EVOLVING FEDERATIONS AND SUBCENTRAL DEFICITS: TESTING THE BAILOUT HYPOTHESIS IN THE SPANISH CASE

ABSTRACT:

High debt autonomy and low tax autonomy often characterize evolving federations, making the bailout hypothesis very attractive when explaining subcentral governments deficits. In order to test it in the case of Spanish regional governments, I analyze relationships among observable variables suggested in the literature on the bailout hypothesis. The main conclusion is that deficit seems to be better explained by a more traditional model of fiscal choices than by bailout expectations.

KEYWORDS: Public deficit, bailout, evolving federations, Spain

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I. INTRODUCTION\(^1\)

One possible explanation for subcentral deficits is the bailout hypothesis. The guideline idea is that governments expecting to be rescued from financial problems will opt by large deficits\(^2\). This bailout may be implemented by the central government in two ways. It may wait for a financial crisis to intervene, or it may increase grants to the most indebted regions before they go into a bankruptcy. This explanation is especially attractive for evolving federations combining two characteristics: a high debt autonomy and a low tax autonomy.

Of course, one region may expect an increase in grants in the future because of other reasons than bailout expectations. For instance, equalization systems use to be revised periodically, opening the possibility of altering the distribution and total amount of equalization grants. This would be an example of soft budget constraint: “the situation when an entity (say, a province) can manipulate its access to funds in undesirable ways” (Rodden et. al, 2003, p.7). Hence, the inability of the rescuer to generate expectations of no bailout entails a soft budget constraint, but there are other mechanisms to soften a budget constraint (Inman, 2003).

On the other hand, the mere existence of limits on indebtedness does not guarantee expectations of no bailout. First, because they may be soft. Depending on the way they are defined, regions may find subtle channels for circumventing limits and hiding deficit (McCarten, 2003; Rodden and Eskeland 2003). Second, high limits do not avoid that regions accumulate a significant stock of debt. Third, bailout expectations depend on more factors. One of then is tax decentralization: The higher the tax autonomy the lower the risk of a bailout (Maskin, 1999; Rodden, 2002). Using cross-country data, Eichengreen and Von Hagen (1996) show that the probability of imposing credit constraints increases with the vertical fiscal imbalance size because the only choices left to the central government will then be to allow the subcentral government to go into bankruptcy or to bail it out. Von Hagen et al (2000) clarify that no tax autonomy and a vertical fiscal imbalance are not the same. In their opinion, the former is the most

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relevant when talking about bailouts. However, as Pisauro (2001) states, this reasoning overlooks the moral hazard problem. If subcentral governments expect to be bailed out by the central government, they will have no incentives to use their fiscal autonomy. Besides, Burki et al (1999) point out that spending autonomy increases the capacity of subcentral governments to stay within the budget constraint. Expectations of bailout will be higher if the central government constrains subcentral choices on spending. Additionally, Burki et al (1999) suggest that a firm allocation of spending responsibilities and the predominance of ruled-based grants would reduce expectations of bailouts.

Interdependence between central and subcentral tiers could be relevant as well. According to Rodden et al (2003, p.11): “If a local government is merely a branch of the central government, then punishing its citizens is useless at best. It is only as the municipality becomes a body on its own, a creature of its own citizens with powers to match its responsibilities, that the central government might credibly commit to let it face the consequences of its actions”. On the contrary, if subcentral governments are too strong: “The central government might appear to be little more than a loose coalition of logrolling regional interest groups”. Hence, extremely dependent subcentral governments from the central one or subcentral governments enjoying a high capacity to influence on national politics would rise the probability of bailouts. In a similar way, Burki et al (1999) posit that the political ability of central government to enforce hard budget constraints is positively correlated with the strength and discipline of state-wide political parties. Conversely, strong regional parties would soften subcentral budget constraints.

Finally, bailout expectations also depend on the capacity of the central government to force subnational governments to service their debts, enforcing losses on banks with bad loans to uncreditworthy subnational governments and maintaining central bank independence (Burki et al, 1999).

Conditions boosting bailout expectations are synthesized in table 1.

To deal with the bailout problem there are at least two analytical possibilities. One of them is to analyze the expectations of subnational governments directly. This is
the way followed by Dahlberg and Pettersson-Lidbom (2003) and Bordignon and Turati (2003). I choose a different approach, based on the observation of the real behavior of subcentral governments, central government and financial markets. In other words, I focus in connections among observable variables that bailout expectations should activate. While bailout models involve a number of testable relationships among observable variables, there are other possible explanations for subcentral deficit with different empirical implications. Therefore, it should not be difficult to ascertain the most reliable story in each case.

Then, the main aim of this paper is to list the empirical implications of bailout models and test them using data corresponding to the Spanish regional governments. Meeting some of the conditions exposed in table 1, their debt rose sharply in the late eighties and the early nineties. Could bailout expectations explain this behavior?

