Fiscal policy responses to changes in the cyclical position of the Spanish Autonomous Communities: an empirical analysis

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Abstract

This paper analyses from 1987 to 2010 the responsiveness of Spanish Autonomous Communities (ACs) fiscal policy to changes in the cyclical position as well as to other determinants such as institutional and political economy features. Overall, ACs fiscal policy has been procyclical although there are some differences across ACs. Results also suggest that as education and health were devolved ACs primary budget balance worsened, which may be indicative of underfunded responsibilities. Relative fiscal resources of ACs funding system and the cash advance system also create distortions to ACs fiscal stance.

Resumen

Este trabajo analiza la respuesta de la política fiscal de las Comunidades Autónomas (CA) a lo largo del ciclo económico, considerando la incidencia del marco institucional y de factores de economía política. En conjunto, la política fiscal de las CA ha sido procíclica aunque existen diferencias entre ellas. Además, a medida que se descentraliza el gasto en educación y sanidad a las CA su posición fiscal empeora, aspecto que podría atribuirse a la infrafinanciación de dichas competencias. La distribución de recursos del sistema de financiación entre las CA, y el sistema de anticipos a cuenta también crean distorsiones en la posición fiscal de las CA.

Keywords: fiscal policy rules; fiscal federalism; effects of economic cycles; procyclicality.

JEL:

H70 General (H7 State and Local Government; Intergovernmental Relations).
H62 Deficit; Surplus.
E32 - Business Fluctuations; Cycles.
E620 Fiscal Policy (E6 Macroeconomic Policy, Macroeconomic Aspects of Public Finance, and General Outlook).

1. Introduction

The stability of public finances throughout the economic cycle is a central question in the study of public economics, and it has been stressed after the recent international financial crisis. From an institutional point of view, there is an increasing relevance of stability in the context of The Stability and Growth Pact, which determines a rule-based framework for the coordination of national fiscal policies. However, sub-national fiscal policies have received much less attention in the literature. To the best of our knowledge only Claeys, Ramos and Suriñach (2008), Rodden & Wibbels (2010) and Argimón & Hernández de Cos (2012) have dealt empirically with fiscal reaction functions at regional level. Therefore, this work contributes in expanding the evidence around the reaction to the cycle of sub-national fiscal policies.

The principal objective of this paper is to analyse the responsiveness of ACs (Autonomous Communities) fiscal policy to cyclical position, as well as to other determinants such as institutional and political economy features. In the present situation, the striking deterioration of Spain's fiscal position (as well as of the ACs) makes this area of research especially attractive. One of the main challenges is to test an asymmetric reaction of Spanish ACs fiscal policy to changes in the cyclical conditions. ACs fiscal policy may be countercyclical but surpluses in expansions may not offset deficits in downturns. As we shall see, the empirical evidence provides no clear support to this hypothesis. Regarding the correlation of ACs fiscal policy with the cycle a procyclical behaviour has been identified, although some ACs do no present such a pattern.

Another contribution is the inclusion of a wide range of political economy and institutional variables. In this regard, we provide several institutional

variables which have not been included in the literature when estimating fiscal reaction functions. For instance, we control for expenditure responsibilities, fiscal corresponsibility as well as relative fiscal resources.[1] Results suggest that ACs primary budget balance (PBB) worsened as education and health were devolved, which may be indicative of underfunded responsibilities. Another interesting finding is that fiscal corresponsibility presents a positive effect on the PBB until the latest global financial crisis. As for relative fiscal resources we also identify a significant effect on PBB, which should be taken into account as there have been great disparities in terms of relative resources between ACs since the inception of the Autonomic Financing System. Furthermore, we have dealt with the effects of the cash advance system, an issue not analyzed in the literature which interferes in the fiscal behavior of the ACs.

The article is structured in six sections. After this introduction we discuss the institutional background in which the ACs develop their activity, and in particular fiscal decentralization issues as well as a brief summary of fiscal rules in Spain regarding debt and budget deficits. In section 3 we review some empirical studies that have focused on fiscal policy rules. Next, we discuss data issues and summarize the evolution of debt and budget balances for the ACs. In section 5 we present panel data estimates of the primary budget balance reaction function. We restricted our analysis to period 1987-2010. Before 1987, the central government provided the funding of the transferred services according to the *effective cost* (the cost before decentralization) which included

[1] Argimón and Hernández de Cos (2012) included a proxy to fiscal corresponsibility which differs substantially from ours. We only consider revenues which may be changed, while their indicator captures the proportion of tax revenues with respect to non financial revenues.

direct and indirect costs, as well as investment outlays. Thus, we exclude of our analysis the previous period, as ACs had low incidence on the evolution of budget balances. Next, in section 6 we do an analysis of ACs structural fiscal policy, in particular its correlation with cyclical conditions. Finally, section 7 concludes.

2. Institutional background

In the past 30 years Spain has moved from a highly centralized public sector to a distribution of revenues and expenditures similar to federal countries like Australia, Germany or Switzerland (see Molina and Mussons, 2010). The 1978 Spanish Constitution organises the present territorial structure into municipalities and provinces at the local level, and 17 ACs at the intermediate level and recognizes their autonomy to manage their own interests. The decentralization process in Spain has been very fast regarding expenditures, in contrast with the revenue side. Figure 1 reflects the Spanish territorial decentralization from the expenditure side.[2] All the ACs have assumed responsibilities in fundamental areas of the welfare state such as education, health and social services. ACs represent one third of non financial public expenditures in Spain according to 2010 data (see Table1). However, ACs non financial revenues are just below 20 % of the public sector (Table 1). Therefore, despite these institutional changes, vertical fiscal imbalance is still important at the intermediate level in Spain. It should be highlighted that dependence on

[2] Data represented in Figure 1 include financial expenditures, and therefore it differs from data presented in Table 1, which refer to non financial expenditures.

central government transfers is generally associated with lower subnational fiscal performance (e.g. Rodden, 2002).

[Figure 1]

[Table 1]

This decentralization process is one of the main issues to bear in mind in order to ensure an appropriate evaluation of ACs budgetary policy. There are some asymmetries that should be noted for the Spanish case. On the one hand, there are two regimes with important differences regarding authority to raise taxes and regarding per capita public resources: the foral regime and the common regime. The Foral regime, which refers to the Basque Country and Navarra ACs, is characterised by a high level of fiscal autonomy, low interregional solidarity and a higher (per capita) public resources with respect to common system ACs. On the other hand, another fundamental asymmetry is related to the devolution process of spending responsibilities. There were a fast and a low path to assume the ACs responsibilities. The high responsibility regions (Andalusia, Canary Islands, Catalonia, Valencian Community and Galicia) were responsible, in general, for health and education since the 80s. Instead, the rest of ACs completed the decentralization process in 2002. Health and education account for the largest part of the budget, representing 65.7 percent in 2007 of the total spent by ACs (Molina and Mussons, 2010). Nevertheless, we should keep in mind that central government is also able to establish the basic legislation on these areas, and therefore it can condition ACs expenditure.

Furthermore, among the Common regime we must point out the main changes in the regional financing agreements of our period of reference, as it

conditions the responsiveness of ACs fiscal policy to cyclical conditions. There have been five financing agreements since 1987, that cover these periods: 1987-1991, 1992-1996, 1997-2001, 2002-2008 and 2009- which is the current agreement in force. Along this period, ACs have been mainly financed through central government transfers. Initially the Common regime was characterized by having a fair amount of expenditure responsibility, but very little revenue autonomy. The regions in this regime were mainly financed by central government transfers until 2001. The 2001 agreement increased responsibility of the regions. It increased the number of ceded taxes as well as the tax power of the ACs in order to improve their fiscal responsibility. In fact, it pretended to be the definitive agreement but it could not cope with unexpected population increase which was uneven across regions. Finally, the current model, which has been applied since 2009, represents an improvement in terms of autonomy and financial sufficiency, at the same time as introducing explicit mechanisms of levelling and solidarity. Therefore, as fiscal autonomy has increased over the last 30 years we expect ACs to be more responsive to cyclical conditions.

Another important issue to ensure an appropriate evaluation of ACs budgetary policy is the legislative fiscal rules in force at any time. In fact, budgetary activity of the ACs is limited by a group of fiscal rules that condition their performance, in particular, LOFCA (the Organic Law on the financing of ACs), Budgetary Consolidation Scenarios (BCS) as well as recent budgetary stability legislation. LOFCA distinguishes between short term credit operations, to cover transitional financial needs, and long term operations, that have to fulfil the following requirements: a) the total amount of the credit has to be devoted to fund investment expenses, b) amortizations and interests cannot exceed of

25% of current revenues. Besides, the permission of the central government is needed for external operations.

The strong increase of regional debt in the early nineties and the signing of the Maastricht Treaty, which establish some requirements regarding the sustainability of the public finances, are the origin of the BCS between the State and each AC. These scenarios fixed deficit and debt ceiling for each AC by means of bilateral negotiations. This frame of bilateral negotiation takes place since 1992 until the year 2001. Despite some weaknesses of design and repeated breaches by some ACs, it is necessary to recognize that the BCS introduced the culture of budgetary stability and achieved to brake the increasing trend of regional debt.

