

Political Business Cycle Theory Reloaded

A Comment on "Fiscal Discipline and Growth in Euroland: Experiences with the Stability and Growth Pact"

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ABSTRACT: This paper is written in order to assess the following questions: First, are the election dates as reported by von Hagen (2003) correct? I find that they mostly are, but that there are still weaknesses in the way the election dates are treated in the following analysis. Secondly, I provide examples on the difficulties that arise when testing for political business cycles.

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1. Introduction

With the beginning of the European Monetary Union (EMU) in 1999, monetary policy is not under the discretion of the participating countries, or their respective central banks, anymore. With a centralized monetary policy, the necessity of a somehow coordinated fiscal policy arises as well, since fiscal policy of one country affects the other participants for several reasons. The means of coordination are the Excessive Deficit Procedure (EDP) and the Stability and Growth Pact (SGP), respectively. Von Hagen (2003) examines whether these procedures proved to be effective.

At first sight, today's experience might overshadow major achievements of the EDP and SGP; the fact, that fiscal policy of just the bigger participants, namely Germany and France, has failed to fulfill some of the requirements, together with at least questionable figures of Greece and Italy on their fiscal policy that provided entrance to the EMU, led to a broad discussion, whether the imposed restrictions on fiscal policy are necessary or helpful at all.

Here, I summarize the arguments put forward by von Hagen and provide critique.

2. Theoretical Considerations

The Structure of EDP and SGP The major theoretical argument in favor of coordinated fiscal policy among participants of the EMU is given by the intertemporal budget constraint of each single country. It states that government expenditures cannot exceed tax income, at least in the long run. If they do not offset each other (in discounted values), an increased money supply has to reduce the *real* value of government debt via inflation, in order to avoid default. But since the money supply is not under the discretion of the single countries anymore, their fiscal policy needs additional restrictions, such that no threat of default can evolve.

This issue might be resolved via the sheer existence of efficient capital markets. Any country borrowing so much that the default probability rises will be restricted in borrowing even more by rising interest rates. But this will only happen if all other participants can commit to leave the defaulting country without financial help; obviously, such a commitment is not credible, since EMU participants are not only linked via the EMU, but also through various other joint political and economic procedures that mainly stem from the European Union. So, an excessive deficit creates externalities, which are even bigger, once the country running the deficit is relatively large, as it then might influence interest rates for all other countries due to the sheer size of its capital demand.

The EDP therefore defines triggers that, once exceeded, allow to induce actions against a deficit-running country. These reference values contain a deficit above 3% of a country's GDP and a debt ratio of above 60%. Simply exceeding these values does not automatically induce sanctions, though. Only if the European Commission has reason to believe that such a participant is not on its way to fulfill the requirements, it reports to the European Council, which itself is still not bounded to impose sanctions in every case. The SGP in addition refines the EDP, e.g. by introducing a forward looking early warning system.

The figures as reported by von Hagen (2003) indeed show that the average deficit declined shortly before and after the wake of the EMU (namely, 1997-2001). Nevertheless, von Hagen argues that this decline can mostly be attributed to the smaller participants, while the bigger countries such as France and Germany did not contribute to the average reduction of govern-

ment debt. Going further, even the success of the smaller countries might just have occurred without the restrictions. Strauch and von Hagen (2001) claim that the effects of EDP and SGP on fiscal policy are rather small, compared to other factors, especially after the criteria for a membership in the EMU had been fulfilled.

It should be noted that von Hagen recognizes that under a decentralized fiscal policy, actions on lower government levels might contradict the effort taken at the federal level. A theoretical analysis of arguments against and in favor of the necessity of an internal SGP is not subject of this essay, though.

The Fiscal Policy Stance In order to measure the impact of consolidation effort in fiscal policy (the "fiscal policy stance"), opposed to other factors, von Hagen defines a neutral and a growth-induced change of the surplus ratio. Let R_t , G_t , and Y_t denote the revenues, non-interest government spending, and GDP, respectively. Then, the surplus ratio is given by

$$s_t = \frac{R_t - G_t}{Y_t}. \quad (1)$$

With Δ denoting the respective changes between t and $t - 1$, the fiscal policy stance is

$$\Delta s_t^P = \Delta s_t - \Delta s_t^N - \Delta s_t^G, \quad (2)$$

where Δs_t^N is the neutral² change, and Δs_t^G is the growth-induced change of the surplus ratio. Unfortunately, only the results for Δs_t^P are presented, while their calculation is missing. For the presentation and evaluation of the results please refer to section 3.

