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The Impact of Soft Budget Constraint on the Fiscal Co-responsibility of the Autonomous Communities in Spain: The Case of Extraordinary Liquidity Funds (2012-2019)

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Abstract

According to the Second Generation of Theories of Fiscal Federalism, if subcentral governments can increase the level of spending without taking responsibility for the cost due to the existence of a soft budget constraint, incentives are created for financially irresponsible behavior. Since 2012, the central government in Spain has created various funds with the aim of improving the liquidity of the Autonomous Communities, but their design has meant that the latter can obtain resources at little cost. This paper tests the hypothesis under which the regions that have received more extraordinary liquidity funds have had a less prudent fiscal behavior, finding no evidence of it. The level of unemployment, the financial insufficiency and the electoral cycle of the budget are the determining factor in explaining greater non-compliance with deficit and debt targets and higher deficit and debt growth rates.

Keywords: Soft budget constraint, Regional financing, Autonomous Communities, Extraordinary liquidity funds.

JEL Classification: H63, H74, H77.

1. Introduction

According to the Theory of Fiscal Federalism, sub-central governments, in the absence of externalities and economies of scale, are the most appropriate level of governments to satisfy the heterogeneous preferences of citizens, given their proximity to them; thus, decentralization can lead to efficiency gains. (Oates, 1972.)

However, institutional design can be an important determinant of performance in decentralized countries where more than one level of government coexists. More specifically, fiscal

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decentralization, if not well structured, can encourage the irresponsible behavior of regional and local jurisdictions, seeking to take advantage of common resources for their own benefit. (Rodden *et al*., 2003; Oates, 2005; Weingast, 2009.)

In this sense, if a sub-central government can increase its level of spending without having to take responsibility of the costs, there is an incentive to raise it above the financially sustainable level, thus considering that there is a soft budget constraint; conversely, it will manage its resources prudently if it is responsible for the consequences of spending above what it can afford, in other words, if it faces a hard budget constraint.[1] (Rodden *et al*., 2003; Pöschl and Weingast, 2015.)

More specifically, under the conditions of soft budget constraint, sub-central governments are not fiscally responsible for the policies they pursue, so they are likely to tend to overspend, cut tax revenues or get into debt beyond the recommended.[2] (Rodden *et al*., 2003.)

In Spain, as shown by Fernández (2016), the levels of regional debt shot up as a result of the economic crisis, from an average of 6.7% of GDP in 2008 to the current 23.7% recorded during the last quarter of 2019, according to data from the Banco de España. Financing needs were also affected, reaching 5.2% of GDP during 2011, producing high levels of non-compliance with deficit targets.[3]

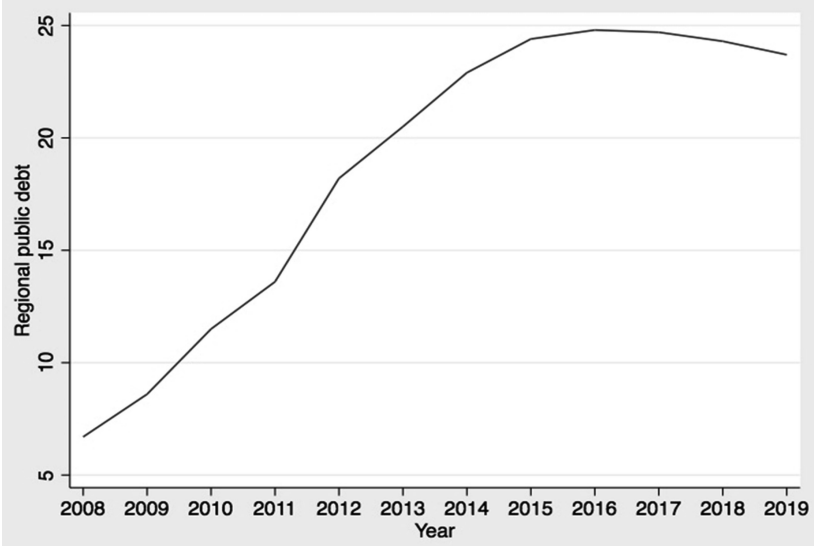
For this reason, the central government created the so-called extraordinary liquidity mechanisms, with the objective of providing financing to the regions that had more difficulties in accessing capital markets in order to obtain the necessary resources to close the gap between their expenditures and revenues.

It should be clarified that a bailout does not imply a soft budget restriction, or rather it is a concrete case of this, since despite the fact that regional and local governments may have limited access to the resources of federation, these may need external rescues (Lago-Peñas, 2005; Fernádez *et al*., 2013); however the mere expectation of being rescued does encourage irresponsible behavior (Wildasin, 1997).

Returning to the extraordinary liquidity funds, as pointed out by authors such as Fuente (2019a), these were applied as if they were a complement to the current regional financing system, due to the great savings in interest they have generated on the regional accounts, which are estimated at 12,744 million euros until 2016. "These savings can be considered as an implicit aid or subsidy that, in some sense, increases the effective financing of the Autonomous Communities" (p. 6), and which is close to 2% per year of the total financing for homogeneous competences of the financing system of Autonomous Communities.