The paper is organized as follows. In the second section literature on bailouts to subcentral governments is surveyed. Special attention is paid to evolving federations and testable empirical results. An alternative explanation, based on the political cost of the different categories of revenues, is developed in section three and used as a benchmark. Empirical analysis is carried on in section four using data from Spain. Section five concludes.

### TABLE 1: CONDITIONS BOOSTING BAILOUT EXPECTATIONS

| 1. NO DEBT LIMITS (OR HIGH AND SOFT DEBT LIMITS) |
| 2. NO TAX AUTONOMY |
| 3. NO SPENDING AUTONOMY |
| 4. WEAK AND UNDISCIPLINED STATE POLITICAL PARTIES |
| 5. STRONG REGIONAL PARTIES |
| 6. SUBCENTRAL GOVERNMENTS TOO STRONG OR TOO WEAK |
| 7. NO CLEAR COMMITMENTS OF THE CENTRAL GOVERNMENT ABOUT NO BAILING OUT |
| 8. A FUZZY ALLOCATION OF SPENDING RESPONSIBILITIES |
| 9. PREDOMINANCE OF NO RULE-BASED GRANTS |

### II. TESTABLE RELATIONSHIPS: THE BAILOUT HYPOTHESIS

Bailout models involve a set of empirical implications on the mean level and interregional differences in deficits.
THE USE OF BORROWING AND DEBT LIMITS

Generalized bailout expectations would foster a complete and similar exploitation of limits on debt and deficit by all the subcentral governments.

THE ECONOMIC SIZE OF A REGION ("TOO BIG TO FAIL" OR "TOO LITTLE TO FAIL"? )

Wildasin (1997) suggests that the probability of a region being bailed out rises with its economic size. The bigger a regional economy is, the graver the negative externalities of a fail on the whole economic system. “Too big to fail” mechanism entails a positive correlation between deficit and regional size. Hernandez Trillo et al (2002) confirm this idea in their work on Mexican regional governments.

However, in the four case study by Von Hagen et al (2000) this relationship is not found, rather the opposite one: “too little to fail”, especially in the German case (Seitz, 2000). They suggest that because the financial cost of bailing out a region increases with its size, the expected statistical correlation between subcentral deficit and regional size is negative.

THE POLITICAL SIZE OF A REGION ("TOO BIG TO FAIL" OR "TOO LITTLE TO FAIL"? )

Seitz (2000) suggests the existence of a political connection between the size of a region and its bailout expectations. The basic idea is that (not) bailing out a region has a (negative) positive effect on the political support of constituency to the incumbent in central government. However, the sign of this relationship is neither clear, mainly in countries with proportional representation systems. Bigger regions in political terms have more seats (“too big to fail”), but little regions use to enjoy a lower ratio votes/seats. The malapportionment of most electoral systems makes that the value of votes from different districts were not the same (Samuels and Snyder, 2001). And this structural effect is reinforced by the dynamics of competition among political parties
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(Monroe and Rose, 2002). Therefore, the political profitability of grants to little regions would be higher in relative terms (“too little to fail”).

**POLITICAL AFFINITY**

Political affinity between central and subcentral governments rises the probability of bailout (Von Hagen et al (2000) and Nicolini et al (2002)). This relationship has been confirmed by Bevilaqua (2002) for Brazil and by Hall et al (2003) for Costa Rica.

**NO CREDIT MARKET DISCRIMINATION**

According to Lane (1993) and Bayoumi et al (1995), an efficient credit market discriminates among lenders depending on their individual solvency. On the contrary, bailout expectations generate no credit market discrimination because of the expected solidarity among creditors. Then, financial discrimination (in terms of debt ratings and spreads) would be evidence against the bailout hypothesis.

**NEGATIVE EXTERNALITIES IN CREDIT MARKETS (SOLIDARITY AMONG LENDERS)**

If creditors do not discriminate, an increase in the deficit of one regional government generates a negative externality on the rest. If creditors discriminate and use average debt as a yardstick, the same rise might generate a positive spillover (Landon and Smith, 2000).

**A POSITIVE CORRELATION BETWEEN INCREASES IN GRANTS AND DEFICIT**

As it was pointed out in the introduction, central government may wait until a financial crisis to intervene or increase grants to the most indebted regions before they go into a bankruptcy. This strategy would imply a positive cross-correlation between subcentral deficits, on the one hand, and discretionary grants and financial improvements derived from reforms on the rule-based grants system, on the other.
III. TESTABLE RELATIONSHIPS: THE POLITICAL COST HYPOTHESIS

From a more traditional perspective, public deficits may be seen as a simple political choice aiming the maximization of government popularity. Grossman (1989) offers an interesting point of departure. He supposes a downsian government that tries to maximize a popularity function when choosing the level and composition of its revenues\(^3\):

\[
\max_T V = V(G, T)
\]

\[s.t.:\]

\[G = IT + T\]

\[\text{with:}\]

\[V'(G) > 0; \quad V'(T) < 0; \quad V''(G) < 0; \quad V''(T) > 0\]