In 2001 it came into force a stability law with stringent legal requirements (i.e. annual equilibrium) as, in practical terms, it excluded debt as a source to fund investment expenses. Next, a reform of the Budgetary Stability Act was passed in 2006, which made more flexible the budgetary stability principle. This reform enabled central and regional government to adapt its fiscal stance to cyclical conditions; it enabled ACs to run a deficit of 0.75% of GDP if economic growth situates below a determinate threshold. Besides, under special circumstances, it was possible a 0.25% additional deficit to fund productive investments.

3. Fiscal policy rules: an empirical review

Our empirical analysis of the behaviour of fiscal policy over the cycle is based on the estimation of fiscal reaction functions, where measures of the fiscal stance are regressed against a series of possible factors explaining the behaviour of fiscal authorities, notably the past level of deficit, debt and a measure of cyclical conditions. This is the main framework although the literature differs in the specification of these functions.

- Type of rule. Do we base our policy rule on the expectation of the output gap (forward-looking rule) or on the past values of the output gap (backward-looking rule)? This question was raised by Clarida, Galí and Gertler (2000) in the context of monetary policy rules. The potential autocorrelation of budget decisions should also be considered, that is, by including the lagged dependent variable as a regressor (for instance, by specifying a partial-adjustment model). In fact, most of the literature considers a dynamic specification when dealing with fiscal reaction functions. Non-linear issues related to debt and related to switching models are also interesting extensions to the baseline model (see Bohn (1998) and Claeys (2008) respectively).

- Dependent variables. The choice of the dependent variable is not neutral. In fact there are various elements that might be addressed. Firstly, we should choose the specification in levels or in first differences, as Turrini (2008) or Golinelli and Momigliano (2009) remark. In our case, we use specification in levels to analyse the determinants of ACs fiscal policy in section 5, whereas in section 6 first differences are used in order to assess the correlation of ACs fiscal policy with cyclical conditions (as

Turrini, 2008). Secondly, it is also of great relevance the cyclical adjustment of fiscal data. If we cyclically adjust our data we are dealing with discretionary measures, whereas if we don't adjust we are analysing the whole effect on fiscal policy (automatic as well as discretionary measures). In this regard, the literature does not show a clear inclination. In addition, it seems of particular interest to extend the analysis for revenues and expenditures, as they might show a different behaviour (Turrini, 2008).

- Independent variables. The baseline model, which follows the seminal paper by Bohn (1998), includes variables that capture the debt stabilisation motive (a test of the government solvency) as well as the output gap stabilization motive (a test of the government response to cyclical conditions). "*The choice of the output gap in levels focuses on whether the position of the economy is above or below its trend and on its distance from it, while the reference to growth measures focuses on whether the economy is in an upturn or in a downturn and its intensity*" (Golinelli and Momigliano, 2008, p.4).

Moreover, the role of monetary policy variables (e.g. a potential interaction with fiscal policy variables, see Claeys, 2005) as well as political economy issues may be considered. Argimon and Hernández de Cos (2012) build political economy variables for the Spanish case which cover ideology of the incumbents, political alignement as well as electoral-cycle models. Sorribas-Navarro (2011) also evaluated the fiscal behaviour of politically-aligned regions but as a determinant of central government bailouts.

- Robustness analysis. It is a central issue in these studies to assess the robustness of the main results. Accordingly, it is interesting to account for alternative measures of the output gap (for instance, real time data in case it is available), a stability analysis as well as comparing results using different data sources (see Golinelli and Momigliano, 2009).

- Method of estimation. If we consider that fiscal policy could have real effects (that is, it is endogenous) we should use instrumental variables or GMM methods. However, if we consider that fiscal policy is exogenous we could use OLS. In the present case, we estimate our fiscal reaction functions using instrumental variables (and also using OLS to check the main differences). As an instrument, we take the output gap of the biggest five Spanish export market weighted by its exports shares, in line with Galí and Perotti (2003) empirical strategy. Besides, it seems interesting to assess differences between single equation and panel data results. When dealing with panel data we might allow for contemporaneous correlation between error terms, and therefore apply SURE estimation (e.g. García et al. (2009).

4. Data

Before the econometric analysis we provide some remarks concerning our dependent variable in the econometric analysis (i.e. primary budget balance) and related to the co-movement between cyclical conditions and primary budget balance. Appendix A2 provides some descriptive statistics of the variables used in the following section and Appendix A3 deals with the definition of the variables and the data sources.

To start with, primary budget balance of each AC is computed according to budgetary criteria both regarding to the institutional scope covered as well as to the accounting rules. On the one hand, this data relates to all the public units included in the consolidated budget of each AC. On the other hand, the use of budgetary accounting criteria differs with National Accounts methodology. A scatter plot immediately reveals a high correlation between both criteria and poorer fiscal performance when dealing with national accounts data in relation to budgetary data. Notwithstanding these limitations, budgetary data allows us to analyse 1987-2010 period whereas national account data adapted to ACs is available only since 2003 (to the best of our knowledge). These issues will be discussed in turn.

Then, our focus turns to the co-movement between cyclical conditions and primary budget balance, i.e., our dependent variable. In this article, cyclical conditions are captured by changes in regional unemployment rate (ur). Nevertheless we should note that an unsuccessful attempt with output gap measures (via a Hodrick-Prescott filter) has been made. Figure 2 provides compelling evidence of a failure of HP filter to capture the intensity of the most recent crisis, despite using official forecasts for the Spanish economy in order to minimize the end-point bias.[3] Instead, changes in the unemployment rate properly capture the key features of the Spanish economic cycle.

[Figure 2]

The model fit to data is much better in first differences than in levels. This result is probably related to the great dependence of ACs financial resources to

[3] Estimates of ACs fiscal reaction functions with output gap measures may be sent on request.

the evolution of the real-state sector, which may be more responsive to growth measures. As mentioned above, the choice of the cyclical position in levels focuses on whether the position of the economy is above or below its trend and on its distance from it, while the reference to growth measures focuses on whether the economy is in an upturn or in a downturn and its intensity.

According to changes in the unemployment rate we can identify different subperiods; two upturn periods (1987-1990 and 1995-2007) and two downturn periods (1991-1994 and 2008-2010). For each AC and subperiod, we compute the mean of the changes in the unemployment rate and the mean of the primary budget balance as a share of GDP. These statistics are shown in Table 3, which also reports the ratio between both variables. The latter ratio can be interpreted as a simple statistic that captures the sign and intensity of the fiscal response. The following section examines the determinants of AC primary budget balances, with special attention given to the sensitivity of primary budget balance to changes in cyclical conditions.

5. Evidence from the estimation of fiscal reaction functions for ACs

In this section we deal with the econometric estimation of fiscal reaction functions for ACs, that is, we attempt to control the main factors that affect their fiscal stance. In other words, we isolate the impact of factors that have an influence on the stance of ACs fiscal policy. Our baseline specification takes the primary balance to GDP ratio (**pbb**) of each AC as the policy instrument and set its target for that instrument as a function of changes in the unemployment rate (***d (ur)***), the lagged dependent variable, an index of expenditure responsibilities

(**ires**) and an electoral cycle variable (**ecycle**). We do not include debt (**debt**) in our baseline specification as data is only available from 1992.

In some specifications we allow for asymmetric reactions to the cycle, by including two variables which capture the change in the unemployment rate in upturns (***d(ur) negative***) and downturns (**d(ur) positive**). Other extensions of this fiscal rule are also considered, by including institutional and political economy variables. Concerning political economy variables, we should distinguish between variables related to the incumbents and the incidence of the institutional framework.

Ideology of the incumbents is a significant factor that lies behind primary budget balance determinants. We address this factor by two means: first, in terms of the number of seats corresponding to the concerned ideology (**% of left-wing seats and % of nationalist seats**), and second, we capture the ideology of the incumbent president with a dummy (**left-wing president and nationalist president**).[4] In addition, we include a political alignment variable (**aligned**) indicating if the incumbent party (or the party leading the incumbent coalition) in the regional government is the same as the incumbent party in the central government (or the party leading the incumbent coalition).

The incidence of the institutional framework is complex, especially in Spain with its decentralized government. Therefore we have included a wide range of variables to capture variation in AC responsibilities (**index of**

[4] The effect of a single dummy independent variable is equivalent to an intercept shift. So the three independent political party variables measure the difference in terms of primary budget balance between the variable concerned and the benchmark group (PP). The base or benchmark group is governments where its president belong to right-wing parties which are not nationalists, i.e., to Partido Popular.

expenditure responsibilities, which tracks the increase in regional expenditures needs due to the assignment of the provision of health and/or education)[5], fiscal corresponsibility (**fiscal corresponsibility 1997-2001 and fiscal corresponsibility 2002-2010**, which captures the % of AC fiscal resources that may be changed)[6], relative resources of the autonomous financing system (**index of relative fiscal resources**), legislative fiscal rules (**Budget Consolidation Scenarios**, a dummy variable which takes the value 1 in the period 1992-2001; **Budget Stability Act 2001**, a dummy variable which takes the value 1 in the period 2002-2006; and **Budget Stability Act 2006**, a dummy variable which takes the value 1 in the period 2007-2010), foral ACs (**foral AC** takes a value of 1 for the Chartered Community of Navarra and the Basque Country) and uniprovincial ACs (**uniprovintial AC** takes a value of 1 for the Community of Madrid, the Chartered Community of Navarra, Balearic Islands, La Rioja, Cantabria, the Principality of Asturias and the Region of Murcia).[7] Ultimately, these institutional features could condition the ACs fiscal reaction to the cycle. Before presenting our empirical specifications we remind that Appendix A3 provides the data sources of the variables used in the analysis.