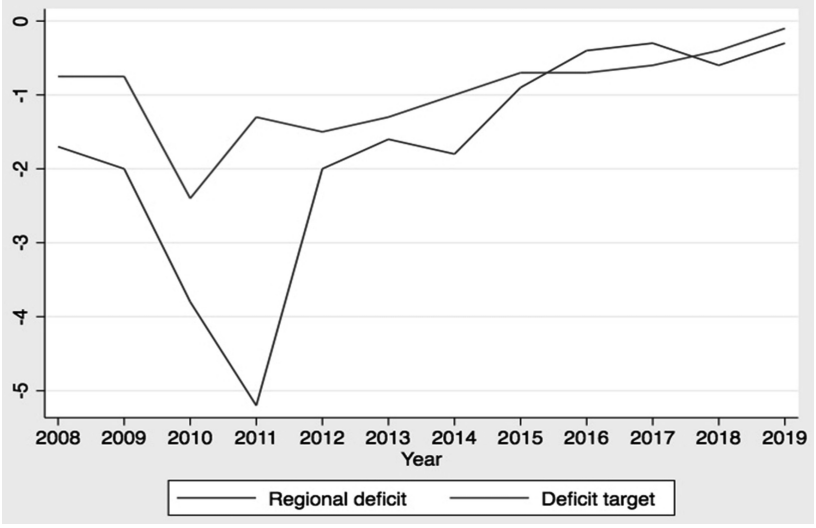
According to several authors[4], these liquidity mechanisms supposed and suppose an explicit rescue that, although it was not novel in the substance, it had been so in the form, given the amounts and the generalization of the quantities contributed, which has meant a soft budgetary restriction.

Figure 1
EVOLUTION OF THE REGIONAL DEBT ACCORDING TO THE EXCESSIVE DEFICIT PROTOCOL, AS A PERCENTAGE OF GDP



Source: Banco de España.

Figure 2
EVOLUTION OF THE CAPACITY(+)/NEED(–) FOR FINANCING OF THE AUTONOMOUS COMMUNITIES AND THE DEFICIT TARGET, AS A PERCENTAGE OF GDP



Source: Ministerio de Hacienda and Banco de España.

For these reasons, it seems convenient to know how these mechanisms have affected and do affect the behavior of the Autonomous Communities, since in the absence of a reform of the autonomous financing system, they have become a substantial element within the regional financial condition[5], so it seems plausible that they have discouraged their financially prudent behavior, which could generate higher future costs in the form of new transfers from the federation and/or increasing problems of moral and reputational risk.

In other words, this paper seeks to address the question of whether the creation of the extraordinary liquidity funds has meant a greater non-compliance of public deficit targets and/or a greater increase in debt levels by regional governments. In this way, the aim is to evaluate if the soft budget constraint hypothesis has been met, or if there are other variables that better explain the financially imprudent behavior of the Autonomous Communities since 2012.

The rest of the paper is organized as follows: section 2 provides a brief description of the extraordinary liquidity mechanisms; section 3 reviews the literature; sections 4 and 5 present the data to be used and the econometric methodology; section 6 shows the results and is discusses them; section 7 concludes.

2. Institutional background

As noted above, in 2012 two extraordinary liquidity funds were created for the Autonomous Communities. On the one hand, the Fiscal and Financial Policy Council agreed on the creation of a liquidity mechanism for supplies payments, which is voluntary, but at the same time requires certain access conditions based on the implementation of an adjustment plan. On the other hand, the *Royal Decree-Law 21/2012 of 13th July on liquidity measures for public administrations and in the financial sphere* created the Autonomous Liquidity Fund (hereinafter FLA, by its Spanish acronym), which differed from the former in that its objective was to finance the debt maturities of those regions that had more difficult access to markets, either because of a low demand for their issues that pushed their prices up, or directly because of a lack of demand for them (Fernández *et al*., 2013).

In 2014, these mechanisms will be restructured through *Royal Decree-Law 17/2014 of 26th December on measures for the financial sustainability of autonomous communities and local entities and others of an economic nature*. This created a Fund for the Financing of Autonomous Communities which was to be divided into four compartments, including the aforementioned Autonomous Community Liquidity Fund and the Fund for the Financing of Payments Suppliers of the Autonomous Communities (to be extinguished as the from that year), to which the Financial Facility compartment and the Social Fund compartment would be added.

The Financial Facility compartment was created with a view to granting credit facilities to those Autonomous Communities that had not joined the Autonomous Community Liquidity Fund, provided that they met the objectives of budgetary stability, public debt and the average period for payment to suppliers. The purpose of the Social Fund compartment was to finance the social expenditure obligations that the Autonomous Communities had undertaken with the Local Entities at 31st December 2014.

Table 1
DISTRIBUTION OF THE EXTRAORDINARY LIQUIDITY FUNDS BY AUTONOMOUS COMMUNITIES PER ADJUSTED POPULATION

Autonomous Community	2012	2013	2014	2015	2016	2017	2018	2019	Total
Andalucía	663.51	632.56	703.10	447.61	524.45	564.57	489.88	400.45	4,426.13
Aragón	302.57	6.90	52.10	1,057.88	731.50	663.02	821.69	926.43	4,562.09
Castilla La-Mancha	1,783.62	540.14	1,057.58	619.50	882.98	873.28	893.79	828.37	7,479.26
Castilla-León	385.80	0.00	0.00	768.44	0.00	233.10	631.91	0.00	2,019.25
Cataluña	1,156.53	1,743.52	1,370.27	1,574.83	1,360.64	1,044.14	1,256.13	1,071.77	10,577.83
Canarias	517.98	401.95	409.86	470.98	554.59	267.89	241.62	349.48	3,214.35
Extremadura	196.42	5.60	288.45	668.50	707.61	496.13	435.16	452.36	3,250.23
Galicia	0.00	0.00	0.00	535.59	623.45	727.95	419.02	244.80	2,550.81
C. Valenciana	1,622.55	825.32	1,711.50	1,815.60	1,446.18	1,124.89	1,206.91	1,404.86	11,157.81
Asturias	450.84	459.87	0.00	507.02	0.00	309.02	576.82	116.95	2,420.52
Illes Baleares	1,173.88	1,024.13	1,301.62	1,091.73	1,118.19	980.27	688.27	539.06	7,917.15
Cantabria	781.42	545.41	580.99	739.78	779.11	900.39	767.84	0.00	5,094.94
Madrid	204.11	14.31	0.00	296.54	0.00	0.00	0.00	0.00	514.96
Murcia	1,091.55	761.62	1,123.83	806.68	1,022.02	861.56	966.08	1,019.78	7,653.12
La Rioja	215.17	0.00	0.00	836.77	0.00	0.00	937.34	794.98	2,784.26
Average Autonomous Communities	775.88	622.74	712.45	866.04	715.89	633.42	678.79	594.64	5,599.85

Source: Ministerio de Hacienda.

