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UNSUSTAINABLE FISCAL POLICIES IN THE EU, A LEGACY OF THE 1970s?

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Abstract/Resumo:
The recent controversy over the excessive deficit procedure in Germany and France has reopened the discussion over the long run sustainability of fiscal policies. This paper tests the hypothesis of sustainability in a group of six EU countries, with an econometric methodology allowing the consideration of often neglected structural breaks in the data. It is found that, prior to EMU, only Germany followed a sustainable fiscal policy, ensuring a bounded debt-GDP ratio. The negative shock to government finances of the early 1970s appears to be still affecting the European economies.

Palavras-chave/Keyword: fiscal policy, sustainability, cointegration, structural breaks

Classificação JEL/JEL Classification:

I. Introduction

The concern with persistent high deficits and debt has been one the most controversial and discussed issues among academics and policymakers during the last two decades. Despite recent efforts towards fiscal consolidation in most industrial countries, expensive welfare programs and unfunded social security systems can exert a considerable strain on public finances over the next generations.

In the particular case of the European Union, fiscal discipline has been considered a necessary condition for a successful monetary union, and strict rules have been imposed on all members has a condition to join EMU and avoid significant fines afterwards. The two main criticisms to these rules are their short-sightedness, forcing pro-cyclical policies, and ineffectiveness, shown by their recent suspension in the cases of Germany and France. As an alternative to these short term constraints, it has been proposed that fiscal policies should be assessed by some measure of long-run sustainability.

The main objective of this paper is to investigate whether current fiscal policies in the European Union (EU) can be considered sustainable in the long run, *i.e.*, able to satisfy the government's intertemporal budget constraint (IBC) and guarantee a bounded debt-GDP ratio. Various alternative approaches have been developed to test this hypothesis. The one adopted here was first proposed by Trehan and Walsh (1988 and 1991) for a deterministic economy, and by Ahmed and Rogers (1995) for a stochastic environment. They show that stationarity of the total deficit time series is a sufficient condition for sustainability.[1]

Several authors have tested this specific condition empirically, with a particular incidence on the US fiscal position. The evidence for the EU countries is not conclusive (compare the results of Grilli *et al*., 1991, Jondeau, 1992, De Haan and Siermann, 1993,

Vanhorebeek and Van Rompuy, 1995, Afonso, 2000, Uctum and Wickens, 2000, and European Commission, 2003). The only absolute agreement in these papers concerns the unsustainability of the Italian fiscal position.

All the above studies test the null hypothesis of a unit root in the deficit series using standard nonstationarity tests. However, as shown by Perron (1989), the presence of a structural break in the series under analysis may bias the results of the tests towards finding unit roots. Perron and Vogelsang (1992) propose a sequential method, which allows a one time mean shift in a date chosen endogenously by the model.

In fact, the total deficit series in most industrial countries display a considerable change in the early 1970s, as a result of the first oil price shock and the consequent expansionary demand-side policies undertaken by the governments. This is a natural candidate for a break point. However, the deterioration of public finances was reversed in the mid 1980s, with a change in policy objectives towards monetary restriction and fiscal consolidation. This policy change may have caused, in statistical terms, another structural change in the deficit series. Therefore, the Perron and Vogelsang sequential break model, which allows for only one break-point, may not be sufficient for the sustainability analysis. Clemente *et al*. (1998) proposed an extension of that test, considering the possibility of two structural changes in the mean of the series. Their modified ADF unit root test is adopted here.

The rest of the paper is organized as follows. The next section introduces the econometric methodology, section three describes the data set, section four reports the empirical evidence and discusses the main results, and section five concludes.

II. Methodology

The Clemente *et al*. procedure tests the null hypothesis of a unit root in a process with two structural breaks, against the alternative hypothesis of a stationary process with two deterministic changes in the mean. Two models may be considered: the additive-outlier (AO) model, for instantaneous changes, and the innovative-outlier (IO) model, for gradual changes. The latter is theoretically more appealing. However, given the low frequency of the data, both models will be estimated.