[5] The index of expenditure responsibilities is defined following Sorribas (2011).
[6] The fiscal corresponsibility indicator is splitted into two variables which take the value of the mentioned indicator for the corresponding period (1997-2001 and 2002-2010), and 0 otherwise. This separation is necessary as changes in expenditure responsibilities make this indicator not homogenous across the sample.
[7] In these uniprovincial ACs, the regional government also assumes the functions of provincial local governments.

The estimation method used is seemingly unrelated regressions (Zellner, 1962), which considers the possibility that the error terms may be correlated across the equations of the system:[8]

$E(u_{it}, u_{js}) = \sigma_{ij}$ for all $t = s$, $E(u_{it}, u_{js}) = 0$ for all $t \neq s$.

This system consists of all the ACs. For instance, we might expect that a central government measure which affects the primary budget balance in one AC would simultaneously affect the primary budget balance in other ACs as well.

In addition, it is necessary to bear in mind that fiscal policy could have real effects, and accordingly changes in the unemployment rate may be endogenous. In other words, fiscal policy does not only react to the cycle but it can also influence it. Therefore, we also estimate our fiscal reaction functions using instrumental variables. In line with Galí and Perotti (2003) we need to instrument our endogenous variable with that of another country (or group of countries) with which it is likely to be correlated for reasons other than the existence of coordinated fiscal policies. So, we take as an instrument the output gap of the biggest five Spanish export markets weighted by its exports shares. This variable is much less volatile than Spanish unemployment rate (in first differences) as we can see in the Figure 2.

We also take into account the strong inertia related to policy processes. As Ballabriga and Martínez-Mongay (2002, p.9) states "*inertia is to a large extent explained by the political difficulty of changing past spending commitments and carrying out regular and recurrent drastic adjustments in tax codes*". Hence, we include the lagged dependent variable as a regressor.

[8] García et al. (2009) estimate fiscal policy rules for EMU countries with the same method.

[Table 2]

The main results are discussed below. In this section we assess the ACs PBB (in levels) reaction to changes in cyclical conditions. Next section includes an analysis of ACs PBB (in first differences), which is more suitable to assess the cyclicality of fiscal policy. Endogeneity of cyclical conditions has been checked with Hausman test and, as we reject the null hypothesis, we instrument the changes in the unemployment rate of each AC. Regarding instrument weakness we provide the partial Shea-Godfrey R-squared statistic which is computed according to Godfrey procedure (1999). Results do not indicate weakness of our instrumental variables, with the exception of our asymmetric specification.

Overall, ACs fiscal policy is countercyclical as primary budget balance reaction to changes in the unemployment rate is negative. When asymmetries are allowed we cannot infer an asymmetric reaction of Spanish ACs fiscal policy to the cycle (see specifications 3 and 4).

In connection with cyclical sensitivity we have also tested if the reaction to the cycle differs depending on AC political and institutional status (see specification 8). Therefore, we have interacted dummy variables with changes in the unemployment rate to allow for differences in slopes. The results suggest that foral ACs and left-wing governments are more responsive to changes in cyclical conditions; in fact, their fiscal behavior is more countercyclical. Conversely, uniprovincial AC exhibit a more procyclical pattern.

Concerning political economy variables, as we have previously stated, we should distinguish between the effect of variables related to the incumbents and the incidence of the institutional framework. Ideology of the incumbents is a significant factor that lies behind primary budget balance determinants.

Nationalist parties present a more prudent fiscal policy than right-wing non nationalist parties (PP) according to the % of seats, but when considering president ideology the opposite result was found. Left-wing governments present an ambiguous pattern as their response also differs depending on the definition used. President ideology indicates a negative correlation with respect to right-wing non nationalist parties, whereas proportion of left-wing seats in the parliament does not present a significant effect. Another interesting finding is the growth of the budget deficit just before elections, in line with electoral-cycle hypothesis. However, it must be remarked that this variable is only significant when using one lag. This means that the fiscal stance of ACs worsens the year before the elections. Lastly, we do not find robust evidence regarding the effect of political alignment on ACs primary budget balance.

The incidence of the institutional framework is complex, especially in Spain with its decentralized government. Therefore we have included a wide range of variables to capture variation in AC responsibilities, fiscal corresponsibility, relative resources of the autonomous financing system and fiscal rules. First, as AC had more responsibilities (that is, when education and health responsibilities were devolved) their accounts presented a worse fiscal stance. This result is captured by the negative expenditure responsibility index coefficient.

Second, fiscal corresponsibility, measured as the proportion of ACs autonomous financing system resources which can be changed, presents different results according to the period under consideration. These estimates refer only to the subset of ACs belonging to the common regime, as our fiscal corresponsibility indicator does not capture properly the higher fiscal

corresponsibility of “foral territories”. Turning to results, we observe no significant reaction of this indicator with respect to ACs primary budget balance for the period 1997-2001.This results points out a lower fiscal corresponsibility of common regime ACs until 2001. The 2001 and 2009 ACs fiscal agreements increased their corresponsibility. It increased the number of ceded taxes as well as the tax power of the ACs in order to improve their fiscal responsibility. In fact, we obtain a positive association for the period 2002-2008, although we get a sign change when we include the last two observations (2009 and 2010). In this regard, we should be cautious with this result as last observations are extremely influential on the estimated coefficient for fiscal corresponsibility index, which increases in 2009 as a result of the last AC financial arrangement. Third, we have also introduced in the fiscal reaction function the relative resources of the autonomous financing system. This variable is significant, indicating that more financial resources lead to a better fiscal stance. However, foral regime variable loses its significance when introducing this variable. We should bear in mind that there has been a great disparity in the relative resources among AC. A first disparity is between the foral and the common systems. In this regard, Zubiri (2011, p. 112) states that “*the Basque Country and Navarre obtain about 50% more per capita resources than the average Common Regime*”. In second place, among the common system there are also significant differences in per capita financing. Furthermore, concerning institutional framework, we must turn to fiscal rules, which have improved significantly the primary budget balances until 2006, as we can appreciate in specification (9). Therefore, in terms of budgetary stability we can provide a positive assessment of the Budgetary Consolidation Scenarios (1992-2001) as well as of the Budgetary Stability Law

approved in 2001, in contrast with the reform passed in 2006 which does not take a significant value.

The results also show that there is a great inertia in the budgetary process, as the lagged dependent variable is very significant, with an estimated coefficient around 0.51. This inertia has recently increased as a result of the last international financial crisis. In this regard, estimations of the baseline specification until 2004 lead to an estimated coefficient of 0.42, in line with Argimón and Hernández de Cos (2012) estimates.

At this point we turn to the effects of the ACs cash advance system on the fiscal stance (which only refers to the common regime ACs, as the foral ACs collect and administrate almost all of their revenues). In the common regime most of the taxes are collected by the central government, with the exception of the wholly assigned taxes and the own taxes. The central government administrates the partially transferred taxes (personal income tax, value added tax and some excise duties) which constitute the lion's share of non financial revenues. The common financing system establishes a cash advance system for the partially transferred taxes. The central government transfers annually the 98% of forecasted revenues. Two years later, there is a settlement to cancel differences. However, it should be taken into account some specific features of the health cash advance system (in force until 2002). In this case, the settlement to cancel differences happened the following year. In addition, but only for a few years, the central government corrected the cash advances before the final settlement. Overall, this complex framework undermined the ACs capacity to decide its own fiscal policy and placed distortions in ACs

managing of financial resources, especially when the central government forecasts were extremely inaccurate.

As an empirical strategy we have introduced in our fiscal reaction function the central government's GDP growth forecast error with a lag structure, in order to capture the effects of the above mentioned complex framework of annual cash advances. We aim to investigate the extent to which central governents forecasts can condition the ACs fiscal policy. To start with we provide figure 3 where it is noticeable the systematic central government underestimation of GDP growth for the period 1998-2007, in contrast with the large overstimation for the period 2008-2009. Therefore, as GDP growth is a key input for forecasting partially transferred taxes we examine the effects of these deviations on the ACs primary budget balance. We obtain a negative effect of central government's GDP growth forecast error on the fiscal stance of ACs, with a dynamic structure up to lag two. In this connection, this result is in line with Leal et al. (2008) which state that errors committed when forecasting macroeconomic variables are responsible for an important part of fiscal forecast errors. This result should be taken into account in the next revision of ACs financing system and thereby modifying the cash advance system properly. Nevertheless, we should be cautious as the forecast error variable is quite correlated with cyclical conditions, which may lead to inaccurate estimates caused by multicollinearity.

[Figure 3]

[Table 3]

Finally, with regard to responses to debt accumulation we should point out that until 2010 AC reaction was increasing primary surpluses, thereby guaranteeing

fiscal solvency. Nevertheless, this systematic pattern should be qualified when national account data are used instead of budgetary data (see next box). We only present results for the available period, 2003-2010. The outcome of this analysis, when using national accounts data, suggests a negative reaction of PBB to debt accumulation which is indicative of fiscal unsustainability. Therefore, government indebtedness is one of the challenges that deserve further attention.

[Table 4]

6. Cyclicality of the ACs fiscal policy (and of the Spanish General Government)

Before tackling with the assessment of ACs fiscal stance we provide some remarks that deal with the stabilising function of fiscal policy (FP), especially of subcentral governments. It is broadly accepted the convenience of a countercyclical FP in order to smooth the effects of economic cycles. Nevertheless we often find a procyclicality stance of FP due to borrowing constraints or political distorsions.