Table 2
DISTRIBUTION OF EXTRAORDINARY LIQUIDITY FUNDS BY TYPE (millions of euros)

Extraordinary liquidity fund	2012	2013	2014	2015	2016	2017	2018	2019	Total
FLA	16,638.13	22,920.56	23,215.19	22,830.23	28,182.26	23,959.96	20,568.99	11,806.83	158,315.33
Supplier Payment Plan	17,704.67	4,544.40	7,970.09	0.00	0.00	0.00	0.00	0.00	30,219.15
Financial Facility	0.00	0.00	0.00	14,267.39	2,999.11	3,634.15	9,097.22	14,181.82	29,997.86
Social Fund	0.00	0.00	0.00	683.23	0.00	0.00	0.00	0.00	683.23
Total	34,342.80	27,464.96	31,185.28	37,780.85	31,181.37	27,594.11	29,666.21	25,988.65	245,204.24

Source: Ministerio de Hacienda.

The distribution of the total of 245,204 million euros up to 2019 that make up the amount delivered by these funds has been unequal, both between Autonomous Communities and between the mechanisms themselves. In aggregate, Cataluña, Comunidad Valenciana and Andalucía have been the regions that have obtained the most resources, while La Rioja, Asturias and Comunidad de Madrid have been the communities that have benefited the least from liquidity aid; by population adjusted according the settlement of the regional financing system, it has been Comunidad Valenciana, Cataluña and Illes Baleares that have benefited the most, as opposed to the funds received by Comunidad de Madrid, Castilla y León and Asturias; likewise the Autonomous Liquidity Fund is the mechanism that has distributed the most resources, constituting 69.4% of the total.

3. Literature review

Most of the works that study the hypothesis of soft budget restriction applied to the Autonomous Communities are based on the determination of the factors that explain their greater or lesser degree of failure to meet the deficit targets, including, for the interest of this paper, as explanatory variables that measured the degree of hardness of the budget restriction when trying to finance themselves through the markets or through the exercise of their fiscal autonomy.

For example, Delgado *et al*. (2016) use the Generalized Method of Moments (GMM) and the Two-Stage Least Squares (2SLS) to estimate to what extent the degree of non-compliance with the deficit targets of the Autonomous Communities between 2002 and 2015 is due to voluntary factors (institutional design of the fiscal rules that imply soft budgetary restriction, and political motivations) or involuntary factors (asymmetric shocks or excessively severe adjustment targets). The authors find that, although neither statistically nor economically significant, facing higher market financing costs increases the probability of increasing the compliance margin, i. e. a hard budget constraint "imposed" by markets motivates more responsible behavior. Fiscal autonomy seems to be going in the same direction by encouraging good behavior of the Autonomous Communities.

Along the same lines, Lago-Peñas *et al*. (2017) find that resources available to the Autonomous Communities have a positive influence on the degree of compliance with the deficit targets; however, the debt burden does not seem to show significance, although it has a positive sign.

As in the studies mentioned above, Leal and López-Laborda (2013) found that a higher per capita income level of the Autonomous Communities reduces the degree of non-compliance, corroborating the hypothesis that the greater the autonomy, the greater the fiscal co-responsibility.

García-Milà *et al*. (2001) have approached the behavior of the Autonomous Communities from a different perspective. Observing the level of debt per capital of the regions between 1984 and 1995 and making distinctions between those that had competences in education

and health during those years (Andalucia, Cataluña, Comunidad Valenciana, Galicia and Islas Canarias), they find that this is higher in the Communities with higher levels of income per capita (as a proxy of the size of the region and, therefore, of the possible spillover effects in the event of no bailout). In other words, since the gap between expenditure needs and income from own resources is not closed, there is an expectation of a bailout, which encourages irresponsible behavior in the form of debt, especially in regions considered to be "too big to fail".

Lago-Peñas (2005) follows a similar line to that of García-Milà *et al*. (2001) in examining the determinants of the regional deficit between 1984 and 1996, finding that the lack of fiscal autonomy and reasons of a fiscal policy nature are the most important variables to explain the deficit, beyond the reasons linked to rescue expectations.

Focusing on the role played by extraordinary liquidity funds, on a descriptive level, Castedo *et al*. (2019) calculate various solvency ratios of the Autonomous Communities before and after the introduction of extraordinary liquidity funds and they note that there has been no reduction in the level of debt of the regions, simply that the General State Administration has replaced several creditors and has become one of the main lenders to the regional governments, damaging their solvency in the long term.

Finally, and although it is no the aim of this paper to study the effects of bailouts on the performance of the Autonomous Communities, the paper of Pérez and Prieto (2014) has some relevance because they find that between 1995 and 2012 as transfers from the central government to the regional governments increase, the short-term debt/ling-term debt ratio falls, reducing the risk of illiquidity of the autonomies. These results may suggest that, in a strategic game, the benefit of bailing out the autonomous regions is greater in terms of reducing the credit risk they may suffer than the benefit of not bailing out, or the cost of not bailing out and not fueling irresponsible behavior is greater than the cost of bailing out and reducing the risk of illiquidity. (Inman, 2003)

At the international level, Bordignon and Turati (2009) study the impact of fiscal rules of European Union on health financing by central government to Italian regions during the 1990s. The authors corroborate the hypothesis of soft budget constraint, since with higher expectations of bailout, measured by the funding obtained in previous years, regional health expenditure is reduced.

Pettersson-Lidbom (2010) calculated how much the debt of local councils in Sweden grew between 1979 and 1992 due to expectations of being bailed out by the central government, using as an explanatory variable the transfers received in year $t+1$ and injecting it by means of the number of neighboring councils receiving transfers in year t. The results show that the soft budget constraint has a negative effect on the responsible behavior of Swedish local governments.