The AO model is applied in two consecutive steps. First, the deterministic part of the total deficit ($tdef_t$) series is removed, by computing

$$tdef_t = \alpha + \beta_1 DU_{1,t} + \beta_2 DU_{2,t} + \overline{tdef}_t , \qquad (1)$$

where $DU_{j,t}$ are dummy variables equal to unity if $t>T_{Bj}$ (j=1,2) and zero otherwise, and T_{Bj} is the unknown date of the j-th break. The residuals are employed in the second step to test for the presence of a unit root, by estimating

$$\Delta\overline{tdef}_t = \delta\overline{tdef}_{t-1} + \sum_{j=0}^{p} \theta_{1,j} D(TB)_{1,t-j} + \sum_{j=0}^{p} \theta_{2,j} D(TB)_{2,t-j} + \sum_{j=1}^{p} \phi_j \Delta\overline{tdef}_{t-j} + \varepsilon_t , \qquad (2)$$

where $D(TB)_{j,t}$ equals unity if $t=T_{Bj}+1$ (j=1,2) and zero otherwise.

The IO model is applied in only one step, with the estimation of

$$\Delta tdef_t = \alpha + \sum_{j=1}^{2} \beta_j DU_{j,t} + \sum_{j=1}^{2} \gamma_j D(TB)_{j,t} + \delta tdef_{t-1} + \sum_{j=1}^{p} \phi_j \Delta tdef_{t-j} + \varepsilon_t . \qquad (3)$$

The two models were estimated for all $T(T-1)/2$ possible combinations of break points.[2] In both cases, the statistic of interest is the minimum t-statistic for the significance of the autoregressive parameter δ. This is compared with the critical values tabulated by Clemente *et al*. (1998) for finite samples (their values for a sample of 50 observations are used here).

III. Data

The empirical analysis focus on a group of six core EU members (Belgium, France, Germany, Italy, Netherlands and UK), representing the bulk of economic activity in the EU. Although constituting only two fifths of the current number of members, these six countries represent more than four fifths of the total EU's GDP. Furthermore, in terms of the particular central objectives of the study, this restricted group constitutes a very convenient balanced sample. While half the countries (Belgium, Italy and the Netherlands) traditionally present very high debt-GDP ratios, suggesting potential sustainability problems, the other half usually display much lower ratios.

The sample covers central government's annual data for the period 1950-98, the longer time span for which a homogeneous data set is available. It excludes therefore the behaviour of the variables after EMU, but allows a comparison with the Maastricht's criteria employed to assess each country's ability to join EMU.

Higher frequency data, although increasing the number of data points, reduces the time span and therefore the power of the test. It also introduces problems of stochastic seasonality, characteristic of fiscal data.

The total deficit series are defined as ratios to GDP, which facilitates international and intertemporal comparisons. All data are from the IMF's *International Financial Statistics*, and the UN's *Statistical Yearbook.*

IV. Empirical analysis

As shown in the table, the null hypothesis of a unit root can be rejected in just one country. Only Germany seems to follow a sustainable fiscal path, with a bounded debt-

GDP ratio. The coefficients of the two dummy variables are generally highly significant, confirming the existence of, at least, three well differentiated periods in the evolution of the fiscal deficit in these countries. There is in general a first period of low deficits until the early 1970s, followed by a more or less extensive period of high deficits, and finally a recovery after the mid 1980s, although to levels above those registered in the first period.

Two main exceptions are worthwhile reporting. In Italy, the middle period is more extensive, starting in the late 1960s and ending only in the mid 1990s, presumably influenced by the pressures to achieve the fiscal consolidation required to participate in the last stage of EMU.

France is an even more particular case, with the evolution of the deficit looking almost as a mirror image of all the others: higher deficits in the two extreme periods, lower in the middle. This is formally shown by the sign of both dummy variables representing the level shifts, which display completely opposite signs comparing with all other countries: a negative sign of the first dummy, suggesting a change to more balanced budgets, and a positive sign in the second dummy, indicating a deteriorating fiscal situation. A possible explanation for the very high deficits in the beginning of the 1950s is the reconstruction costs from World War II, augmented by the subsequent wars in the French colonies. This first period ends with the 1958 Rueff-Pinay stabilization plan. On the other hand, the deterioration of the public finances in the early 1980s can be explained by the expansionary fiscal policies followed after the election of F. Mitterrand in 1981, and his designation of a socialist government whose main aim was to solve the problem of a rising unemployment rate. These policies, mainly impelled by political and

social reasons, contrast markedly with the contractionary policies followed at the time by most EU countries, with different fiscal perspectives.