As for subcentral governments, the classical literature on federalism assigns the stabilising function of the growth of the economy to the central level, due to the absence of monetary power at sub-central level, the greater degree of openness in the economy, fiscal competition as well as *a priori* procyclical behaviour of sub-national governments. Nevertheless, a part of the literature considers convenient the intervention of sub-national governments to guarantee the stabilising role of fiscal policy. In this respect, high decentralization of spending responsibilities in many countries is one of the main reasons that justifies the intervention of subcentral governments in the stabilising function, as

the scope for central government to carry out stabilization policies have been constrained. Countercyclical FP by subcentral government may also be appropriate to deal with asymmetric shocks across the states. Nevertheless it is important to ensure some degree of fiscal coordination in order to avoid undesired (vertical and horizontal) externalities.

In this section we examine the correlation of the ACs fiscal policy with the cyclical conditions. This is an issue of growing importance as fiscal decentralization in Spain has lead the ACs to be the first level of government regarding the expenditure side when we exclude financial expenditures (see Table 1). Our focus rests on the structural or cyclically adjusted component of the primary budget balance, as its variations are due to the discrecionality of fiscal authorities. Therefore we exclude of our analysis the automatic response of fiscal variables to changes in the cyclical conditions. We are going to assess not only the cyclicality of the ACs fiscal policy, but the Spanish General Government too. The results for the latter can be used as a benchmark, although the assignment of responsibilities between levels of government makes this benchmark somewhat dubious.

Disentangling the structural from the cyclical part of the PBB is not a closed issue in the literature. We can distinguish two main approaches. The former is the one used by the European Commision (see Girouard and André, 2005), which evaluates from a disaggregate point of view the automatic response of the different budget items. The latter approach obtains the cyclical part of the PBB from an aggregate point of view. However, at the same time, there are different methods to obtain this cyclical component. We highlight a straight-forward approach (e.g. Raymond, 1996), which is used in the present

work (see the following expressions, 1 and 2), as well as an approach based on unobserved components models that use economic relationships (like the Phillips Curve or the Okun's Law) to infer the structural component of PBB (e.g. Corrales et al, 2004). In further works it would be interesting to evaluate the consistency of our results with other approaches to the structural PBB.

$$\widehat{structural}\ PBB = PBB - \widehat{cyclical}\ PBB \quad [1]$$

$$\widehat{cyclical}\ PBB = \widehat{PBB} - [\widehat{PBB}|d(ur) = 0] \quad [2]$$

In order to assess countercyclicality we focus on a marginal concept (as Turrini, 2008), that is we appraise the correlation between changes in the structural PBB and changes in the unemployment rate. We have used budgetary data for ACs and Spanish General Governement in order to guarantee data homogeneity. A distinction is made between the pre-crisis period and the whole period, as a robustness check. A negative correlation between the variation of the PBB and the variation of the cyclical conditions is indicative of countercyclicality, while the opposite indicates procyclicality.

ACs have been procyclical over the period 1987-2010, whereas the Spanish General Government does not present any significant link with the cyclical conditions. Nevertheless, in the former case it should be pointed out that ACs procyclical behaviour have diminished since the latest global financial crisis. Besides, in the latter case the sign of the correlation between our variables of interest changes but not at significant levels.

[Table 5]

In addition, not all ACs have the same response, as it is shown below. Overall, results are consistent regardless of the method of estimation. We have checked if results are robust to different weighting specifications as well as to the introduction of fixed effects. From this analysis we should highlight that some ACs present a clearly procylical fiscal stance like Asturias, Balears, Catalunya, Extremadura, Madrid and La Rioja. The foral ACs, Canarias and Castilla la Mancha are the ones with a more countercyclical / acyclical behaviour, and the rest are prone to procyclicality despite the onset of the current crisis has partially offset such behaviour.

[Table 6]

7. Conclusions

One of the main objectives of this paper is to analyse the responsiveness of ACs (Autonomous Communities) fiscal policy to the cyclical position of regional economies. In this regard, we have not identified an asymmetric reaction in ACs fiscal policy, but a procyclical behaviour which have dampened in the onset of the latest financial crisis. In Spain the lion share of the welfare state is a regional responsibility. A procyclical behaviour of this level of government does not seem to contribute positively to the welfare of its citizens, as it impacts on health, education and social services expenditures. Therefore a new setting should be implemented to avoid these undesired results. Increasing fiscal autonomy, especially regarding tax collection and administration, is an option that should be considered, especially in a context where subnational access to credit market has stalled. Other ways to counteract procyclicality (see Rodden 2012) are modifying the tax basket (and assigning less volatile tax

sources to subcentral governements), guaranteeing a countercyclical incidence of central government grants, fostering incentives to save during good times (that is, fostering rainy day funds) and increasing subnational borrowing autonomy to the extent possible. Thus, it might be interesting to evaluate the new fiscal rules stated by the organic law on budgetary stability and financial sustainability of public administrations. In this connection, we remark a counterfactual exercise by Hernández de Cos and Pérez (2013) which advocates the effectiveness of this rule. Nevertheless, we point out that the instauration of the rule in bad times may prevent government spending (as a fraction of GDP) returning to pre-crisis levels.

To ensure an adequate evaluation of the fiscal position of ACs we also deal with other key determinants that make up our fiscal reaction functions: institutional features related to the Spanish decentralization process, legislative fiscal rules, political economy variables and responses to debt accumulation. In connection with institutional features we provide several variables which have not been included in the literature when estimating fiscal reaction functions (to the best of our knowledge). For instance, we control for expenditure responsibilities, fiscal corresponsibility as well as relative fiscal resources. Results suggest that as education and health were devolved ACs primary budget balance (PBB) worsened, which may be indicative of underfunded responsibilities. As for relative fiscal resources we also identify a significant effect on PBB, which should be taken into account as there have been great disparities in terms of relative resources between ACs. Therefore the next revision of ACs financing system (envisaged for 2014) should evaluate the current distribution of public resources to ensure horizontal equity between ACs.

Furthermore, regarding institutional features, we highlight the analysis of the cash advance system. In short, ACs public finances are conditioned on the accuracy of central government forecasts, which gave a wrong signal in the early stage of the last crisis. In this regard, it would be advisable either increasing fiscal autonomy or correcting the cash advance estimates on real time (and not on an annual basis).

Another interesting finding is that fiscal corresponsibility presents a positive effect on the PBB until the latest global financial crisis. We would note at this point that the uneven decentralization process in Spain –when regarding both the revenue and the expenditure side- may have not fostered a fiscally responsible behavior among ACs. This situation is becoming increasingly evident with the striking deterioration of regional public finances. Accordingly, ACs fiscal behaviour may improve by increasing revenue autonomy and decreasing dependence on central government transfers and tax sharing schemes (as is the case of VAT and excise taxes).

Legislative fiscal rules have been also a key determinant of ACs fiscal position. These rules have improved significantly the primary budget balances of the ACs until 2006, that is, the Budget Consolidation Scenarios (in force between 1992 and 2001) and the Budget Stability Act passed in 2001 (in force between 2002 and 2006). Instead, the Budget Stabilty Act approved in 2006 could not cope with the recent deterioration of regional public finances. This field deserves further attention, and in particular it seems very interesting to monitor the incidence on all levels of government of the Organic Act on Budgetary Stability and Financial Sustainability of Public Administrations passed in 2012.

Political economy variables offer some interesting results, which are ambiguous in some fields. To start with solid results we found that the fiscal stance of ACs worsens the year before the elections, in line with the electoral-cycle hypothesis. We also find that foral ACs have been more responsive to changes in cyclical conditions. Regarding ideology of incumbents we obtained mixed results. Nationalist parties present a more prudent fiscal policy than right-wing non nationalist parties (PP) according to the % of seats, but when considering president ideology the opposite result was found. Furthermore, left-wing governments also present an ambiguous pattern as their response differs depending on the definition used. In addition, we do not find clear evidence as for the effect of political alignment on ACs PBB. After all, it seems advisable to design a fiscal policy rule for ACs which guarantees fiscal sustainability, regardless of political economy issues.

Lastly, concerning debt accumulation our estimates indicate that ACs fiscal adjustment guaranteed fiscal sustainability until 2010. Nevertheless, as we have mentioned, this systematic pattern may have changed in recent times as more indebted ACs have run larger budget deficits. This upward trend in government indebtedness is one of the challenges that deserve further attention in the near future.

Appendix 1. References

Argimón, I. and P. Hernández de Cos (2012). “Fiscal Rules and Federalism as Determinants of Budget Performance: An Empirical Investigation for the Spanish Case”, *Public Finance Review*, 40, 30-65.

Ballabriga, F. and C. Martinez-Mongay (2002). “Has EMU shifted policy?” European Commission, European Economy Economic Paper, 166.

Bohn, H. (1998). “The Behaviour of U.S. Public Debt and Deficits”, *Quarterly Journal of Economics*, 113 (3), 949-963.

Clarida, R.; Galí, J. and M. Gertler (2000). ‘Monetary policy rules and macroeconomic stability: Evidence and some theory’, *Quarterly Journal of Economics*, 115 (1), 147-180.

Claeys, P. (2005) “Policy mix and debt sustainability: evidence from fiscal policy rules”, CESifo working paper no. 1406.

Claeys, P; Ramos, R. and J. Suriñach (2008). "Fiscal sustainability across government tiers”, *International Economics and Economic Policy*, 5(1), 139-163.