The German case is studied by Baskaran (2012), applying a different method, since it analyses how debt strategies of the Länder are conditioned by those of the rest of the state governments and/or by the federal deficit. The author finds that interactions only occur at a hori-

zontal level, presenting, in addition, a positive sign, so that the expectations of being rescued with more than the amount finally perceived as a rescue, taking into account that, the more Länder are over-indebted, the less resources they will receive from a hypothetical bailout.

At the municipal level in Netherlands, Allers (2015) does not corroborate the existence of irresponsible behavior by local governments despite the existence of rescue programs; this is because the cost in terms of loss of autonomy of a bailout is too high to implement spending policies that compromise their public accounts.

On the other hand, Baskaran (2010) has carried out a cross-sectional analysis for 17 OECD economies without measuring expectations, but rather seeks to find the relation between indebtedness and fiscal decentralization, which is negative on the expenditure side. According to Weingast (2009), institutional design is important for explaining the performance of federalism, and it is more likely to work well in more developed countries, where it is plausible that the possible effects of a soft budget constraint can be reduced.

Rodden (2002) tries to go beyond the simple dichotomy between federal and non-federal countries, trying to find out to what extent institutional design affects the indebtedness of countries, both at the subcentral level and in aggregate manner. To this end, it takes 43 case studies within the OECD countries between 1986 and 1996, finding that a greater vertical imbalance coupled with freedom of indebtedness is what explains irresponsible behavior on the part of subcentral governments.

Table 3
LITERATURE REVIEW

Author (year)	Sample	Methodology	Conclusions
Allers (2015)	Local governments in Netherlands between 1967 and 2013.	Qualitative and quantitative analysis (logistic regression).	The possibility of being bailed out does not encourage local governments to over-indebtedness, due to the cost associated with the bailout in the form of loss of fiscal autonomy.
Baskaran (2010)	17 OECD countries between 1975 and 2001.	Panel data with fixed effects and Generalized Method of Moments (GMM).	Greater fiscal decentralization on the expenditure side is negatively related to indebtedness.
Baskaran (2012)	German Länder between 1975 and 2005.	Two-Stage Least Square (2SLS) and Instrumental Variables (IV).	Länder indebtedness depends on horizontal rather than vertical interactions, with expectations of bailout being more important than the possible amount perceived as bailout.

(Continued)

Author (year)	Sample	Methodology	Conclusions
Bordignon y Turati (2009)	Italian regional governments between 1990 and 1999.	Models of Multiplicative Interaction, Method of Substitution and Instrumental Variables (IV).	A lower probability that the Italian central government will bail out regional governments to make more spending on health, reduces such spending.
Castedo *et al*. (2019)	Autonomous Communities in Spain between 2011 and 2016.	Descriptive accounting analysis.	The extraordinary liquidity funds have not led to a reduction in the debt of the Autonomous Communities; the General State Administration has replaced private creditors to become the main lender in many regions.
Delgado *et al*. (2016)	Autonomous Communities in Spain between 2002 and 2015.	Generalized Method of Moments (GMM) and Two-Stage Least Square (2SLS).	Hard budgetary constraint "imposed" by financial markets increases the scope for meeting deficit targets.
García-Milà *et al*. (2001)	Autonomous Communities in Spain between 1984 and 1995.	Panel data with random effects (OLS).	Regions considered "too big to fail" behave more irresponsibly by taking on more debt to compensate for the gap between their own resources and their spending needs, given their expectation that they will be rescued by the central government.
Lago-Peñas (2005)	Autonomous Communities between 1984 and 1996.	Panel data (OLS).	Fiscal reasons, such as lack of financial autonomy, rather than bailout expectations, are the main reasons for regional deficits.
Lago-Peñas *et al*. (2017)	Autonomous Communities in Spain between 2005 and 2015	Generalized Method of Moments (GMM) and Ordinary Least Squares (OLS).	The higher per capita non-financial income for the Autonomous Communities has a positive influence on the degree of compliance with the deficit targets; the debt burden, although with positive effects, is not significant.

(Continued)

Author (year)	Sample	Methodology	Conclusions
Leal y López-Laborda (2013)	Autonomous Communities in Spain between 2003 and 2012.	Generalized Method of Moments (GMM).	The more per capita income the Autonomous Communities have, the more likely they are to meet the deficit targets
Pérez y Prieto (2014)	Quarterly data for the Autonomous Communities in Spain between 1995 and 2012.	Ordinary Least Squares (OLS) and Generalized Method of Moments (GMM).	The transfers received by the Autonomous Communities from the central government reduce their risk of illiquidity.
Petterson-Lidbom (2010)	Local governments in Sweden between 1979 and 1992.	Instrumental Variables (IV).	Increasing rescue expectations for local governments increases their debt level by about 20%.
Rodden (2002)	43 case studies within OECD countries between 1986 and 1996.	Panel data with fixed effects and the Generalized Method of Moments (GMM).	The factors that explain a higher level of deficit are the combination of a greater dependence on sub-central governments and freedom of indebtedness.

Source: Own elaboration.

4. Variables and data

Ter-Minassian (2015) has identified a number of institutional failures that can influence the degree of financial accountability of subcentral governments and has been categorized by Delgado *et al*. (2016) into three classes: 1) limited fiscal autonomy; 2) lack of preconditions of market discipline; and 3) weak administrative controls and fiscal rules.

But as Delgado *et al*. (2016) point out, irresponsibility in resource management by subcentral governments may also be due to the lack of tools needed to balance public accounts, so that non-compliance would be unintentional, such as shock affecting both the amount of available revenue and the level of spending, for example, through automatic stabilizers.

Finally, the literature often includes political variables, such as dummy variables that capture the existence or otherwise of elections in a year (Delgado *et al*., 2016) or the political party in government (Leal and López-Laborda, 2013).