Where \(V\) is the popularity function, \(G\) is public spending, \(IT\) is grants and \(T\) taxes. First-order maximization condition is:

\[V'(T) = -V'(G)\]

Assuming that grants are exogenous, the government will choose \(T\) to equate the marginal effects of spending and taxes. Once optimal taxes are fixed, total revenues and then spending are determined. The incorporation of deficit is direct by inserting the model into a simple two-period inter-temporal framework:

\[
\max_{i_1, i_2, D} V = V(G_1, G_2, T_1, T_2)
\]

\[s.t.:\]

\[G_1 = IT_1 + T_1 + D\]

\[G_2 = IT_2 + T_2 - D(1 + r)\]

\[\text{with:}\]

\[V'(G_1) > 0; \quad V'(T_1) < 0; \quad V''(G_1) < 0; \quad V''(T_1) > 0\]

Where \(D\) is the deficit and \(r\) the interest rate. First-order maximization condition is:

\[V'(T_1) = -V'(G_1) = (1 + r)V'(T_2) = -(1 + r)V'(G_2)\]

The optimal value for \(T\) depends on the function \(V(.)\) and the volume of grants. The optimal deficit –or superavit- depends on changes in the marginal effect of spending and taxes from period one to period two; changes in the volume of grants; the existence of limits on deficit and debt; and the interest rate. The deficit in period one

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\(^3\) Originally, Grossman applied its model to the central government, so grants were among expenditures and not revenues.
will be higher when the political cost of taxes in period two was lower, when there were expected increases in grants; when limits on borrowing were higher and softer; and when the interest rate was low. And vice versa.

Differences in fiscal choices among regions could be explained by disparities in per capita GDPs –if we assume that the higher the per capita GDP, the higher the marginal effect of public spending and the lower the marginal effect of taxes on popularity- or spending responsibilities –assuming that the optimal level of total spending grows with the level of powers-. Table 2 synthesizes the empirical implications of both bailout and political cost hypothesis.

Table 2: Empirical Implications of Both the Bailout Model and the Political Cost Model

<table>
<thead>
<tr>
<th>Bailout Model</th>
<th>Political Cost Model</th>
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<tr>
<td>1. Similar exploitation of debt limits</td>
<td>1. Differences in the exploitation of debt limits</td>
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<tr>
<td>2. Too big to fail (I): Negative externalities on the national economic system</td>
<td></td>
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<td>3. Too big to fail (II): Votes count</td>
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<td>6. Political affinity increases expectations of bailout and then present deficit</td>
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<td>7. No credit market discrimination</td>
<td>7. Credit market discrimination</td>
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<td>11. Mean deficit depends on the expectations of future grants and the political cost of taxes</td>
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<td>12. Regional differences in per capita GDP, grants, powers and spending needs explain the differences in own revenues and then in deficit</td>
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</table>
IV. THE DEFICIT OF THE SPANISH REGIONAL GOVERNMENTS

The Spanish Constitution sanctioned in 1978 designed a new organization of the Spanish State with the creation of the Comunidades Autónomas (Autonomous Communities or ACs). The decentralization of spending powers towards the new regional tier has evolved in such a way that is now similar to that of federal countries like Germany, USA or Canada (Monasterio and Suárez-Pandiello, 2002; Aja, 2003). Their participation in total Spanish public spending has risen to around the 37% of the whole after the devolution of powers on health to ten ACs in 2002.

Decentralization patterns in the revenue side have been completely different. The vertical fiscal imbalance has been huge until 2002, and the tax autonomy has been low. In any case, while it is true that there are significant constitutional limits to the creation of new taxes by the ACs, they have enjoyed from the beginning the capacity to surcharge the Personal Income Tax (PIT) and the ceded taxes. And ACs have taken limited advantage of this possibility.

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4 There are 17 ACs. Each one is composed by one or several provinces -the range goes from 1 to 9-. The local governments at the provincial level are called Diputaciones. The relevance of their powers is much lower than the corresponding to the regional and municipal governments.

There are two and clear-cut sorts of ACs: the so-called forales ACs -Navarra and País Vasco- and the rest (common ACs). Due to historical reasons, the former enjoy a higher degree of autonomy and a radically different system of financing, which is translated into a higher level of resources per capita. The regional governments of Navarra and País Vasco collect all the taxes in their territories -business income tax, special excises, VAT and PIT among others- and transfer an amount to the State yearly. Both ACs can modify the structure of their fiscal system -except in the indirect taxes- subject to the harmonization rules imposed by the European Union and the central government.

5 Until 2002 (1999), Andalucía, Canarias, Catalunya, Galicia and Comunidad Valenciana were the only ACs with responsibilities in health (education). Because both public policies absorb more than fifty percent of total spending, the mean size of the budget for this group of ACs was much higher than in the rest.

6 After several reforms of the financing system to reduce the gap, around 70 per cent of the public spending of common ACs in 1998 was still financed by means of grants.

7 In particular, they cannot tax bases previously levied by the central government, nor tax rents or goods placed out of the own territory, nor hamper the movements of factors and goods across regions. The main taxes created are the tax on petrol derivates in Canarias and minor green taxes in many AC.