Corrales, F., Doménech, R. and J. Varela (2002), “El Saldo Presupuestario Cíclico y Estructural de la Economía Española”, *Hacienda Pública Española*, 162(3), 9-33.

Galí, J. and R. Perotti (2003). “Fiscal policy and monetary integration in Europe”, Economic Policy, 18 (37), 533-572.

García, A.; Arroyo, M.J.; Mínguez, R. and J. Uxó (2009). “Estimation of a fiscal policy rule for EMU countries (1984-2005)”, *Applied Economics*, 41, 869-884.

Girouard, N. i C. André (2005). "Measuring Cyclically-adjusted Budget Balances for OECD Countries," OECD Economics Department Working Papers, 434, OECD, Economics Department.

Godfrey, L.G. (1999). “Instrument relevance in multivariate linear models”, *Review of Economics and Statistics*, 81, 550-552.

Golinelli, R. and S. Momigliano (2009). "The cyclical response of fiscal policies in the euro area. Why do results of empirical research differ so strongly?", Fiscal Studies, 30(1), 39-72.

Hernández de Cos, P. and J. Pérez (2013). “La nueva ley de estabilidad presupuestaria”, *Boletín Económico del Banco de España*, abril, 65-78.

Leal, T.; Pérez, J.J.; Tujula, M. and J.P. Vidal (2008) “Fiscal forecasting: lessons from the literature and challenges”, *Fiscal Studies*, 29, 347-386.

Molina, V. and J.M. Mussons (2010). Els governs intermedis: autonomia, solidaritat i competències des de l’experiència comparada. Paper de treball 14/2010, Departament d’Economia i Finances, Generalitat de Catalunya.

Raymond, J. LL. (1996). “El carácter estructural del déficit presupuestario”, *Papeles de Economía Española*, 68, 192-198.

Rodden, J. (2002). “The Dilemma of Fiscal Federalism: Grants and Fiscal Performance around the World”. American Journal of Political Science, 46, 670-687.

Rodden, J. and E. Wibbels (2010). “Fiscal Decentralization and the Business Cycle: an Empirical Study of Seven Federations”, *Economics & Politics*, 22, 37-67.

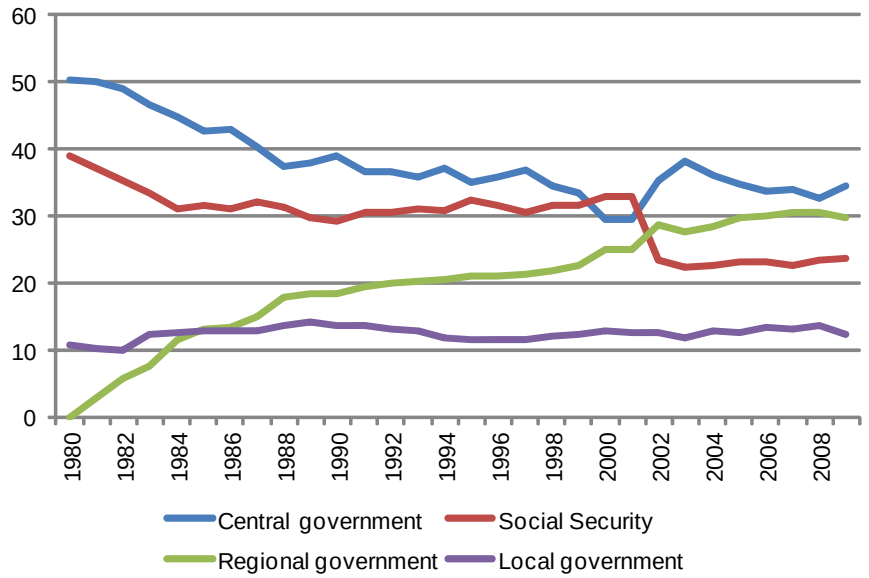
Sorribas-Navarro, P. (2011). “Bailouts in a fiscal federal system: Evidence from Spain”, *European Journal of Political Economy*, 27, 154-170.

Turrini, A. (2008). "Fiscal policy and the cycle in the Euro Area: The role of government revenue and expenditure," *European Economy - Economic Papers*, 323, Directorate General Economic and Monetary Affairs, European Commission.

Zubiri, I. (2011). The *Economic Agreement between the Basque Country and Spain*. Ad Concordiam.

Figure 1. Distribution of public expenditures by levels of government[a]

% of total



Source: Spanish Ministry of Finance and Public Administration.

[a] total expenditures (including financial expenditures).

Table 1. Distribution of non financial public expenditures and revenues by levels of government

% of total. Non financial public expenditures

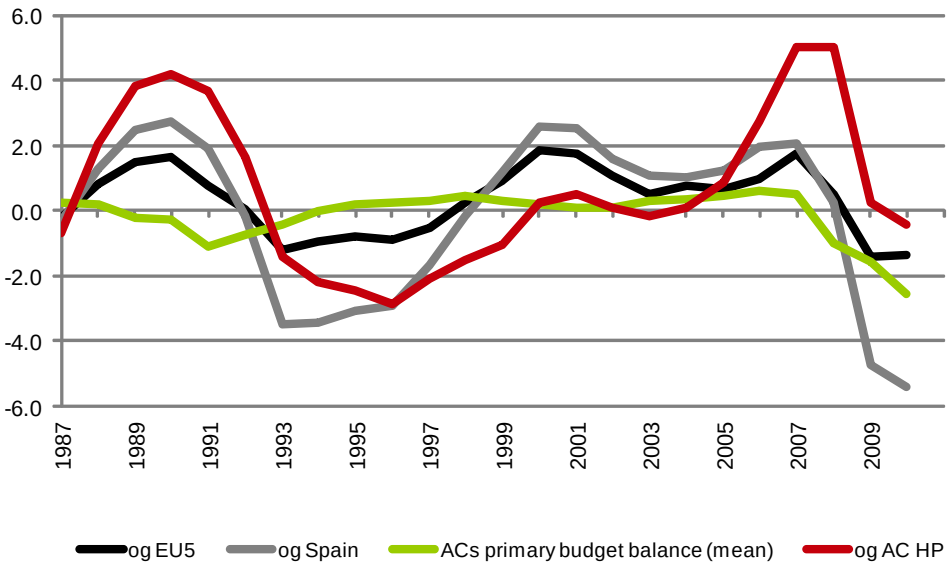
	Central government	Social Security	Regional goverment	Local government
2001	24.8	29.3	33.0	12.8
2002	24.4	30.3	32.3	13.1
2003	23.5	29.2	34.0	13.3
2004	24.4	28.8	34.2	12.5
2005	22.4	28.8	35.7	13
2006	22.2	28.5	35.9	13.4
2007	21.7	28.3	35.9	14.1
2008	21.4	28.6	36.4	13.6
2009	20.7	29.7	35.7	13.8
2010	20.4	31.6	34.6	13.4

% of total. Non financial public revenues

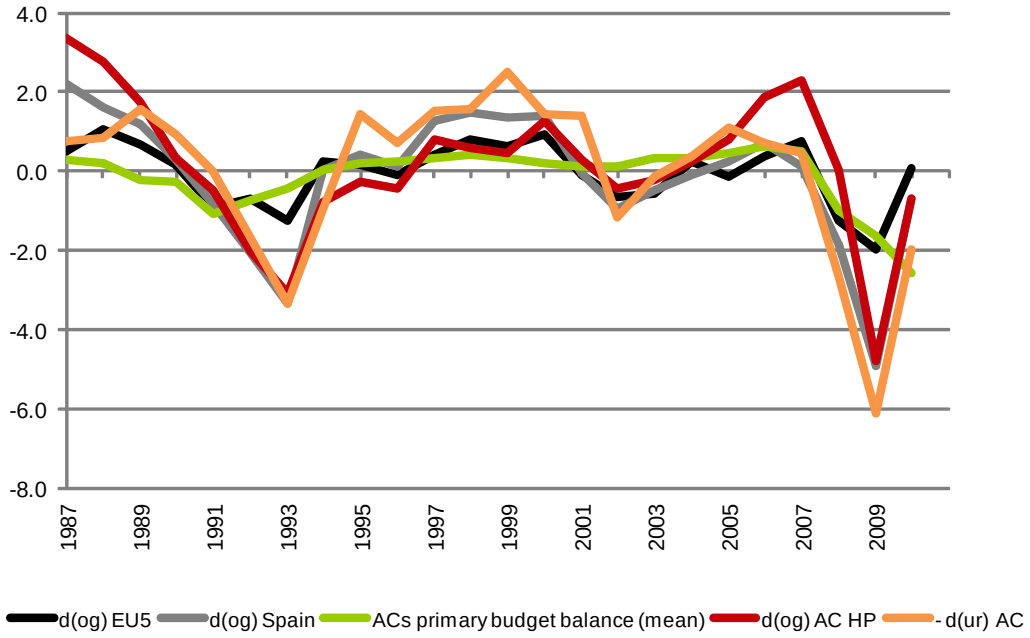
2001	48.7	31.5	9.5	10.3
2002	39.5	31.1	19.3	10.1
2003	37.7	31.3	21.2	9.8
2004	36.6	31.0	22.2	10.2
2005	36.9	30.2	22.6	10.3
2006	37.5	29.7	22.5	10.3
2007	38.5	29.4	21.8	10.2
2008	33.5	33.0	22.8	10.7
2009	29.8	34.9	24.2	11.1
2010	36.6	33.4	19.1	10.9

Source: IGAE. Spanish Ministry of Finance and Public Administration.