Thus, the variables to be included in the model would be determined by those that try to capture the irresponsible behavior of the Autonomous Communities, the amount of the extraordinary mechanisms that the regional governments receive annually and a set of control variables that take into account their political, economic and demographic characteristics.

The dependent variables included are:

— DEBT: reflects the annual growth rate of debt for each Autonomous Community, so that regions that have received more aid to improve their liquidity are expected to have higher levels of debt increase. The source of the data is Banco de España.

— NON-COMPLIANCE: reflects the deviation in percentage points of GDP between the deficit target set in t and that finally recorded. The regions that breach most are expected to be those that obtain the most resources through extraordinary liquidity funds. The source of the data are Ministerio de Hacienda and General Intervention of the State Administration.

The variables that collect the funds received by each Autonomous Community through the extraordinary liquidity funds are:

— MECHANISMS: it includes the amount of resources obtained by each region through the extraordinary liquidity funds in relation to the population adjusted according to the settlement of the regional financing system. A positive relationship is expected to be observed with the dependent variables. The source of the data is Ministerio de Hacienda.

— FLA: this only includes the resources from the Autonomous Liquidity Fund in relation to the population adjusted according to the settlement of the regional financing system. It is expected that the regions that receive more funds from the FLA will behave more irresponsibly. The source of the data is Ministerio de Hacienda.

The following control variables have been included:

— UNEMPLOYMENT: this refers to the unemployment rate registered in each Autonomous Community in the fourth quarter of the year. A positive relationship is expected since a higher level of unemployment implies lower income and higher expenditure for the public sector. The source of the data is the National Institute of Statistics (INE).

— GROWTH: indicated the annual GDP growth rate for each Autonomous Community. A negative relationship is expected, since a positive shock tends to reduce the automatic stabilizers. The source of the data is the National Institute of Statistics (INE).

— ELECTIONS: dichotomous variable that takes the value 1 in case of elections in year t and 0 in the opposite case. A positive relationship with irresponsible behavior is expected according to the electoral cycle of the budget. The source of the data is self-construction from several sources.

— EFFORT 1: variable that seeks to reflect the degree to which the failure to meet the deficit target is unintentional due to the setting of a target that requires a large budgetary adjustment compared to the previous year. It is calculated as the difference between the deficit target set at t and the deficit target set at $t-1$. A negative

relationship with the non-compliance variable is expected. The source of the data is Ministerio de Hacienda.

— EFFORT 2: variable which, having the same objective as the previous one, tries to assess whether the setting of a homogeneous objective for all the Autonomous Communities affects the degree of compliance. It is calculated as the difference between the deficit of region *n* in *t* – 1 and the deficit target set for *t*. A positive relationship with the non-compliance variable is expected. The source of the data is Ministerio de Hacienda.

— GROWTH_GAP: variable that reflects the heterogeneity in the degree of economic growth among the Autonomous Communities and which may affect the growth rate of indebtedness. It is calculated as the difference between the GDP growth rate of region in n in year t and the growth rate recorded at national level for the same year. A negative relationship is expected with respect to the debt growth rate. The source of the data is the National Institute of Statistics (INE).

— VFI: variable that attempts to calculate the vertical financial imbalances of the Autonomous Communities. It is calculated as the inverse of the quotient between own income and expenditure taken as the total of non-financial resources and uses without taking into account transfers between public administrations. A negative relationship is expected with the non-compliance variable and a positive relationship with the debt variable. The source of the data is the General Intervention of the State Administration.

— AUTONOMY: variable that calculates the financial autonomy of the Autonomous Communities. It is calculated as the inverse of the quotient between the sum of current and capital transfers received by region n and the non-financial resources of that region in year *t*. A positive relationship is expected with the non-compliance variable and a negative relationship with the debt variable. The source of the data is the General Intervention of the State Administration.

— ALIGNMENT: dichotomous variable that takes the value 1 when the autonomous and central governments are managed by the same political party and 0 in another case. A negative relationship is expected with the non-compliance and a positive relationship with the debt variable. The source of the data is of own construction from several sources.

Table 4
DESCRIPTIVE STATISTICS. PERIOD 2008-2019

Variable	Mean	Median	Standard deviation	Minimum	Maximum	Observations
Debt	0.17	0.12	0.20	-0.07	1.64	204
Non_compliance	-0.99	-0.52	1.67	-9.72	2.45	204
Mechanisms	636.64	621.48	464.75	0.00	1815.60	120

(Continued)

Variable	Mean	Median	Standard deviation	Minimum	Maximum	Observations
FLA	404.39	192.14	471.40	0.00	1790.66	120
Unemployment	18.33	17.21	6.45	8.13	17.21	204
Growth	0.53	1.10	2.47	-5.80	7.10	204
Elections	0.26	0.00	0.44	0.00	1.00	204
Effort_1	-0.008	0.10	0.66	-1.65	1.65	204
Effort_2	-0.96	-0.48	1.74	-9.24	2.15	204
Growth_Gap	-0.10	-0.10	0.82	-2.40	3.30	204
VFI	0.50	0.59	0.24	-0.28	0.75	204
Autonomy	0.48	0.41	0.19	0.25	1.00	204
Alignment	0.44	0.00	0.50	0.00	1.00	204

Source: Own elaboration.

5. Econometric specification, methodology and results

Thus, the following specification arises:

$$IMPRUDENT_{i,t} = \beta_{0i} + \beta_1 * IMPRUDENT_{i,t-1} + \beta_2 * MECHANISMS_{i,t} + \sum_{i=0}^{n} \beta_3 * CONTROL\,VARIABLES + e_{it} \quad (1)$$

Where imprudent are the variables taken as dependent, mechanisms the variables that include the amount of resources perceived by the region i in t through the extraordinary liquidity funds, the control variables represent the individual characteristics for each year of the sample, and e the error term.

The lagged dependent variable has also included to capture the persistence of financial imbalances for each Autonomous Community and helps to obtain consistent estimates. (Bond, 2002).