The Quality of Government Spending Countries can reduce their debt ratio basically in two ways. First, they can increase their revenues, and second, they can cut back spending. The latter can be achieved by either reducing transfers or by reducing investments. Theory suggests that reduction of transfers most likely dominates the other alternatives in having a lasting effect on the debt ratio. Nevertheless, empirical results only seem to corroborate that fiscal policy has *some* effect of growth. So if the debt ratio has to be reduced, this can be achieved either by reducing debt or by a growing GDP. Von Hagen utilizes this and distinguishes between debt-growth and GDP-growth induced change in the debt ratio. Again, the results are presented and discussed in section 3.

3. Empirical Results and Evaluation

The Data and the Results by von Hagen (2003) In this section, I focus on some empirical results by von Hagen (2003). He claims that the introduction of SGP and EDP did not prevent the EMU member countries from running higher deficits in a preelection year.³ The

²I.e., the neutral policy with respect to the size of R/Y and G/Y .

³It is not the goal of this essay to reassess the theory of political business cycles. Nevertheless, the two most prominent reasons for PBC to occur should be mentioned: (1) The incumbent increases spending before an election in order to increase his winning probability. The incumbent more or less bets that voters do not understand the model (Nordhaus, 1975). (2) As there is a positive probability that the incumbent may

policy-induced surplus ratio as theoretically introduced in section 2 is on average -0.88% of GDP in preelection years versus -0.49% in all other years, including the year of the election itself (furthermore referred to as nonelection years for simplicity). As reported in table 1, the election dates as used by von Hagen (2003) are more or less correct, except of Austria, where he misses the Austrian "Nationalratswahl" in 2002. Since the Austrian surplus in 2001 is positive (2.6%), his results will be weakened.

In addition, if one uses the data as proposed by von Hagen, the claimed t-statistic for the difference of the two averages of $t = -2.5$ seems to be wrong. It is actually -1.20 for the original data, and only -0.46 for the corrected data (once unequal variances are assumed), which renders the difference insignificantly different from zero for both data sets. The data correction includes imposing a double weight on the preelection year in France, as two elections took place in the same year, and changing one observation of Austria from nonelection to preelection. All results concerning the t-tests are summarized in table 2. Admittedly, I am not able to replicate the figures as given by von Hagen (2003).

Nevertheless, some of the results may be driven by outliers. Taking the small size of the data set into account, I apply a simple identification method for outliers. Refer to figure 1 for the boxplots of the respective data sets, namely for the original and corrected samples. Here, one can clearly identify outliers by the construction of *outside values* of the boxplot⁴. If these outliers are left out of the testing procedure, the difference between surplus ratios in preelection years to all other years becomes significant at the 10% level, with t-values of -1.73 and -1.83 for the original and corrected data, respectively. Interestingly, one of the outliers is Austria in the year 2001, the year before the election not mentioned by von Hagen (2003). The results can be found in table 2 as well.

As mentioned for the case of France, the weighting of elections seems to be inconsistent. Portugal counts three preelection years, differing in presidential and parliamentary elections. France instead seems to be counted only once, since presidential and parliamentary elections took place in the same year (2002). But as argued below, it is doubtful how presidential and parliamentary elections should be aggregated, hence, what the specific weights per election should be.

It seems reasonable to assume that increased government spending took place in the months before the election. But what the analysis neglects is that elections do not occur in the same month in all countries; in fact, the difference is huge, ranging from elections in January (Portugal and the Netherlands) to elections in November (Austria and Denmark). Which fiscal year was actually affected by the political business cycle (the year of the election itself or the year before) heavily depends on the month in which the election took place. Neglecting this issue is a major drawback of the analysis, though it remains unclear at this stage which method would correctly attribute the amount of additional spending to the different years, as

loose, government spending especially on ideological projects is increased, as a deficit would restrict the spending possibilities of the opponent with different preferences, should he be elected (Alesina, 1987).

⁴Outside values are values lying strictly outside the so-called inner fence of a punctuated boxplot, which itself is calculated by

$$\begin{aligned} x_{\text{lower bound}} &= \tilde{x}_{0.25} - 1.5QD \\ x_{\text{upper bound}} &= \tilde{x}_{0.75} + 1.5QD, \\ \text{with } QD &= \tilde{x}_{0.75} - \tilde{x}_{0.25} \end{aligned}$$

and \tilde{x}_α being the α -quantile.

any assignment would be arbitrary.

Dependence of Governmental Bodies For some countries, von Hagen (2003) reports the election years of the parliament and the president, Finland, France, and Portugal being the most prominent examples. This is reasonable if fiscal policy cannot be determined by one governmental body alone, but only with at least two interacting units. The process of budgeting might involve veto rights of one of the involved bodies or other procedural mechanisms.