Figure 2. ACs primary budget balance and Spanish / EU5 cyclical position
in levels

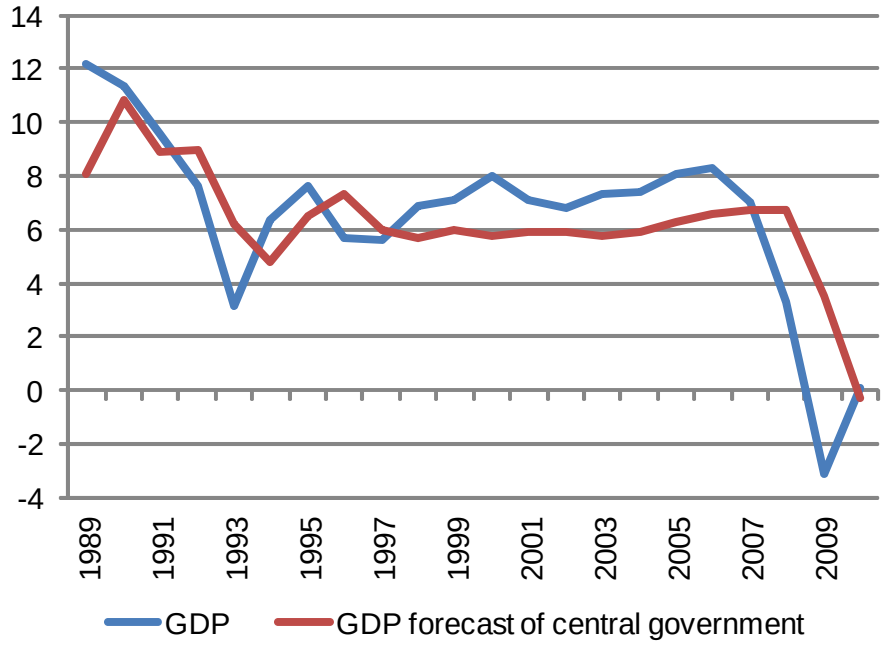


in first differences



Source:
og Spain: European Commission.
og EU5: own elaboration from European Commission.
og AC: own elaboration from data based on De la Fuente (2010).
ur AC: own elaboration from INE (data used in the empirical analysis).
Notes:
[a] output gap of the biggest 5 Spanish export markets - weighted by their export shares- is used as an instrument of ACs unemployment rate.

Figure 3. Spanish GDP growth vs GDP growth forecasts from the central government (%)



Source: INE and Spanish Ministry of Finance and Public Administration (Informe Económico Financiero, PGE).

Table 2. ACs fiscal reaction functions: the response of the fiscal stance over the cycle and of political and institutional features
Dependent variable: Primary budget balance / GDP

	all ACs								common regime ACs	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Constant term (x1000)	**-0.27**	**-0.43**	**0.77**	**-1.30**	**-0.38**	**0.30**	**-5.34**	**-8.51**	**-5.73**	**-5.40**
	(-1.44)	(-2.2)**	(2.87)***	(-1.83)*	(-1.15)	(1.74)*	(-3.11)***	(-4.12)***	(-2.86)***	(-3.12)***
d (unemployment rate)	**-0.12**	**-0.17**			**-0.18**	**-0.15**	**-0.17**	**-0.15**	**-0.11**	**-0.14**
	(-16.78)***	(-12.88)***			(-10.82)***	(-16.77)***	(-13.05)***	(-6.43)***	(-5.39)***	(-6.07)***
d (ur) positive			**-0.15**	**-0.13**						
			(-11.08)***	(-3.56)***						
d (ur) negative			**-0.05**	**-0.24**						
			(-4.19)***	(-3.26)***						
d (ur) * foral AC					**-0.92**					
					(-8.23)***					
d (ur) * uniprovincial AC					**0.14**					
					(8.63)***					
d (ur) * left-wing president					**-0.03**					
					(-2.2)**					
Primary Budget Balance / GDP (-1)	**0.54**	**0.52**	**0.52**	**0.53**	**0.42**	**0.63**	**0.53**	**0.44**	**0.55**	**0.39**
	(17.39)***	(17.05)***	(14.7)***	(16.25)***	(12.87)***	(42.93)***	(17.81)***	(12.4)***	(13.86)***	(9.03)***
Index of expenditure responsibilities (x 1000)	**-0.72**	**-0.50**	**-0.84**	**-0.30**	**-0.86**	**-1.12**	**-0.75**	**-1.90**	**-0.90**	**-1.04**
	(-4.58)***	(-3.03)***	**(-4.66)*** **	(-1.19)	(-4.21)***	(-8.02)***	(-3.77)***	(-5.39)***	(-2.82)***	(-3.31)***
Electoral Cycle (-1) (dummy) (x1000)	**-0.64**	**-0.58**	**-0.66**	**-0.42**	**-0.89**	**-1.30**	**-0.64**	**-0.56**	**-0.99**	**-1.01**
	(-3.32)***	(-2.8)***	(-2.76)***	(-1.53)	(-3.67)***	(-7.7)***	(-3.13)***	(-1.74)*	(-3.71)***	(-3.28)***
Aligned (dummy) (x1000)							**0.02**	**-0.21**		
							(0.1)	(-0.67)		
Debt (-1)						**0.01**				
						(3.58)***				
% of left-wing seats (x1000)							**4.08**	**6.71**	**5.17**	**2.88**
							(2.1)**	(3.37)***	(2.31)**	(1.47)
% of nationalist seats (x1000)							**2.49**	**4.25**	**3.16**	**2.30**
							(2.72)***	(4.55)***	(3.14)***	(2.53)**
Nationalist president (dummy) (x1000)					**0.48**					
					(1.33)					
Left-wing president (dummy) (x1000)					**-0.77**					
					(-2.57)**					
Fiscal corresponsibility 1987-2001 (x1000)									**-1.19**	**-0.63**
									(-1.86)*	(-0.92)
Fiscal corresponsibility 2002- (x1000)									**-1.88**	**5.37**
									(-1.73)*	(5.24)***
Index of relative fiscal resources (x1000)							**0.03**	**0.02**	**0.03**	**0.03**
							(2.3)**	(2.03)**	(2.01)**	(2.61)***
Budget Consolidation Scenarios (dummy) (X1000)								**3.08**		
								(3.73)***		
Budget Stability Act 2001 (dummy) (X1000)								**6.08**		
								(5.32)***		
Budget Stability Act 2006 (dummy) (X1000)								**-0.95**		
								(-0.68)		
Number of observations	408	408	408	408	408	306	408	408	360	330
Sample	1987-2010	1987-2010	1987-2010	1987-2010	1987-2010	1993-2010	1987-2010	1987-2010	1987-2010	1987-2008
Adjusted R2	0.72	0.73	0.60	0.68	0.65	0.92	0.75	0.69	0.63	0.44
Estimation method	OLS	IV	OLS	IV	IV	IV	IV	IV	IV	IV
Hausman exogeneity test Chi2 (p-value)		13.64 (0.02)		70.31 (0.00)						
Shea partial R2										
d (ur)		0.32								
d (ur) positive				0.14						
d (ur) negative				0.03						

Notes: [a] all regressions are estimated by Panel EGLS (Cross-section SUR weights).
[b] *** signification at 99% & ** 95% & * 90%. t-statistics are reported between parentheses.
[c] Shea R-square above 0.10 is generally regarded as support of predictive power.
[d] Output gap of the biggest 5 Spanish export markets - weighted by their export shares- is used as an instrument of ACs unemployment rate.

Table 3. ACs fiscal reaction functions: the role of the cash advance system
Dependent variable: Primary budget balance / GDP

	common regime ACs			
	(19)	(20)	(21)	(22)
Constant term (x1000)	**-0.42**	**-0.43**	**1.88**	**1.92**
	(-1.53)	(-1.55)	(3.75)***	(3.51)***
d (unemployment rate)	**-0.10**	**-0.11**	**-0.04**	**-0.03**
	(-11.01)***	(-7.02)***	(-3.12)***	(-1.35)***
Primary Budget Balance / GDP (-1)	**0.53**	**0.53**	**0.45**	**0.46**
	(13.95)***	(13.42)***	(10.61)***	(10.4)***
Index of expenditure responsibilities (x 1000)	**-0.80**	**-0.79**	**-2.85**	**-2.92**
	(-3.73)***	(-3.66)***	(-6.64)***	(-6.15)***
Electoral Cycle (-1) (dummy) (x1000)	**-0.78**	**-0.78**	**-2.47**	**-2.27**
	(-3.05)***	(-3.02)***	(-6.8)***	(-5.66)***
Central government's GDP growth forecast error			**-0.48**	**-0.49**
			(-3.11)***	(-2.34)***
Central government's GDP growth forecast error (-1)			**-1.08**	**-1.09**
			(-6.21)***	(-5.21)***
Central government's GDP growth forecast error (-2)			**-0.65**	**-0.68**
			(-2.85)***	(-2.63)***
Number of observations	360	360	286	286
Sample	1987-2010	1987-2010	1991-2010	1991-2011
Adjusted R2	0.61	0.61	0.71	0.67
Estimation method	OLS	IV	OLS	IV

Notes: [a] all regressions are estimated by Panel EGLS (Cross-section SUR weights).
[b] *** signification at 99% & ** 95% & * 90%. t-statistics are reported between parentheses.
[c] Output gap of the biggest 5 Spanish export markets - weighted by their export shares- is used as an instrument of ACs unemployment rate.