First, the Ordinary Least Square (OLS) method is used with temporary fixed effects, something recommended to mitigate the contemporary correlation in the residues in small samples (Pesaran, 2004), and for each region with the objective of reflecting the individual characteristics of each Autonomous Community, being validated by the Hausman test. This technique shows the most unbiased, efficient and consistent estimators.

However, the Ordinary Least Square method, when both the lagged dependent variable and fixed effects are included, being T small, produces biased estimates (Nickell, 1981). Therefore, the Generalized Method of Moments (GMM) has also been applied for dynamic models, using the Arellano-Bond estimator in two stages, showing its validity in similar

works (Lago-Peñas *et al*., 2017), which also allows to address possible problems of endogeneity of the model, especially with respect to the mechanism variables, FLA and the variables that measure the effort to meet the deficit targets[6]. The differences from the second lag of the endogenous variable and all the regressors lagged on period are used as instruments.

6. Results and discussion

First the models estimated through Ordinary Least Square are shown. The different estimated models present autocorrelation and heteroscedasticity, so in addition to the ordinary t-statistics, the value of the robust t-statistics to heteroscedasticity and autocorrelation problems are presented in square brackets, following the method of estimators consistent to heteroscedasticity and autocorrelation of Arellano (2003), especially convenient with samples where N is large and T is small. Additional estimates have been run for robustness purposes[7].

Mechanisms and FLA variables have the expected signs in all the estimates carried out; however, their impact on the dependent variable is not significant, so it is not possible to assume the hypothesis of soft budget restriction as the main driver of the imprudent behavior of the Autonomous Communities. The main variables that explain this behavior seem to be the holding of elections and the level of unemployment, both with the expected sign. The vertical fiscal imbalance also has some negative impact on prudential financial performance, so it is plausible to think that extraordinary liquidity funds are a way to complement the regional financing system and close the resource gap. Finally, the effort variables in the fulfillment of the deficit objectives are not significant.

Table 5
OLS MODEL RELATIONSHIP BETWEEN EXTRAORDINARY LIQUIDITY FUNDS AND NON-COMPLIANCE

Dependent variable (method of estimation)	**Non-compliance (OLS)**	**Non-compliance (OLS)**	**Non-compliance (OLS)**	**Non-compliance (OLS)**	**Non-compliance (OLS)**
Constant	1.21 (2.29)** [4.38]***	1.41 (1.20) [0.80]	1.41 (1.20) [0.80]	0.82 (0.36) [0.48]	0.82 (0.36) [0.48]
Non-compliance (-1)	-0.04 (-0.71) [-0.93]	-0.01 (-0.18) [-0.18]	-0.33 (-0.80) [-0.95]	-0.02 (-0.21) [-0.27]	-0.35 (-0.88) [-0.88]
Mechanisms	-0.0004 (-1.12) [-1.56]	-0.0003 (-0.99) [-1.22]	-0.0003 (-0.99) [-1.22]	-0.0004 (-1.04) [-1.46]	-0.0004 (-1.04) [-1.46]
Effort 1		-0.32 (-0.73) [-0.80]		-0.34 (-0.78) [-0.77]	
Effort 2			0.32 (0.73) [0.80]		0.34 (0.78)

(Continued)

Dependent variable (method of estimation)	**Non-compliance (OLS)**	**Non-compliance (OLS)**	**Non-compliance (OLS)**	**Non-compliance (OLS)**	**Non-compliance (OLS)**
Growth	0.03 (0.58) [0.42]	0.04 (0.75) [0.78]	0.04 (0.75) [0.78]	0.04 (0.72) [0.58]	0.04 (0.72) [0.58]
Unemployment	-0.07 (-3.13)*** [-5.62]***	-0.06 (-2.19)** [-1.83]*	-0.06 (-2.18)** [-1.83]*	-0.07 (-2.67)*** [-3.90]***	-0.07 (-2.67)*** [-3.90]***
Elections	-0.91 (-5.04)*** [-3.00]***	-0.89 (-4.80)*** [-2.61]**	-0.89 (-4.80)*** [-2.61]**	-0.89 (-4.78)*** [-2.64]**	-0.89 (-4.78)*** [-2.64]**
Alignment	0.24 (1.15) [1.07]	0.24 (1.18) [1.13]	0.24 (1.17) 1.13]	0.24 (1.16) [1.12]	0.24 (1.16) [1.12]
VFI		-0.57 (-0.21) [-0.13]	-0.57 (-0.21) [-0.13]		
Autonomy				0.79 (0.16) [0.22]	0.79 (0.16) [0.22]
Number of observations	120	120	120	120	120
R^2	0.48	0.48	0.48	0.48	0.48
Redundancy test of fixed individual effects	6.25e-06	3.35e-05	3.35e-05	3.38e-05	3.38e-05
Wooldridge AR(1) autocorrelation test	0.001	0.001	0.002	0.002	0.002
Wald heteroscedasticity test	0.00	0.00	0.00	0.00	0.00
Contemporary correlation test Pesaran CD	5.57e-07	2.76e-06	2.76e-06	4.10e-06	4.10e-06

Notes: ***, **, * indicate statistical significance at 1%, 5% and 10%, respectively. The regressions have been run with the econometric program Eviews 11.