8 In 1997 there is a structural change in the financing system changing the relative weight of granted revenues and own taxes. Before 1997, the collection (tax administration and revenues) of a set of taxes (the net wealth tax, taxes on donations and inheritances, the patrimonial transmissions tax and an array of gambling taxes) was ceded to ACs without normative powers. Then ceded taxes were closer to a revenue sharing formula with a regional participation of 100% and included in IT. Differences among regions in tax collections were compensated with unconditional grants to equalize fiscal capacities. The reform of the financing system in 1997 altered the nature of these taxes. Since then ACs have constrained powers to change tax rates or deductions, so they must be considered own taxes and then incorporated into AUTO. Resulting differences among regions in total own tax revenues (highly correlated with the per capita GDP) should be understood as the effect of a structural change and not the consequence of a dramatic change in fiscal preferences.
Although rule-based grants were predominant, periodical renegotiations of the financing system and some financial instruments as the investment conventions (IC) softened the subcentral budget constraints, opening the possibility to rent-seeking. Unconditional grants have been, by and large, the main source of revenues for regional governments in Spain; setting aside the special arrangements of Navarra and País Vasco. The equalization of fiscal capacity and spending needs has been very strong. At the same time, the poorest regions have received more supplementary conditional grants from the central government and the European Union to boost their economic performance. This is another reason to expect a negative correlation between per capita GDP and own resources. Although the system of unconditional grants to ACs has taken into account differences in per capita spending needs, corrections could be imperfect and therefore correlation between them and differences in deficit must be tested.

Otherwise, debt and deficit limits have been higher and softer until the middle of the nineties. Before then the two most important limits were the golden rule (debt must be used to finance capital spending) and the sum of interest payments and debt refunds can not exceed the 25% of current revenues. This second limit has not been very troublesome for the ACs because the initial debt stock was zero and the rise in current revenues has been very fast, in parallel to the devolution of the spending powers.

On the contrary, common ACs did not meet some of the conditions exposed in table 1. They enjoyed a high spending autonomy and spending responsibilities were clear. State-wide parties were strong and disciplined (Gunther et al, 2002). Although regional parties were also strong in Spain, their influence on national politics was only remarkable since 1993 (until 2000). Both the central government and the central bank reiterated their no responsibility on subcentral debt, especially in the early nineties when deficit seems to be unsustainable (Ezquiaga and García, 2001). Finally, the social and political consolidation of subcentral governments has promoted the perception of their independence with respect to the central one (Máiz et al, 2002).

The analysis of the relationships contained in table 2 is divided into three parts. The first one (“INTERTEMPORAL DIFFERENCES”) refers to points 10 and 11. Points 2 to 6, 11 and 12 are treated in the second part (“INTERREGIONAL DIFFERENCES”). The last part (“THE USE OF DEBT LIMITS, MARKET DISCRIMINATIONS AND THE
DETERMINANTS OF GRANTS”) is devoted to points 1, and 7 to 9. Foral ACs are not considered in some of this empirical work because of their particularities.

INTERTEMPORAL DIFFERENCES

Figure 1 shows the evolution of regional deficit, defined as the unweighted mean of individual deficits expressed in pesetas, on per capita basis, and in real terms, by deflating the current values using the national public consumption deflator (base year=1986). The dotted line reflects the evolution of the weight of D on the financing of total expenditures. Foral ACs are not included.

The source of data is the Ministerio de Economía y Hacienda (MEH, several years, www.meh.es). Regional populations and price deflator are from the Instituto Nacional de Estadística (INE, www.ine.es). Although data were obtainable for 1984-1999 only, fiscal consolidation has followed afterwards. Moreover, recent legal changes involve that subcentral deficit and indebtedness will be an exceptional procedure from 2002 (González-Páramo, 2001).

From 1984 to 1991 deficit rises with the devolution of spending responsibilities, except in 1987 due to a reform of the financing system that increased unconditional grants to ACs. Since 1991 deficit dropped because of a new reform of the financing system in 1992 (increasing overall resources again) and the introduction of additional limits to debt that have been progressively stronger (Vallés, 2002).

Looking at the figure 1 from the perspective of the model presented in section three, it seems that ACs have been permanently placed in a first period of indebtedness. However, differences in deficit along the time point out changes in the optimization problem. As it was already discussed, deficit in period one will be higher when: limits on borrowing are higher and softer; the political cost of taxes in period two is lower; there are expected increases in grants; and the interest rate is lower.

Figure 2 shows the evolution of spending, granted revenues, own revenues (AUTO) and deficit. All of them are calculated like \( D \) and data sources are the same. Variable AUTO includes deficit, own taxes and other minor revenues. Until 1991 the
deficit was the result of a growth of spending higher than the corresponding to granted revenues and the stagnation of own taxes and other revenues. Since 1992, the weight of $D$ in $AUTO$ decreases and the weight of own taxes and other revenues increase. The consolidation of the new tier would make easier the expansion of own taxes.