Table 4. ACs fiscal reaction functions: a further inspection to debt response
Dependent variable: Primary budget balance / GDP
all ACs

	national accounts data				budgetary data			
	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
Constant term (x1000)	**-5.58**	**-5.71**	**1.13**	**1.08**	**-0.51**	**-0.51**	**0.72**	**0.74**
	(-6.94)***	(-6.77)***	(0.7)	(0.66)	(-0.76)	(-0.74)	(0.46)	(0.47)
d (ur)	**-0.19**	**-0.17**	**-0.20**	**-0.19**	**-0.15**	**-0.15**	**-0.15**	**-0.15**
	(-6.2)***	(-4.11)***	(-7.04)***	(-5.12)***	(-6.56)***	(-4.91)***	(-6.58)***	(-5.01)***
Primary Budget Balance / GDP (-1)	**0.70**	**0.72**	**0.65**	**0.66**	**0.85**	**0.85**	**0.83**	**0.83**
	(8.3)***	(7.8)***	(8.16)***	(7.74)***	(11.63)***	(10.96)***	(11.23)***	(10.53)***
Electoral Cycle (-1) (dummy) (x1000)	**-2.19**	**-2.27**	**-2.56**	**-2.59**	**-2.91**	**0.00**	**0.00**	**0.00**
	(-1.43)	(-1.48)	(-1.75)*	(-1.76)*	(-2.29)**	(-2.29)**	(-2.35)**	(-2.35)**
Debt (-1)			**-0.12**	**-0.12**			**-0.02**	**-0.02**
			(-4.76)***	(-4.77)***			(-0.89)	(-0.9)
Number of observations	136	136	136	136	136	136	136	136
Sample	2003-2010	2003-2010	2003-2010	2003-2010	2003-2010	2003-2010	2003-2010	2003-2010
Adjusted R2	0.59	0.59	0.65	0.65	0.68	0.68	0.68	0.68
Estimation method	OLS	IV	OLS	IV	OLS	IV	OLS	IV

Notes: [a] all regressions are estimated by Panel EGLS (Cross-section SUR weights).
[b] *** signification at 99% & ** 95% & * 90%. t-statistics are reported between parentheses.
[c] Output gap of the biggest 5 Spanish export markets - weighted by their export shares- is used as an instrument of ACs unemployment rate.

Table 5. The structural response of the fiscal stance over the cycle: ACs and Spanish General Government

Dependent variable: d (structural primary budget balance / GDP)

	ACs	ACs	Spanish General Government	Spanish General Government
Constant term (x1000)	**1.15**	**-0.15**	**2.42**	**1.00**
	(4.67)***	(-0.63)	(1.08)	(0.43)
d (unemployment rate)	**0.19**	**0.07**	**0.11**	**-0.06**
	(22.54)***	(6.76)***	(0.79)	(-0.52)
Number of observations	357	408	21	24
Sample	1987-2007	1987-2010	1987-2007	1987-2010
Estimation method	OLS	OLS	OLS	OLS

Notes: [a] all regressions are estimated by Panel EGLS (Cross-section SUR weights).

[b] *** signification at 99% & ** 95% & * 90%. t-statistics are reported between parentheses.

Table 6. The structural response of the fiscal stance over the cycle: differences across ACs

Dependent variable: d (structural primary budget balance / GDP)

	1987-2007						1987-2010					
	Cross-section weigths[b]		Cross-section SUR[c]		Cross-section SUR fixed effects[d]		Cross-section weigths[b]		Cross-section SUR[c]		Cross-section SUR fixed effects[d]	
constant (x1000)	1.03	(3,76)***	1.44	(8,3)***	1.07	(11,67)***	-0.42	(-1,29)	-0.36	(-1,22)	-0.58	(-2,06)**
d (ur_and)	0.13	(1,63)	0.11	(2,39)**	0.14	(3,72)***	0.03	(0,5)	0.03	(0,81)	0.03	(0,75)
d (ur_ara)	0.14	(2,09)**	0.09	(3,03)***	0.08	(3,48)***	0.03	(0,6)	-0.01	(-0,44)	-0.01	(-0,36)
d (ur_ast)	0.28	(5,66)***	0.27	(23,59)***	0.27	(50,66)***	0.16	(3,02)***	0.15	(4,19)***	0.15	(4,23)***
d (ur_bal)	0.28	(2,15)**	0.36	(4,09)***	0.47	(5,87)***	0.15	(1,51)	0.16	(2,12)**	0.16	(2,17)**
d (ur_can)	0.04	(0,51)	0.07	(1,71)*	0.00	(0,19)	0.02	(0,43)	0.03	(1,05)	0.03	(1,06)
d (ur_cant)	0.36	(2,79)***	0.39	(5,55)***	0.40	(6,92)***	0.22	(1,82)*	0.20	(2,78)***	0.21	(2,87)***
d (ur_cat)	0.14	(3,8)***	0.14	(13,13)***	0.15	(25,91)***	0.06	(1,67)*	0.07	(3,12)***	0.08	(3,36)***
d (ur_cll)	0.19	(3,09)***	0.20	(9)***	0.20	(11,75)***	0.03	(0,45)	0.05	(1,57)	0.05	(1,65)*
d (ur_clm)	0.14	(0,88)	0.13	(3,88)***	0.14	(7,8)***	-0.16	(-1,76)*	-0.10	(-1,84)*	-0.08	(-1,49)
d (ur_ext)	0.20	(1,97)**	0.20	(10,18)***	0.21	(23,25)***	0.11	(1,19)	0.13	(2,6)***	0.14	(2,82)***
d (ur_gal)	0.25	(4,51)***	0.25	(10,53)***	0.25	(16,4)***	0.13	(2,12)**	0.12	(3,9)***	0.12	(3,9)***
d (ur_mad)	0.16	(4,27)***	0.16	(5,93)***	0.14	(5,92)***	0.10	(2,71)***	0.11	(4,54)***	0.11	(4,68)***
d (ur_mur)	0.17	(3,77)***	0.17	(12,78)***	0.16	(20,46)***	0.10	(1,09)	0.10	(1,58)	0.09	(1,55)
d (ur_nav)	0.14	(0,39)	0.12	(1,39)	0.09	(1,84)*	-0.02	(-0,07)	0.21	(1,17)	0.22	(1,19)
d (ur_pb)	0.25	(1,85)*	0.26	(8,09)***	0.25	(13,12)***	-0.23	(-1,61)	-0.28	(-2,54)**	-0.28	(-2,54)**
d (ur_rio)	0.34	(5,32)***	0.34	(21,69)***	0.34	(40,89)***	0.23	(2,87)***	0.20	(4,74)***	0.19	(4,77)***
d (ur_val)	0.13	(1,73)*	0.09	(2,74)***	0.09	(4,03)***	0.02	(0,34)	0.01	(0,27)	0.01	(0,24)
R2 adjusted	0.28		0.87		0.97		0.07		0.16		0.14	
Redundant fixed effects test					2.44						0.45	
(p-value)					(0.00)						(0.97)	
MODEL with common coefficients												
constant (x1000)			1.14	(4,72)***					-0.17	(-0,72)		
d (ur)			0.19	(22,42)***					0.04	(2,46)**		

Notes: [a] *** signification at 99% & ** 95% & * 90%. t-statistics are reported between parentheses.

[b] Feasible GLS specification assuming the presence of cross-section heteroskedasticity.

[c] Feasible GLS specification correcting for both cross-section heteroskedasticity and contemporaneous correlation.

[d] Feasible GLS specification correcting for both cross-section heteroskedasticity and contemporaneous correlation and including fixed effects.

Appendix 2

Table A1. Descriptive statistics
Sample: 1987 2010

Mean by AC	primary bb / gdp	og	dog	ur	dur	og_ue5	dog_ue5	debt[a]	foral	uni
and	-0.07	0.76	0.17	23.6	-0.04	-0.06	-0.03	7.2	0	0
ara	-0.29	0.68	0.17	9.4	0.00	-0.06	-0.03	4.7	0	0
ast	-0.16	0.35	0.14	13.5	-0.03	-0.06	-0.03	4.2	0	100
bal	-0.41	0.48	0.06	10.9	0.28	-0.06	-0.03	5.3	0	100
can	-0.13	0.52	0.07	18.0	0.17	-0.06	-0.03	4.3	0	0
cant	0.06	0.52	0.14	13.7	-0.11	-0.06	-0.03	4.0	0	100
cat	-0.25	0.64	0.19	13.3	-0.14	-0.06	-0.03	8.6	0	0
cll	-0.12	0.64	0.15	13.6	-0.05	-0.06	-0.03	3.6	0	0
clm	-0.57	0.87	0.19	12.9	0.29	-0.06	-0.03	4.5	0	0
ext	0.07	0.87	0.20	20.2	-0.08	-0.06	-0.03	5.9	0	0
gal	-0.14	0.55	0.20	13.0	0.11	-0.06	-0.03	8.3	0	0
mad	0.03	0.67	0.17	11.3	-0.07	-0.06	-0.03	5.0	0	100
mur	-0.10	0.84	0.15	15.8	0.18	-0.06	-0.03	4.4	0	100
nav	0.20	0.59	0.12	9.1	-0.23	-0.06	-0.03	6.4	100	100
pb	0.22	0.65	0.14	9.3	0.02	-0.06	-0.03	4.6	100	0
rio	-0.34	0.55	0.14	9.0	-0.02	-0.06	-0.03	3.8	0	100
val	-0.32	0.71	0.13	15.1	0.18	-0.06	-0.03	9.7	0	0
mean (unweighted)	-0.14	0.64	0.15	13.63	0.03	-0.06	-0.03	5.5	12	41
median	0.04	0.21	0.22	12.66	-0.37	1.05	0.15	4.80	0.00	0.00
maximum	4.76	7.41	4.74	32.20	9.13	2.74	1.06	18.60	100.00	100.00
minimum	-5.39	-4.95	-6.51	4.54	-4.91	-5.42	-1.96	1.00	0.00	0.00
std. dev.	1.08	2.50	1.91	5.65	2.21	2.45	0.76	2.70	32.26	49.28
skewness	-0.90	0.39	-0.65	0.73	1.23	-0.78	-0.77	1.41	2.37	0.36
kurtosis	7.25	2.46	3.79	3.16	5.23	2.29	2.92	5.96	6.63	1.13
jarque-bera	361.52	15.56	39.64	37.06	187.40	49.77	40.77	224.93	607.49	68.28
probability	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Notes: bb (budget balance); og (output gap); dog (first difference of og); ur (unemployment rate); dur (first difference of ur); uni (uniprovincial).