Table 6
OLS MODEL RELATIONSHIP BETWEEN AUTONOMOUS LIQUIDITY FUND AND NON-COMPLIANCE

Dependent variable (method of estimation)	**Non-compliance (OLS)**	**Non-compliance (OLS)**	**Non-compliance (OLS)**	**Non-compliance (OLS)**	**Non-compliance (OLS)**
Constant	1.05 (2.06)** [4.15]***	1.37 (1.16) [0.70]	1.37 (1.16) [0.70]	0.57 (0.25) [0.29]	0.57 (0.25) [0.29]
Non-compliance (-1)	-0.02 (-0.36) [-0.53]	0.01 (0.17) [0.16]	-0.32 (-0.78) [-0.92]	0.009 (0.12) [0.15]	-0.36 (-0.89) [-0.83]

(Continued)

Dependent variable (method of estimation)	**Non-compliance (OLS)**	**Non-compliance (OLS)**	**Non-compliance (OLS)**	**Non-compliance (OLS)**	**Non-compliance (OLS)**
FLA	-0.0001 (-0.40) [-0.45]	-9.60e-05 (-0.30) [-0.25]	-9.60e-05 (-0.30) [-0.25]	-0.0001 (-0.36) [-0.41]	-0.0001 (-0.36) [-0.41]
Effort 1		-0.33 (-0.77) [-0.83]		-0.37 (-0.85) [-0.78]	
Effort 2			0.33 (0.77) [0.83]		0.37 (0.85) [0.78]
Growth	0.02 (0.39) [0.27]	0.04 (0.61) [0.65]	0.04 (0.61) [0.65]	0.03 (0.56) [0.43]	0.03 (0.56) [0.43]
Unemployment	-0.07 (-3.08)*** [-5.85]***	-0.06 (-2.08)** [-1.61]	-0.06 (-2.08)** [-1.61]	-0.07 (-2.62)** [-3.81]***	-0.07 (2.62)** [-3.81]***
Elections	-0.94 (-5.18)*** [-2.89]**	-0.91 (-4.89)*** [-2.39]**	-0.91 (-4.89)*** [-2.39]**	-0.91 (-4.87)*** [-2.51]**	-0.91 (4.87)*** [-2.51]**
Alignment	0.25 (1.17) [1.24]	0.25 (1.20) [1.35]	0.25 (1.20) [1.35]	0.25 (1.19) [1.27]	0.25 (1.19) [1.27]
VFI		-0.88 (-0.33) [-0.18]	-0.88 (-0.33) [-0.18]		
Autonomy				1.00 (0.20) [0.25]	1.00 (0.20) [0.25]
Number of observations	120	120	120	120	120
R^2	0.47	0.48	0.48	0.48	0.48
Redundancy test of fixed individual effects	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Wooldridge AR(1) autocorrelation test	0.002	0.003	0.003	0.005	0.005
Wald heteroscedasticity test	0.00	0.00	0.00	0.00	0.00
Contemporary correlation test Pesaran CD	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001

Notes: ***, **, * indicate statistical significance at 1%, 5% and 10%, respectively. The regressions have been run with the econometric program Eviews 11.

Table 7
OLS MODEL RELATIONSHIP BETWEEN EXTRAORDINARY LIQUIDITY FUNDS, AUTONOMOUS LIQUIDITY FUND AND DEBT GROWTH

Dependent variable (method of estimation)	**Debt growth (OLS)**	**Debt growth (OLS)**	**Debt growth (OLS)**	**Debt growth (OLS)**	**Debt growth (OLS)**	**Debt growth (OLS)**
Constant	-0.19 (-4.20)*** [-7.10]***	0.10 (1.13) [0.75]	-0.85 (-4.53)*** [-3.13]***	-0.14 (-3.01)*** [-5.03]***	0.11 (1.25) [0.73]	-0.75 (-3.73)*** [-2.50]**
Debt (-1)	-0.20 (-2.36)** [-3.95]***	-0.19 (-2.17)** [-3.16]***	-0.19 (-2.00)** [-3.16]	-0.28 (-3.15)*** [-4.16]***	-0.26 (-2.87)*** [-3.78]**	-0.26 (-2.71)*** [-3.46]***
Mechanisms	9.16 (3.53)*** [3.45]***	9.23e-05 (3.56)*** [3.15]***	8.37e-05 (2.96)*** [2.71]**			
FLA				-3.56e-05 [-1.32]	-2.00 (-0.76) [-0.90]	-3.96e-05 (-1.44) [-1.64]
Growth	-0.02 (-5.41)*** [-5.55]***			-0.02 (-4.72)*** [-4.11]***		
Growth-gap		-0.009 (-1.05) [-0.89]	-0.0.01 (-1.91) [-0.99]		-0.01 (-1.14) [-0.85]	-0.01 (-1.19) [-0.86]
Unemployment	0.01 (6.22)*** [9.05]***	0.02 (10.58)*** [10.06]***	0.02 (9.078)*** [9.82]***	0.02 (6.83)*** [9.48]***	0.02 (10.67)*** [9.58]***	0.02 (9.49)*** [9.26]***
Elections	0.005 (0.36) [0.54]	-0.0004 (-0.03) [-0.05]	-0.003 (-0.19) [-0.31]	0.01 (0.68) [0.95]	0.005 (0.37) [0.60]	0.002 (0.10) [0.15]
Alignment	-0.0003 (-0.02) [-0.03]	0.02 (1.20) [1.42]	0.02 (1.23) [1.52]	-0.01 (-0.87) [-1.04]	0.005 (0.32) [0.37]	0.005 (0.31) [0.39]
VFI		-0.90 (-5.39)*** [-3.19]***			-0.83 (-4.50)*** [-2.65]**	
Autonomy			1.18 (2.88)*** [2.04]*			1.06 (2.47)**
Number of observations	120	120	120	120	120	120
R^2	0.70	0.70	0.64	0.66	0.66	0.61
Redundancy test of fixed individual effects	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Wooldridge AR(1) autocorrelation test	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001

(Continued)

Dependent variable (method of estimation)	Debt growth (OLS)	Debt growth (OLS)	Debt growth (OLS)	Debt growth (OLS)	Debt growth (OLS)	Debt growth (OLS)
Wald heteroscedasticity test	0.00	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Contemporary correlation test Pesaran CD	< 0.0001	0.02	< 0.0001	< 0.0001	0.02	< 0.0001

Notes: ***, **, * indicate statistical significance at 1%, 5% and 10%, respectively. The regressions have been run with the econometric program Eviews 11.