The main explanation of the cut in deficit since 1992 is the existence of additional debt limits, progressively stronger. However, the reduction in deficit was accompanied by a significant increase in the debt of the unconsolidated public sector. By definition, its indebtedness is not subject to the mentioned debt limits, offering a way to hide deficit. Figure 3 reflects the evolution of the debt of all the ACs. $DC$ excludes unconsolidated debt. $DCPLUS$ includes it. Data are from the Banco de España (www.bde.es). Unfortunately, data on unconsolidated debt are not disaggregated by ACs.

While both series are clearly reducing their growth, the gap between them increases with time. To cast some light on the consequences of this strategy, the following equation have been estimated for both $DC$ and $DCPLUS$ as explained variables and a time trend as explicative variable. $TREND$ values 1 in 1990 and 13 in 2002:

$$DC_t = \beta_1 + \beta_2 \cdot TREND_t + \beta_3 \cdot TREND_t^2 + \varepsilon_t$$

Results are synthesized in table 5. Estimates have been used as the basis of two simulations. According to them $DC$ would attain its maximum in 2005. The stock of debt would be then 43.4 billions of euros (41.5 in 2002). On the contrary, $DCPLUS$ would not stop to growth until 2008 attaining 53.9 billions of euros (48.9 in 2002).

During the late eighties and first nineties, credit markets were euphoric about the Spanish financial risks (Ezquiaga and García, 2001). It helped ACs in its strategy of indebtedness. In the second part of the nineties interest rates dropped dramatically in Spain. However, the reason of the cut in spreads was precisely fiscal consolidation. Therefore, its effect on the cost of the stock of debt is more evident than its effect on the optimal deficit. Figure 4 reflects the evolution of interest payments ($INT$) and deficit.
INTERREGIONAL DIFFERENCES

The following equation has been estimated in order to explain regional disparities in terms of deficit:

\[ D_i = \beta_1 + \beta_2 \cdot CAN_i + \beta_3 \cdot POW_i + \beta_4 \cdot GDP_i + \epsilon_i \]

*CAN* is included to control by differences in the financing system of Canarias, which are translated in a higher level of tax autonomy and tax collection\(^9\). *CAN* values 1 for Canarias and 0 for the rest. Variable *POW* controls by differences in the level of powers. It values 1 for regions with powers on public health and education (Andalucía, Canarias, Comunidad Valenciana, Catalunya and Galicia) and 0 for the rest. Finally, *GDP* is the relative per capita Gross Domestic Product (Spanish mean=100)\(^10\). Figures for 1991 have been used because the relative position of regions in terms of total GDP, population and per capita GDP do not change significantly along the period. The data source is the *Fundacion BBV* [http://bancoreg.fbbv.es](http://bancoreg.fbbv.es). Foral ACs are excluded again.

Econometric estimates of the equation are reported in the first row of table 5. Cross-section specific means for the whole period 1984-1996 have been used\(^11\). The reason to exclude data from 1997 to 1999 is that results will be compared with the corresponding to own taxes.

According to the White’s test of heteroscedasticity and the RESET test, the econometric specification is correct and Ordinary Least Squares (OLS) the best estimation method. The goodness of fit is high. The sample size is not large, but it includes all the population. At the same time, results are straightforward. According to them, deficit has been higher in rich regions and in ACs with more powers. As it was expected, the special fiscal agreement enjoyed by Canarias has reduced its deficit.

Political and economic sizes are measured by two different variables: relative population (*RATPOP*) and relative GDP (*RATGDP*), respectively. As in the case of *GDP*, data for variables *RATGDP* and *RATPOP* correspond to 1991. Both ratios do not change significantly along the period.

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\(^9\) Main indirect taxes (VAT and excises) are controlled by the regional government in Canarias.

\(^10\) Spending needs indexes estimated by Castells and Solé (2000) were also included in regressions as control variables. However they were not significant.

\(^11\) Because the values of explicative variables do not change, panel data information would be redundant.
Setting aside the expected high correlation between $RATPOP$ and $RATGDP$, multicollinearity does not seem to be a problem (Table 4). Multiple correlations are also moderate. The two coefficients of determination for the regressions of $RATGDP$ and $RATPOP$ on the other regressors in rows 2 and 3 of Table 5 are 0.562 and 0.548. It is clearly less than the overall $R^2$ in both cases (0.886 and 0.884).

$RATGDP$ and $RATPOP$ are not statistically significant (rows 2 and 3), meaning that political or economic sizes are not relevant to explain differences in deficit among the regions.

The dummy variable $POLAF$ is included in the basic specification to test the role played by political affinities (row 4 of table 4). It values 1 in the case of regions governed by the Partido Socialista Obrero Español (PSOE) most of the time from 1984-1996\footnote{They are the following: Andalucía, Asturias, Castilla-La Mancha, Comunidad Valenciana, Extremadura, Madrid, Murcia and La Rioja. The PSOE governed Spain from 1982 to 1996.} and 0 for the rest. Although its sign is positive, its significance is very low.