[a] Sample: 1992-2010.

Table A2. Descripte statistics. Political economy and institutional variables

Sample: 1987 2010

Mean by AC	expenditure responsib. index	fcor_8796[a]	fcor_9701[a]	fcor_0208[a]	fcor_0910[a]	relative resources index	nacionalist president	left-w ing president	% nationalist seats	% left-w ing seats	electoral cycle	aligned	budget consolid. scenarios	budget stability act 2001	budget stability act 2006
and	140	0	19	26	39	100	0	100	4	65	25	67	42	21	17
ara	60	0	58	37	52	116	29	54	24	47	25	46	42	21	17
ast	58	0	73	32	47	102	0	83	2	57	25	75	42	21	17
bal	63	0	66	46	52	89	0	33	16	45	25	33	42	21	17
can	117	0	32	28	40	108	71	13	38	36	25	8	42	21	17
cant	60	0	51	31	48	111	63	0	26	34	25	33	42	21	17
cat	140	0	58	52	63	96	71	29	57	47	29	0	42	21	17
cll	58	0	45	27	41	122	0	0	2	39	25	33	42	21	17
clm	58	0	25	23	38	112	0	100	0	56	25	67	42	21	17
ext	58	0	17	16	28	124	0	100	1	59	25	67	42	21	17
gal	127	0	26	25	38	111	0	29	18	45	25	63	42	21	17
mad	60	0	89	71	81	85	0	33	0	49	25	67	42	21	17
mur	60	0	65	29	41	87	0	33	0	46	25	67	42	21	17
nav	130	50	50	50	50	165	75	25	66	51	25	21	42	21	17
pb	140	50	50	50	50	165	92	8	59	42	25	8	42	21	17
rio	60	0	52	33	46	120	0	17	6	43	25	50	42	21	17
val	137	0	49	40	49	88	0	33	11	53	25	67	42	21	17
mean (unw eighted)	90	6	49	36	47	112	24	41	19	48	25	45	42	21	17
median	140	0	0	0	0	110	0	0	10	47	0	0	0	0	0
maximum	140	50	113	73	83	165	100	100	72	76	100	100	100	100	100
minimum	0	0	0	0	0	66	0	0	0	26	0	0	0	0	0
std. dev.	64	11	22	18	13	24	42	49	22	10	43	50	49	41	37
skew ness	-1	4	2	1	3	1	1	0	1	0	1	0	0	1	2
kurtosis	1	18	8	4	14	3	3	1	3	3	2	1	1	3	4
jarque-bera	63	5245	693	175	2768	62	109	68	73	4	97	68	68	140	242
probability	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Notes: [a] mean of fcor (fiscal corresponsibility index) for the indicated periods.

Table A3. Descripte statistics by subperiods

	1987-1990			1991-1994				1995-2007				2008-2010			
	d(ur)	primary bb	primary bb / d(ur)	d(ur)	primary bb	debt	primary bb / d(ur)	d(ur)	primary bb	debt	primary bb / d(ur)	d(ur)	primary bb	debt	primary bb / d(ur)
and	-1.2	-0.9	0.70	2.0	-0.9	6.4	-0.42	-1.5	0.7	7.4	-0.47	5.1	-1.3	6.9	-0.26
ara	-1.6	0.2	-0.15	1.8	-1.1	3.5	-0.61	-0.8	0.1	4.5	-0.09	3.2	-1.5	6.4	-0.48
ast	-0.4	-0.3	0.67	0.8	-0.3	3.3	-0.42	-0.7	0.1	4.2	-0.15	2.5	-0.9	5.1	-0.37
bal	-0.9	-0.3	0.29	1.7	-0.2	2.8	-0.11	-0.8	0.1	4.3	-0.12	4.5	-3.0	12.3	-0.68
can	-0.8	0.1	-0.13	0.7	-0.4	3.8	-0.63	-1.1	0.1	4.0	-0.12	6.1	-1.2	6.0	-0.19
cant	-0.3	-1.0	2.93	1.4	1.3	5.8	0.93	-1.2	0.4	3.3	-0.34	2.7	-1.7	5.3	-0.62
cat	-2.2	-0.2	0.07	2.1	-0.7	5.1	-0.32	-1.1	0.3	8.4	-0.25	3.7	-2.1	12.8	-0.55
cll	-0.7	0.2	-0.30	1.3	-0.5	2.3	-0.36	-0.9	0.2	3.3	-0.17	2.9	-1.3	5.9	-0.45
clm	-0.6	0.4	-0.72	1.3	-0.5	2.3	-0.37	-0.7	-0.2	3.4	0.21	4.5	-3.9	11.4	-0.86
ext	-0.9	0.5	-0.52	1.2	-0.9	5.1	-0.76	-1.0	0.6	5.8	-0.61	3.3	-1.5	6.9	-0.45
gal	-0.4	-0.5	1.32	1.7	-1.3	7.3	-0.77	-0.8	0.5	8.4	-0.58	2.6	-0.8	8.9	-0.30
mad	-1.8	-0.3	0.16	1.7	-0.2	3.1	-0.13	-0.8	0.3	5.2	-0.35	3.3	-0.4	6.2	-0.11
mur	-1.0	-0.3	0.31	2.2	-0.1	5.7	-0.02	-1.3	0.5	3.9	-0.38	5.3	-2.4	5.1	-0.46
nav	-1.6	1.8	-1.14	0.6	-2.7	7.1	-4.44	-0.7	1.1	6.2	-1.64	2.4	-1.9	6.6	-0.82
pb	0.1	0.1	1.07	0.7	-0.1	5.2	-0.10	-0.6	1.0	4.5	-1.75	1.5	-2.6	4.2	-1.73
rio	-1.9	0.1	-0.05	1.7	-0.3	3.9	-0.15	-0.7	-0.2	3.1	0.27	2.9	-1.7	6.9	-0.60
val	-1.4	0.1	-0.11	2.4	-0.9	5.2	-0.37	-1.1	-0.1	9.6	0.07	4.8	-1.3	14.8	-0.27
mean (unweighted)	-1.0	0.0	-0.00	1.5	-0.6	4.6	-0.38	-0.9	0.3	5.3	-0.35	3.6	-1.7	7.8	-0.48

Appendix 3. Data sources

Aligned$_{it}$: own elaboration from http://www.pre.gva.es/argos/archivo/index.html

Budget Consolidation Scenarios$_{it}$ = 1 for period 1992-2001 and 0 otherwise.

Budget Stability Act 2001$_{it}$ = 1 for period 2002-2006 and 0 otherwise.

Budget Stability Act 2006$_{it}$ = 1 for period 2007-2011 and 0 otherwise.

Central government's GDP growth forecast error $_{it}$: own elaboration from Informe Económico Financiero de los Presupuestos Generales del Estado. Spanish Ministry of Finance and Public Administration.

Debt$_{it}$: Bank of Spain.

Electoral cycle$_{it}$: own elaboration from Ministerio del Interior.

http://www.infoelectoral.mir.es/OtraInformacion/listado_elecciones_fe.html

Foral$_{it}$ = 1 for Basque Country and Navarra and 0 otherwise.

Index of expenditure responsibilities$_{it}$: Sorribas (2011).

Fiscal corresponsibility$_{it}$: own elaboration based on definitive data of ACs Funding System. Ministerio de Hacienda y Administraciones Públicas.

Index of relative fiscal resources$_{it}$: own elaboration based on definitive data of ACs Funding System. Ministerio de Hacienda y Administraciones Públicas.

Left / nationalist president$_{it}$: own elaboration based on

http://www.terra.es/personal2/monolith/spain2.htm

Left-wing / nationalist seats$_{it}$ own elaboration based on

http://www.pre.gva.es/argos/archivo/index.html

Primary budget balance$_{it}$: Liquidación de Presupuestos de las Comunidades y Ciudades Autónomas. Ministerio de Economía y Hacienda.

Unemployment rate$_{it}$: LFS. INE.

Uniprovincial$_{it}$ = 1 for uniprovincial ACs and 0 otherwise.