Unfortunately, the strength of interdependencies among the different governmental bodies involved is not the same, i.e. the power of the parliament in a presidential system may be different among the observed countries. These differences are not taken into account, however. What is also neglected is the strength of incentives for the incumbent government: The stronger the parliament, e.g., the higher are the incentives of the incumbent *president* to spend public resources on influencing the parliamentary elections. It becomes more complex once the president and the majority in the parliament are opponents, i.e. once they belong to different political parties. In such a case the president's and the parliament's effort to invest in winning probabilities may either set off each other, or such spending may be prevented in the first place due to veto rights of the opposing governmental body. All these questions should be taken into account in order to present a proper analysis, nevertheless, it would be necessary to compare constitutions and their evolution over the last 15 years.

Federal State Governments and Accountability of Deficits A subject very closely related to the weights of presidents and parliaments covers the existence of federal states or similar subunits with (at least partially) independent budgets. Examples are Germany (Bundesländer) and Austria (Länder). The debt ratio and the surplus ratio of the federal states accrue with the government spending on the federal level to the total deficit and debt ratios that have to fulfill the EDP and SGP criteria. Von Hagen (2003) addresses this point and presents arguments against and in favor of internal stability pacts, meaning that federal state governments are restricted in their fiscal policy. Nevertheless, the final responsibility lies with the federal government. But en suite, he neglects these arguments and treats all countries the same, e.g. he neglects the differences between Germany and France. Just as a president might have the incentive to influence parliamentary elections and vice versa, the national government might want to influence outcomes of elections on the state level or vice versa, especially once governments on a lower level cannot only influence the fulfillment of the Maastricht-criteria by running their own deficit, but also by influencing the nation-wide policy as well.⁵

Again, the issue gains complexity once governments on different levels may be opponents, or even worse, *some* of the state-level governments stand in opposition to the federal government, while some do not. In addition, election cycles may be overlapping⁶, and state governments also have the incentive to produce their own political business cycles, such that even if they are increases in spending before elections, it would be extremely difficult to identify them and to attribute them to a specific election. One can think of election cycles that that amplify each other in the sense that elections take place at the same time; in the contrary, there is potential for election cycles that have elections for one government body just amidst the election period

⁵As is given by the existence of the "Bundesrat" in Germany, which represents the state-level governments and which can heavily influence federal, i.e. nation-wide policy.

⁶This also applies to presidential and parliamentary election cycles.

of the other; even though both governmental bodies could actually run a higher deficit in the respective preelection years, the identification of deficit cycles would be much harder.

The Relative Contribution of Debt and GDP The correlation of the growth rate of real GDP with the relative contribution of the debt ratio to GDP growth on the change in public debt yields a significantly negative effect, which is smaller (in size) in the period 1992-1997 than in 1997-2001. Additionally, changes in the debt ratio are positively correlated with the relative contribution of a debt change, which is smaller in the latter period. Von Hagen derives from these correlations an argument against the setup of the SGP: Fostering the growth rate of GDP instead of reducing the debt ratio alone by reducing debt leads to better results in terms of strength and persistency.

Another argument implies that the reduction of debt is not independent of the means by which the debt is reduced (increased revenues vs. decreased spending). Decreasing the tax *and* the revenue ratios contribute to a larger contribution of growth on the change in debt ratios. This indicates that increasing taxes actually has a negative impact on the debt ratios as it might reduce growth more than it reduces debt. Additionally, investment spending fosters growth and is therefore able to reduce the debt ratio, while the opposite is true for spending on transfers. As for the composition of taxes, von Hagen concludes that the share of direct taxes (hence, on factor income) reduces the growth rate of GDP. Just as predicted by von Hagen, investment spending in relation to total spending increases the growth rates of GDP.

Unfortunately, the results as reported by von Hagen (2003) cannot be combined with the results in his figures. In his figure 4, e.g., he reports five regression results together with four (sic) regression lines. Two of the results equal each other, but are assigned to different lines. In addition, the derivation, hence the estimation method, remains unclear. The results can therefore not be replicated, just as well as the claimed inference from R^2 -values on the significance of the parameters.

