflation of consumers.
In (.) average annual inflation. The lengthier period refers to 1967-1991.
TABLE 4: Average GNP Growth, Economic Condition and Production

<table>
<thead>
<tr>
<th></th>
<th>1968m10-1992m7(^a)</th>
<th>1972m1-1992m7</th>
<th>1979m1-1992m7</th>
<th>1982m1-1992m7</th>
<th>1986m1-1992m7</th>
<th>1982q2-1992q3(^a)</th>
<th>1986q1-1992q3</th>
<th>1986m1-1992m8(^b)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(3.0)</td>
<td>(2.5)</td>
<td>(2.1)</td>
<td>(2.3)</td>
<td>(3.2)</td>
<td>(2.3)</td>
<td>(3.2)</td>
<td>(3.2)</td>
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</tbody>
</table>

Notes:
- \(^a\): Business surveys.
- \(^b\): Consumers surveys.
- \(*\): Expected production.
- \(**\): Expected economic condition.

In answering to the first question, tables 2-4 report on the average inflation, unemployment and GNP growth against survey values. One general conclusion we can draw is that businessmen's expectations are generally more accurate than those of consumers. To be more precise, whereas both were found to be pessimistic about unemployment (they felt that unemployment figures were getting worse) consumers were more skeptical. Businessmen became less pessimistic especially after 1986. Concerning inflation (see table 3), every respondent expected a lower rate, particularly businessmen: +7.2 and +8.3 against consumers +27.3. Concerning the economic conditions and production expectations (see table 4), consumers and businessmen have had a slump in confidence because averages show a negative trend. Businessmen expressed less pessimism after 1982 and particularly after 1986.

The credibility of the EMS from Belgium's point of view is supported by an overall pessimistic attitude towards unemployment. Inflation decreased after 1982 and in particular after 1986. Only expected unemployment worsened after 1979 as a sign of approaching EMS constraints. In table 2 the average 1977-92 is -10.8 and after 1979 climbs to -16.1, only to drop significantly to -2.5 after 1986. Even if a more complete analysis will be presented in the next section, we can say that:
(i) credibility seems to have arisen only after several years of Belgium's entering the EMS and this may have coincided with the shift from the soft currency option supplied by the Bank of France to the hard currency option of the Bundesbank;

(ii) more complete knowledge of the economy has driven businessmen to have a better track record in forecasting.

5. Empirical Evidence

Our complete model consists of equations (10)-(12) which almost capture the role of expectations and attitudes towards inflation and unemployment as described by the model of Alesina and Grilli. The most significative ordinary least squares estimates are reported in tables 5-7:

\begin{align*}
\text{CYE}_t &= \alpha_0 + \alpha_1 \text{CPE}_t + \alpha_2 \text{CUE}_t + \varepsilon_t \\
\text{PRE}_t &= \beta_0 + \beta_1 \text{PE}_t + \beta_2 \text{EE}_t + \varepsilon_t \\
\text{PRE}_t &= \gamma_0 + \gamma_1 \text{PE}_t + \gamma_2 \text{BSEE}_t + \varepsilon_t
\end{align*}

where:

\begin{align*}
\text{CYE} &= \text{general economic situation expectations (consumers)}, \\
\text{CPE} &= \text{price expectations (consumers)}, \\
\text{CUE} &= \text{unemployment expectations (consumers)}, \\
\text{PRE} &= \text{production expectations (businessmen)}, \\
\text{PE} &= \text{selling price expectations (businessmen)}, \\
\text{EE} &= \text{employment expectations (businessmen)}, \\
\text{BSEE} &= \text{employment expectations (building survey)}.
\end{align*}

\footnote{A complete set of results is available from the author upon request.}
TABLE 5: OLS estimates of equation 10

\[ CYE_t = \alpha_0 + \alpha_1 CPE_t + \alpha_2 CUE_t + \varepsilon_t \]

N=80       Sample: 1986m1 - 1992m8  adjusted R-squared = 0.7633
F(2,77) = 128.401     SER = 3.9202     RSS=1183.34     DW = 0.605

<table>
<thead>
<tr>
<th>Coefficient</th>
<th>Estimate</th>
<th>S.E.</th>
<th>t-statistic</th>
</tr>
</thead>
<tbody>
<tr>
<td>$\alpha_0$</td>
<td>18.8511</td>
<td>2.025</td>
<td>9.3092</td>
</tr>
<tr>
<td>$\alpha_1$</td>
<td>-0.4461</td>
<td>0.056</td>
<td>-7.9724</td>
</tr>
<tr>
<td>$\alpha_2$</td>
<td>-0.6113</td>
<td>0.0394</td>
<td>-15.5166</td>
</tr>
</tbody>
</table>