To compare choices about deficit with those about own taxes, another equation has been estimated. In this case, $T$ is the explained variable. It is defined as total taxes minus ceded taxes. A dummy variable ($UNI$) is also included to control by slightly higher tax autonomy of uniprovincial ACs (Monasterio and Suárez-Pandiello, 1998). $UNI$ values 1 for Asturias, Cantabria, Madrid, Murcia and La Rioja and 0 for the rest. Equation to estimate is then:

$$T_i = \beta_1 + \beta_2 \cdot UNI_i + \beta_3 \cdot CAN_i + \beta_4 \cdot POW_i + \beta_5 \cdot GDP_i + \epsilon_i$$

The main results are shown in the seventh row of table 5. Both $UNI$ and $CAN$ are significant, but not $POW$ and $GDP$. Things change when only the last part of the sample is examined (row 8). Using cross-section specific means for the period 1995-1996, $GDP$ (in 1995) becomes highly significant and $POW$ increases its significance.

The behavior of deficit is the opposite. With data for 1995-96, $GDP$ is not statistically significant and $POW$ reduces its significance substantially (row 5). The p-value corresponding to the joint test of the hypothesis that all the coefficients except the
intercept are zero is 0.02. With data for 1997-99 (data for GDP in 1997) any explicative variable is relevant (row 6). The p-value of the F-statistic is 0.37 now.

In short, regions with higher levels of per capita GDP and spending responsibilities choose higher deficits but do not collect more taxes if one looks at the whole period. Results are different once attention is paid to the last part of the sample, when limits on debt are tighter and the political power to tax increases with the consolidation of the new tier. Otherwise, political affinity and the economic and political sizes of the regions are not relevant to explain interregional differences in deficit.

THE USE OF DEBT LIMITS, MARKET DISCRIMINATIONS AND THE DETERMINANTS OF GRANTS

The three most relevant deficit and debt limits met by ACs have been the following:

i) The golden rule;

ii) The sum of interest payments and debt refund can not be more than the 25% of current revenues; and

iii) Since 1992 ACs must meet the deficit limits accorded with the central government to guarantee the achievement of fiscal constraints attached to the European Monetary Union.

Monasterio et al (1999) analyze the performance of ACs during the period 1990-97. In general, the regions with more difficulties to meet this set of conditions would have been Catalunya and Comunidad Valenciana (the two richest among the ACs with powers in health and education) and Madrid. From the six poorest regions, only Murcia would have approached the limits. Therefore, there are differences among the

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13 Lago-Peñas and Lago-Peñas (2001) show that regional economic performance does not affect regional electoral results during the eighties but they are important to explain electoral outcomes in the nineties. At the same time, electoral dynamics at general elections are more relevant during the eighties to explain what happens at the regional level. These results are interpreted as evidence of an institutional consolidation process that is translated in a progressive independence of both tiers.

14 With 1991 data, mean per capita GDP were the following (Spain=100): Baleares (143), Madrid (130), Catalunya (126), Navarra (116), País Vasco (110), Aragón (109), La Rioja (107), Comunidad Valenciana (102), Canarias (97), Cantabria (91), Asturias (89), Castilla y León, (87), Murcia (83), Castilla-La Mancha (83), Galicia (81), Andalucía (72), and Extremadura (68). Source: http://bancoreg.fbbv.es.
regions in the exploitation of indebtedness constraints. And these disparities would be best explained by the model developed in section three than by the bailout hypothesis.

With respect to credit market discriminations, disposable evidence show that the most indebted ACs are effectively discriminated in terms of credit ratings (Monasterio y otros, 1999) and spreads (Alcalde y Vallés, 2002). Unfortunately, the existence and sign of externalities in credit markets are not analyzed.

Finally, the relationships between regional deficit, on the one hand, and discretionary grants and increases in unconditional grants, on the other, have been tested. Using cross-section data for the period 1990-1996, correlation between per capita investment conventions (the most important discretionary grants program) and per capita deficit is negative but not significant at usual levels (−0.33). Not surprisingly, the correlation with POLAF is positive and significant at 10% (0.47)\(^\text{15}\). The reforms of the financing system in 1987 and 1992 increased overall grants for ACs. Utrilla (2002, row 4 in table 1 and 4) has calculated the growth rates in total revenues due to both revisions. Using again cross-section data from the 15 common ACs correlation between mean per capita deficit in the period 1984-1996 and the growth rate of granted revenues in the base year of both reforms were 0.34 and −0.08, respectively. Both coefficients are not significant at usual levels. In this case, correlations with POLAF (-0.02 and 0.36) are neither significant.

In short, while increases in both based-rule grants and discretionary transfers may be fairly interpreted as evidence of the strength of regional governments and the softness of their budget constraints, it is not clear that the distribution of additional resources has impinged upon bailout expectations.