Still, von Hagen derives an argument against the SGP in its current setup. He claims that the imposed requirements do not refer to equilibrium values of debt and are therefore not able to guide the fiscal policy of the participating countries. The required debt ratio of 60% or lower just represents the average debt ratio of EU members in 1992. Depending on the state of the economy at that time, the requirements could be too strict. Suppose that in 1992, debt and deficit ratios have been remarkably low, for two reasons: First, due to the position in the business cycle, and second, the figures could be results of the effort taken to fulfill the criteria that had to be met in order to join the EMU. But there are drawbacks to this argument. Even if the figures are wrong in the sense that they do not represent an equilibrium policy, this is no reason for the abolition of *some* explicitly stated figures at the same time. In addition, the figures are not as strict as von Hagen claims them to be in his conclusion. If debt and surplus ratios have been low in order to meet the so-called Maastricht-criteria, then one could draw another conclusion: One may argue that the sanction of *not* participating in the EMU has been a much bigger threat than the sanctions that can be imposed within the EDP. Incentives to meet today's criteria are possibly too low, which again is not an argument in favor of their abolition, but rather in favor of stronger sanctions.

4. Testing for Political Business Cycles

In the section above, I already assess von Hagen's method for testing for political business cycles. The weaknesses encompass the following points:

1. The elections dates are not complete.
2. The weighting of single elections is inconsistent, especially with regard to the dispersion of power, either horizontally or vertically.
3. The assignment of the preelection period is rather arbitrary.
4. The difference of government spending between election year and preelection year does not have to be a result of a political business cycle, but of different ideologies. This applies to elections that changed the parties in responsibility.
5. The estimation method does neither take outliers, nor the small sample size into account.

The first weakness can easily be solved and is presented in the section above. The second point, however, demands that the respective power of the president, of the parliament or the different chambers, or of state level governments regarding fiscal policy has to be evaluated by consulting the constitutions. In addition, election cycles of different governmental bodies may overlap, so that it has to be carefully examined, which government body and when has an incentive and the possibility to invest in political business cycles. The identification of political business cycles under overlapping election cycles might have to involve time series techniques that allow for filtering out two (or even more) different frequencies. Obviously, the data set is much too small for such methods.

Which time period the additional spending should be assigned to (point three) will always be arbitrary, nevertheless one may try to attribute all additional expenditures generated by elections in the fourth quarter to the same year and not to the year before. The fourth point has one rather easy part, and one more difficult: One would have to find out whether a government changed in an election and which party was in charge before and afterwards. Data on this issue is readily available, e.g. refer to the weblinks in the appendix. But then one would have to examine whether these different parties really were different in ideological terms, and if this difference showed up in a different size of deficit and debt ratios in general. As a first approach, a dummy that is set to 1 if the government changed in an election, and 0 otherwise, might be sufficient, probably combined with a dummy for left-wing and right-wing parties.

The fifth point, again, is already taken into consideration in the section above (at least in parts). The method of identification of outliers presented here is not very evolved, but a first step.

5. Conclusion

In this essay I wanted to give a summary and evaluation of the article by von Hagen (2003). He essentially gives two arguments: Political business cycles exist among members of the EMU, and the criteria of the EDP and SGP are not suited to adjust and coordinate fiscal

policy of the participants, in the sense that they give the debt and deficit ratios priority over growth rates. The evaluation shows that these arguments have to be doubted. The empirical corroboration for both arguments is rather weak and cannot be replicated. In addition, the conclusions drawn for the future of the EDP and SGP are rather one-sided. Even though there are weaknesses (which show up in the fact that some countries do not meet the criteria), it does not necessarily follow that weaker criteria would resolve these drawbacks.

A. Tables

Country	Preelection Year (von Hagen)	Exact Date of Election, and Type (re-examined)
Austria	1998	Okt. 3, 1999 (Nationalrat) Nov. 24, 2002 (Nationalrat)
Belgium	1998	June 13, 1999 (Kamer and Senaat)
Denmark	2000	Nov. 20, 2001 (Folketing)
Finland	1998, 1999	March 21, 1999 (Parliamentary Elections) Feb., 10, 2000 (Presidentinvaalit)
France	2001	June 9/16, 2002 (élections législatives) May 5, 2002 (élection présidentielle)
Germany	2001	Sept. 22, 2002 (Bundestag)
Greece	1999	April 9, 2000 (Parliamentary Elections)
Ireland	2001	May 17, 2002 (General Elections)
Italy	2000	May 13, 2001 (Camera dei Deputati and Senato)
Luxembourg	1998	June 13, 1999 (élections législatives)
Netherlands	2001	May 15, 2002 (Tweede Kamer) Jan. 22, 2003 (Tweede Kamer) May 25, 2003 (Eerste Kamer)
Portugal	1998, 2000, 2001	Oct. 10, 1999 (Eleicao Legislativa) Jan. 14, 2001 (Eleicao Presidencial) March 17, 2002 (Eleicao Legislativa)
Spain	1999	March 12, 2000 (Congreso and Senado)
Sweden	2001	Sept. 15, 2002 (Rikstag)
United Kingdom	2000	June 7, 2001 (House of Commons)