For all countries, the coefficient of the first dummy variable is always higher in absolute value, and more significant than the coefficient of the second dummy, revealing the higher magnitude of the first, usually positive, break. Furthermore, the date of the first break coincides in general with the date detected by the Perron and Vogelsang's (1992) test, where only one change is considered (results available on request). This may help explain why, in spite of the improvement of the 1980s and 1990s, the fiscal situation is still considered unsustainable in most countries. The recovery was not sufficient to restore government finances to levels previous to the 1970s.

V. Conclusion

This study has tested the hypothesis of long-run sustainability of fiscal policies in a sample of six core members of the EU during the period 1950-98. The empirical evidence suggests that only Germany satisfies the condition for a sustainable policy with a bounded debt-GDP ratio. All other governments may face the problems inherent to a continuously growing debt ratio, with increasing difficulties to place their debt on the market. However, all these countries were considered to comply with the Maastricht's criteria of fiscal discipline, and allowed to join EMU's third stage.

This result is robust to the consideration of two possible structural breaks in the deficit series. The first break, in the 1970s, roughly coincides with the first oil shock and the end of the Bretton Woods exchange rate system. The second break, in mid 1980s and early 1990s, signals a recovery of the fiscal situation. However, the evidence suggests

that this recovery was only partial. The negative shock in the early 1970s seems to be still affecting the European public finances.

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Modified ADF unit root tests, allowing two mean shifts

		Belgium	France	Germany	Italy	Netherl.	UK
Additive Outlier Model (AO)							
Test statistic (lag length *p*)	t_δ	-4.2369 (1)	-5.1449 (0)	-6.4714** (2)	-3.1537 (3)	-3.6485 (0)	-4.8718 (3)
Break-dates	T_{B1}	1977	1956	1971	1970	1973	1970
	T_{B2}	1986	1979	1982	1992	1991	1986
Dummy coef. (stand. errors)	$\hat{\beta}_1$	0.0764 (0.0075)	-0.0386 (0.0054)	0.0124 (0.0032)	0.0754 (0.0066)	0.0416 (0.0057)	0.0298 (0.0067)
	$\hat{\beta}_2$	-0.0485 (0.0087)	0.0170 (0.0039)	-0.0044 (0.0034)	-0.0496 (0.0107)	-0.0261 (0.0081)	-0.0137 (0.0077)
Innovative Outlier Model (IO)							
Test statistic (lag length *p*)	t_δ	-3.8925 (1)	-5.0381 (0)	-6.8727*** (2)	-3.5980 (1)	-3.5439 (0)	-4.8343 (1)
Break-dates	T_{B1}	1978	1956	1973	1969	1973	1972
	T_{B2}	1987	1979	1984	1995	1991	1987
Dummy coef. (stand. errors)	$\hat{\beta}_1$	0.0355 (0.0102)	-0.0215 (0.0056)	0.0274 (0.0047)	0.0327 (0.0096)	0.0169 (0.0061)	0.0192 (0.0063)
	$\hat{\beta}_2$	-0.0289 (0.0079)	0.0127 (0.0033)	-0.0130 (0.0036)	-0.0602 (0.0127)	-0.0161 (0.0067)	-0.0077 (0.0060)

The AO (IO) model assumes an instantaneous (gradual) change in the level of the series. The number of lags was chosen so that the coefficient on the last included lag is significant at the 10% level of significance (starting from a maximum of three). The asterisks (***), (**) and (*) indicate rejection of the null hypothesis of a unit root at, respectively, the 1%, 5% and 5% significance levels. Critical values (Clemente *et al*., 1998): -5.37/-5.52 (10%), -5.70/-5.88 (5%), -6.50/-6.55(1%) for the AO/IO models.

[1] A demonstration of how this condition is derived from the government's IBC can be found in any of the above quoted papers.

[2] Zivot and Andrews (1992) argue that the tests should not be performed at the extreme points of the sample, outside the interval [0.15T, 0.85T], where T is the number of observations. However, the tests performed above were estimated for all sample points, for completeness. Perron (1997) proves that the arbitrary exclusion of end-points is not necessary for a correct test.