Farley-Hinich's test:
N=80       Sample: 1986m1-1992m8  adjusted R-squared = 0.776
F(4,75) = 69.431     SER = 3.8136     RSS=1090.77     DW = 0.6031

<table>
<thead>
<tr>
<th>Coefficient</th>
<th>Estimate</th>
<th>S.E.</th>
<th>t-statistic</th>
</tr>
</thead>
<tbody>
<tr>
<td>$\alpha_0$</td>
<td>22.52</td>
<td>2.5321</td>
<td>8.8938</td>
</tr>
<tr>
<td>$\alpha_1*T$</td>
<td>-3.232917E-03</td>
<td>2.067749E-03</td>
<td>-1.5635</td>
</tr>
<tr>
<td>$\alpha_1$</td>
<td>-0.4161</td>
<td>0.1068</td>
<td>-3.8969</td>
</tr>
<tr>
<td>$\alpha_2*T$</td>
<td>4.402395E-03</td>
<td>1.993350E-03</td>
<td>2.2085</td>
</tr>
<tr>
<td>$\alpha_2$</td>
<td>-0.8062</td>
<td>0.0921</td>
<td>-8.7497</td>
</tr>
</tbody>
</table>

Wald's stability test: F(2,75) = 3.18245
Critical value: 0.952858
TABLE 6: OLS estimates of equation 11

\[ \text{PRE}_t = \beta_0 + \beta_1 \text{PE}_t + \beta_2 \text{EE}_t + \epsilon_t \]

<table>
<thead>
<tr>
<th>Coefficient</th>
<th>Estimate</th>
<th>S.E.</th>
<th>t-statistic</th>
</tr>
</thead>
<tbody>
<tr>
<td>( \beta_0 )</td>
<td>-2.86</td>
<td>1.5321</td>
<td>-1.8668</td>
</tr>
<tr>
<td>( \beta_1 )</td>
<td>0.5781</td>
<td>0.0813</td>
<td>7.1123</td>
</tr>
<tr>
<td>( \beta_2 )</td>
<td>0.2024</td>
<td>0.0765</td>
<td>2.6454</td>
</tr>
</tbody>
</table>

Farley-Hinich's test:

<table>
<thead>
<tr>
<th>Coefficient</th>
<th>Estimate</th>
<th>S.E.</th>
<th>t-statistic</th>
</tr>
</thead>
<tbody>
<tr>
<td>( \beta_0 )</td>
<td>-5.7231</td>
<td>1.6717</td>
<td>-3.4236</td>
</tr>
<tr>
<td>( \beta_1 \times T )</td>
<td>-8.711655E-03</td>
<td>5.168896E-03</td>
<td>-1.6854</td>
</tr>
<tr>
<td>( \beta_1 )</td>
<td>0.5569</td>
<td>0.1244</td>
<td>4.4781</td>
</tr>
<tr>
<td>( \beta_2 \times T )</td>
<td>0.0113</td>
<td>6.141800E-03</td>
<td>1.8396</td>
</tr>
<tr>
<td>( \beta_2 )</td>
<td>0.1432</td>
<td>0.1207</td>
<td>1.1867</td>
</tr>
</tbody>
</table>

Wald's stability test: \( F(2,37) = 4.89835 \)

Critical value: 0.987036
TABLE 7: OLS estimates of equation 12

\[ \text{PRE}_t = \gamma_0 + \gamma_1 \text{PE}_t + \gamma_2 \text{BSEE}_t + \epsilon_t \]

<table>
<thead>
<tr>
<th>Coefficient</th>
<th>Estimate</th>
<th>S.E.</th>
<th>t-statistic</th>
</tr>
</thead>
<tbody>
<tr>
<td>$\gamma_0$</td>
<td>-12.6368</td>
<td>1.2954</td>
<td>-9.7552</td>
</tr>
<tr>
<td>$\gamma_1$</td>
<td>0.3881</td>
<td>0.0524</td>
<td>7.403</td>
</tr>
<tr>
<td>$\gamma_2$</td>
<td>0.2994</td>
<td>0.0366</td>
<td>8.1892</td>
</tr>
</tbody>
</table>