Table 1: Election Dates of EMU Members (as reported by von Hagen (2003) and re-examined)

	Under Assumption of Equal Variances	Under Assumption of Unequal Variances
von Hagen	-1.1078 (0.2726)	-1.2017 (0.2366)
von Hagen, without Outliers	-1.8229 (0.0739)	-1.7287 (0.0943)
Corrected	-0.4657 (0.6432)	-0.4557 (0.6516)
Corrected, without Outliers	-1.9345 (0.0582)	-1.8275 (0.0779)

Table 2: t-Statistics of Tests on Equal Means of Deficits in Preelection Years and Nonelection Years (respective p-Values in parenthesis)

B. Figures

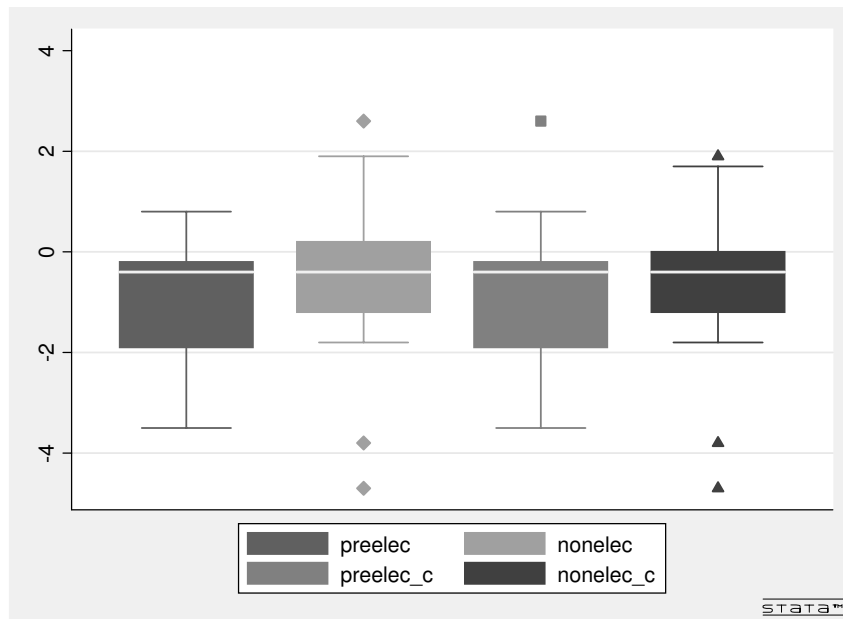


Figure 1: Boxplot of Original and Corrected Surplus-Ratios (Preelection Years and Non-election Years with the Original Sample on the left, and with the Corrected Sample on the right)

References

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3. NORDHAUS, WILLIAM D. (1975), The Political Business Cycle, *The Review of Economic Studies*, Vol. 42, No. 2, pp. 169-190.
4. STRAUCH, ROLF and JÜRGEN VON HAGEN (2001), Fiscal Consolidations: Quality, Economic Conditions, and Success, *Public Choice*, 109, pp. 327-346.

Weblinks (as of Dec. 3, 2004)

1. <http://www.bmi.gv.at/wahlen/>
2. http://www.bundeswahlleiter.de/wahlen/btw2002/btwahl_bt看2002.htm
3. http://www.cne.pt/_x.cfm?sec=03010000
4. http://www.cne.pt/_x.cfm?sec=03030000
5. <http://www.elections.public.lu/legislatives/1999/resultats/index.html>
6. <http://www.electionworld.org/denmark.htm>
7. <http://www.electionworld.org/italy.htm>
8. <http://www.electionworld.org/netherlands.htm>
9. <http://www.electionworld.org/sweden.htm>
10. <http://www.electionworld.org/unitedkingdom.htm>
11. <http://www.ifes.org/eguide/resultsum/belgiumres.htm>
12. <http://www.ifes.org/eguide/resultsum/greeceres.htm>
13. <http://www.ifes.org/eguide/resultsum/spainres.htm>
14. <http://www.interieur.gouv.fr/avotreservice/elections/legis2002/>
15. <http://www.interieur.gouv.fr/avotreservice/elections/presid2002/>
16. http://www.ireland.com/focus/election_2002/
17. http://www.stat.fi/tk/he/vaalit/index_en.html
18. <http://www.val.se/>