\(^{15}\)To test the significance of correlations (r\(_{xy}\)), the following t-statistic with n-2 degrees of freedom is computed:

\[
t = \frac{r_{xy} \cdot \sqrt{n-2}}{\sqrt{1-r_{xy}^2}}
\]

When n=15, critical values are 0.44 (10%), 0.52 (5%) and 0.64 (1%).

FIGURE 3: THE EVOLUTION OF TOTAL REGIONAL PUBLIC DEBT STOCK 1990-2002 (BILLIONS OF EUROS. CURRENT PRICES)


<table>
<thead>
<tr>
<th>EXPLAINED VARIABLE</th>
<th>DC</th>
<th>DCPLUS</th>
</tr>
</thead>
<tbody>
<tr>
<td>INTERCEPT</td>
<td>0.62</td>
<td>1.15</td>
</tr>
<tr>
<td></td>
<td>(1.1)</td>
<td>(1.4)</td>
</tr>
<tr>
<td>TREND</td>
<td>5.25</td>
<td>5.43</td>
</tr>
<tr>
<td></td>
<td>(29.0)</td>
<td>(20.7)</td>
</tr>
<tr>
<td>TREND²</td>
<td>-0.16</td>
<td>-0.14</td>
</tr>
<tr>
<td></td>
<td>(-12.8)</td>
<td>(-7.7)</td>
</tr>
<tr>
<td>R²</td>
<td>0.998</td>
<td>0.997</td>
</tr>
<tr>
<td>D-W</td>
<td>1.78</td>
<td>1.86</td>
</tr>
<tr>
<td>RESET (p-value)</td>
<td>0.30</td>
<td>0.89</td>
</tr>
<tr>
<td>Number of observations</td>
<td>13</td>
<td>13</td>
</tr>
<tr>
<td>Simulated maximum (Year)</td>
<td>2005</td>
<td>2008</td>
</tr>
<tr>
<td>Simulated maximum (Billions of euros)</td>
<td>43.4</td>
<td>53.9</td>
</tr>
</tbody>
</table>

Notes: Standard t-statistics in parenthesis. D-W is the Durbin-Watson test on serial autocorrelation. RESET is Ramsey’s test on the null hypothesis of no specification errors.


<table>
<thead>
<tr>
<th></th>
<th>POW</th>
<th>POLAF</th>
<th>GDP</th>
<th>RATPOP</th>
<th>RATGDP</th>
<th>CAN</th>
<th>UNI</th>
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<tr>
<td>POW</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>POLAF</td>
<td>-0.19</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>GDP</td>
<td>-0.07</td>
<td>-0.31</td>
<td>1</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>RATPOP</td>
<td>0.63*</td>
<td>0.10</td>
<td>0.09</td>
<td>1</td>
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</tr>
<tr>
<td>RATGDP</td>
<td>0.53*</td>
<td>0.03</td>
<td>0.35</td>
<td>0.94*</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CAN</td>
<td>0.38</td>
<td>-0.29</td>
<td>-0.02</td>
<td>-0.12</td>
<td>-0.11</td>
<td>1</td>
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<tr>
<td>UNI</td>
<td>-0.50</td>
<td>0.38</td>
<td>0.07</td>
<td>-0.29</td>
<td>-0.19</td>
<td>-0.19</td>
<td>1</td>
</tr>
</tbody>
</table>

*Significant at 5% level.

<table>
<thead>
<tr>
<th></th>
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<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>-920 (-0.71)</td>
<td>-373 (-0.28)</td>
<td>-964 (-0.76)</td>
<td>-1560 (-0.73)</td>
<td>-1027 (-0.23)</td>
<td>-5 (-0.00)</td>
<td>-224 (-0.96)</td>
<td>-6237 (-2.02)</td>
</tr>
<tr>
<td>CAN</td>
<td>-3614 (-3.16)</td>
<td>-2901 (-2.31)</td>
<td>-2853 (-2.19)</td>
<td>-3528 (-2.86)</td>
<td>2007 (0.51)</td>
<td>-1812 (-1.42)</td>
<td>21929 (10.79)</td>
<td>24291 (9.05)</td>
</tr>
<tr>
<td>POW</td>
<td>4994 (8.22)</td>
<td>4285 (5.23)</td>
<td>4480 (4.56)</td>
<td>5016 (7.85)</td>
<td>6926 (3.27)</td>
<td>1121 (1.64)</td>
<td>1027 (0.84)</td>
<td>2005 (1.24)</td>
</tr>
<tr>
<td>GDP</td>
<td>35 (2.82)</td>
<td>27 (1.88)</td>
<td>33 (2.57)</td>
<td>37 (2.63)</td>
<td>18 (0.42)</td>
<td>3 (0.18)</td>
<td>37 (1.67)</td>
<td>90 (3.13)</td>
</tr>
<tr>
<td>RAITGDP</td>
<td>84 (1.25)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RATPOP</td>
<td></td>
<td>85 (1.05)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>POLAF</td>
<td></td>
<td></td>
<td>175 (0.28)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>UNI</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>4267 (3.65)</td>
<td>3220 (2.13)</td>
<td></td>
</tr>
<tr>
<td>RESET (p-value)</td>
<td>0.98</td>
<td>0.85</td>
<td>0.94</td>
<td>0.85</td>
<td>0.90</td>
<td>0.47</td>
<td>0.83</td>
<td>0.18</td>
</tr>
<tr>
<td>White (p-value)</td>
<td>0.50</td>
<td>0.76</td>
<td>0.80</td>
<td>0.79</td>
<td>0.58</td>
<td>0.36</td>
<td>0.51</td>
<td>0.52</td>
</tr>
<tr>
<td>F-statistic (p-value)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.02</td>
<td>0.37</td>
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<tr>
<td>$R^2$</td>
<td>0.868</td>
<td>0.886</td>
<td>0.884</td>
<td>0.869</td>
<td>0.566</td>
<td>0.237</td>
<td>0.935</td>
<td>0.919</td>
</tr>
<tr>
<td>Number of observations</td>
<td>15</td>
<td>15</td>
<td>15</td>
<td>15</td>
<td>15</td>
<td>15</td>
<td>15</td>
<td>15</td>
</tr>
</tbody>
</table>