Farley-Hinich’s test:

<table>
<thead>
<tr>
<th>Coefficient</th>
<th>Estimate</th>
<th>S.E.</th>
<th>t-statistic</th>
</tr>
</thead>
<tbody>
<tr>
<td>$\gamma_0$</td>
<td>-12.5589</td>
<td>1.3033</td>
<td>-9.636</td>
</tr>
<tr>
<td>$\gamma_1 \times T$</td>
<td>-4.330210E-04</td>
<td>5.840585E-04</td>
<td>-0.7414</td>
</tr>
<tr>
<td>$\gamma_1$</td>
<td>0.4306</td>
<td>0.0795</td>
<td>5.4164</td>
</tr>
<tr>
<td>$\gamma_2 \times T$</td>
<td>-6.817824E-05</td>
<td>5.125394E-04</td>
<td>-0.133</td>
</tr>
<tr>
<td>$\gamma_2$</td>
<td>0.2945</td>
<td>0.0815</td>
<td>3.6154</td>
</tr>
</tbody>
</table>

Wald’s stability test: \( F(2,293) = 0.275532 \)

critical value: 0.237313
We wish to find out shifts in the relation between attitudes. In selecting timing in shifts, the first step is to check the CUSUM and the log ratio Quandt tests as in figures 1 to 6. The graphical representations help to show not only dramatic shifts (the largest peak) but also gradual shifts, and this fact drove us to choose some break-points as candidates for empirical testing. Even though we may expect more than one shift when a longer span of data (1967-1992) is used, the statistical significance of these shifts are tested by FARLEY-HINICH'S (1975) and WALD'S TESTS (1991) both corrected for heteroscedasticity. The first test (reported as the second regression in each table) offers estimates of shifts in the different parameters in the sense that it calculates the direction of those shifts by including trends which multiply the explanatory variables (see LEJEUNE, 1991). The second test (on the bottom of each table) is modelled like Chow's test but it includes the variance of the two sub periods to compute the F-statistic.

Before examining the situation in Belgium, we wish to give some idea on how this model operates and how estimates should be interpreted. Expected inflation and unemployment are the weights that indicate the current economy's attitudes towards inflation and unemployment. A negative expected unemployment means that respondents are concerned about it. The same applies to inflation expectations. The largest coefficient is indicative of the relative importance of the two.

From estimations, the Farley-Hinich test suggests that:

- Equation 10 (table 5) : consumers are more concerned about inflation: the unemployment coefficient goes to zero suggesting a declining concern about unemployment;
- Equation 11 (table 6) : we find businessmen more concerned about employment and less concerned about inflation. Nevertheless, the two shifts were found not to be very informative;
- Equation 12 (table 7) : the two shifts are not significant although the Wald stability tests show some break points.

As concerns the Wald test, the following break points have been
selected after a close inspection of every figure (CUSUM and log ratio Quandt figures):

Figure 1: January 1989,
Figure 2: January 1989 and July 1990,
Figure 3: no shifts,
Figure 4: June 1988 and mid 1980s,
Figure 5: mid 1973, 1984 and 1986,
Figure 6: 1970 and 1984.

In general, the stability tests reveal:

Equation 10  1988m8 : Structural break,
             1989m8 : Structural break,
             1990m8 : Structural break,

Equation 11  1986q3 : Structural break,
             1990q2 : Inconclusive,

Equation 12  1969m7 : Structural break,
             1983m7 : Structural break,
             1986m7 : Structural break,

Findings suggest that shifts took place in the mid 1980s and not earlier as suggested by Collins and Giavazzi. There is some evidence that other shifts occurred in the late 1960s, early 1970s and late 1980s just near the main changes of the exchange rate's environment. This proves our belief that the exchange rate policy may have influenced private domestic attitudes. Another piece of evidence is that businessmen were less concerned about inflation than consumers (1986-1992) who instead were more concerned about inflation.
FIGURE 2: Log Ratio Quandt Equation 1
FIGURE 3 : Cusum Equation 2
6. Concluding Remarks

In this article empirical evidence of private attitudes towards unemployment and inflation has been considered. We observed that private attitudes may change over a period of time and that the role of the exchange rate may sometimes explain the changes. We support the idea that entry into the EMS produced some shifts in attitudes about the mid 1980s and not earlier as suggested by Collins and Giavazzi. Furthermore, other shifts occurred in the late 1960s, early 1970s and late 1980s in the light of the main exchange rate events.

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