Notes: Standard t-statistics in parenthesis. RESET is the Ramsey’s test on the null hypothesis of no specification errors. White is White’s test on the null hypothesis of homocedasticity. F-statistic is a joint test of the hypothesis that all the coefficients except the intercept are zero.
V. CONCLUDING REMARKS

According to the empirical evidence showed in this paper and summarized in table 6, the bailout hypothesis would not be the best explanation for the deficit of Spanish regional governments. Effectively, some conditions that promote bailout expectations hold in the past: tax autonomy was low and debt limits were high and soft until the middle of the nineties. Although rule-based grants were predominant, periodical renegotiations of the financing system and discretionary grants softened the subcentral budget constraints.

However, the behavior of central and subcentral governments and credit markets do not meet the empirical implications of the bailout hypothesis discussed in section two. On the contrary, it seems to back the model discussed in section three. From this more traditional perspective, ACs would have chosen the level and composition of own resources according to their needs, legal limits on deficit and indebtedness, and the political costs of the several sources of revenues. Because those have changed along the time, fiscal choices have also been variable.
TABLE 6: EMPIRICAL EVIDENCE ON BOTH THE BAILOUT MODEL AND THE POLITICAL COST MODEL

<table>
<thead>
<tr>
<th>BAILOUT MODEL</th>
<th>POLITICAL COST MODEL</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. SIMILAR EXPLOITATION OF DEBT LIMITS (NOT)</td>
<td>1. DIFFERENCES IN THE EXPLOITATION OF DEBT LIMITS (YES)</td>
</tr>
<tr>
<td>2. TOO BIG TO FAIL (I): NEGATIVE EXTERNALITIES ON NATIONAL ECONOMIC SYSTEM (NOT)</td>
<td></td>
</tr>
<tr>
<td>3. TOO BIG TO FAIL (II): VOTES COUNT (NOT)</td>
<td></td>
</tr>
<tr>
<td>4. TOO SMALL TO FAIL (I): LOW COST OF RESCUE (NOT)</td>
<td></td>
</tr>
<tr>
<td>5. TOO SMALL TO FAIL (II): NO PROPORTIONALITY OF ELECTORAL SYSTEMS (NOT)</td>
<td></td>
</tr>
<tr>
<td>6. POLITICAL AFFINITY INCREASES EXPECTATIONS OF BAILOUT AND THEN PRESENT DEFICIT (NOT)</td>
<td></td>
</tr>
<tr>
<td>7. NO CREDIT MARKET DISCRIMINATION (NOT)</td>
<td>7. CREDIT MARKET DISCRIMINATION (YES)</td>
</tr>
<tr>
<td>8. NEGATIVE EXTERNALITIES IN CREDIT MARKETS (SOLIDARITY AMONG LENDERS) (?)</td>
<td>8. POSITIVE EXTERNALITIES IN CREDIT MARKETS (DEBT YARDSTICKS) (?)</td>
</tr>
<tr>
<td>9. POSITIVE CORRELATION BETWEEN RISES IN GRANTS AND DEFICIT (NOT)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>10. NEGATIVE CORRELATION BETWEEN DEFICIT AND THE REAL INTEREST RATE (?)</td>
</tr>
<tr>
<td></td>
<td>11. MEAN DEFICIT DEPENDS ON THE EXPECTATIONS OF FUTURE GRANTS AND THE POLITICAL COST OF TAXES (YES)</td>
</tr>
<tr>
<td></td>
<td>12. REGIONAL DIFFERENCES IN PER CAPITA GDP, GRANTS, POWERS AND SPENDING NEEDS WOULD EXPLAIN DIFFERENCES IN OWN REVENUES AND THEN IN DEFICIT (YES)</td>
</tr>
</tbody>
</table>
REFERENCES

Evolving Federations and Subcentral Deficits: Testing the Bailout Hypothesis

Santiago Lago-Peñas