As for the use of the Generalized Method of Moments, the variables of interest for testing the hypothesis of soft budget constraint are not significant, as was the case with the Ordinary Least Square method. However, the effort variables, also those of the fulfillment of the deficit targets, the vertical fiscal imbalance, the unemployment level and the dummy variable elections are significant and take the expected signs in the most of the regressions, so they would be the main factors that explain the (im)prudent behavior of the regions.

Table 8
GMM MODEL RELATIONSHIP BETWEEN EXTRAORDINARY LIQUIDITY FUNDS AND NON-COMPLIANCE

Dependent variable (method of estimation)	Non-compliance (GMM)	Non-compliance (GMM)	Non-compliance (GMM)	Non-compliance (GMM)	Non-compliance (GMM)
Non-compliance (-1)	-0.01 (-0.21)	-0.04 (-1.39)	-1.09 (-3.69)***	-0.04 (-1.36)	-1.19 (-3.11)***
Mechanisms	-6.01e-05 (-0.19)	0.0001 (0.34)	0.0001 (0.34)	1.03E-05 (0.03)	1.03E-05 (0.03)
Effort 1		-1.05 (-3.47)***		-1.15 (-2.93)***	
Effort 2			1.05 (3.47)***		1.15 (2.93)***
Growth	-0.012 (-2.10)**	-0.06 (-1.35)	0.06 (-1.35)	-0.07 (-1.29)	-0.07 (-1.29)
Unemployment	-0.11 (-4.12)***	-0.004 (-1.47)	-0.004 (-1.47)	-0.07 (-2.07)**	-0.07 (-2.07)**
Elections	-0.45 (-3.36)***	-0.32 (-2.97)***	-0.32 (-2.97)***	-0.29 (-2.11)**	-0.29 (-2.11)**
Alignment	-0.09 (-0.55)	0.27 (2.06)**	0.27 (2.06)**	0.25 (1.99)*	0.25 (1.99)*
VFI		-6.98 (-2.88)***	-6.98 (-2.88)***		
Autonomy				7.23 (1.85)*	7.23 (1.85)*
Number of observations	90	90	90	90	90
Sargan test	0.69	0.69	0.69	0.69	0.69

Notes: ***, **, * indicate statistical significance at 1%, 5% and 10%, respectively. The instruments used are the variable non-compliance in differences from the second lag, and lagged one period the variables growth, unemployment, elections, alignment, mechanisms, VFI and autonomy. The regressions have been run with the econometric program Eviews 11.

Table 9
GMM MODEL RELATIONSHIP BETWEEN AUTONOMOUS LIQUIDITY FUND AND NON-COMPLIANCE

Dependent variable (method of estimation)	Non-compliance (GMM)	Non-compliance (GMM)	Non-compliance (GMM)	Non-compliance (GMM)	Non-compliance (GMM)
Non-compliance (-1)	0.02 (0.87)	-0.03 (-0.65)	-0.81 (-1.69)*	-0.04 (-0.98)	-1.14 (-2.43)**
FLA	0.0003 (0.91)	0.0004 (0.99)	0.0004 (0.99)	0.0003 (0.68)	0.0003 (0.68)
Effort 1		-0.78 (-1.72)*		-1.11 (-2.47)**	
Effort 2			0.78 (1.72)*		1.11 (2.47)**
Growth	-0.15 (-2.77)***	-0.09 (-1.24)	-0.09 (-1.24)	-0.10 (-1.21)	-0.10 (-1.21)
Unemployment	-0.11 (-4.00)***	-0.05 (-1.31)	-0.05 (-1.31)	-0.07 (-1.60)	-0.07 (-1.60)
Elections	-0.35 (-1.86)*	-0.23 (-1.85)*	-0.23 (-1.85)*	-0.20 (-1.30)	-0.20 (-1.30)
Alignment	-0.008 (-0.45)	0.23 (1.87)*	0.23 (1.87)*	0.26 (2.50)**	0.26 (2.50)**
VFI		-8.49 (-2.44)**	-8.49 (-2.44)**		
Autonomy				8.16 (1.83)*	8.16 (1.83)*
Number of observations	90	90	90	90	90
Sargan test	0.59	0.77	0.77	0.74	0.74

Notes: ***, **, * indicate statistical significance at 1%, 5% and 10%, respectively. The instruments used are the variable non-compliance in differences from the second lag, and lagged one period the variables growth, unemployment, elections, alignment, FLA, VFI and autonomy. The regressions have been run with the econometric program Eviews 11.

Table 10
GMM MODEL RELATIONSHIP BETWEEN EXTRAORDINARY LIQUIDITY FUNDS, AUTONOMOUS LIQUIDITY FUND AND DEBT GROWTH

Dependent variable (method of estimation)	Debt growth (GMM)	Debt growth (GMM)	Debt growth (GMM)	Debt growth (GMM)	Debt growth (GMM)	Debt growth (GMM)
Debt (-1)	-0.11 (-2.49)**	-0.11 (-3.81)***	.0.10 (-4.27)***	-0.011 (-4.27)***	-0.11 (-3.17)***	-0.12 (-4.44)***
Mechanisms	4.60e-05 (2.05)**	5.22e-05 (1.94)*	5.47e-05 (2.40)**			
FLA				-2.55e-05 (-0.42)	-1.99e-05 (-0.35)	-2.53E-06 (-0.05)
Growth	-0.002 (-0.47)			0.001 (0.58)		
Growth-gap		-0.1 (-1.91)*	-0.02 (-2.06)**		-0.01 (-1.51)	-0.01 (-1.34)

(Continued)

Dependent variable (method of estimation)	**Debt growth (GMM)**	**Debt growth (GMM)**	**Debt growth (GMM)**	**Debt growth (GMM)**	**Debt growth (GMM)**	**Debt growth (GMM)**
Debt (-1)	-0.11 (-2.49)**	-0.11 (-3.81)***	.0.10 (-4.27)***	-0.011 (-4.27)***	-0.11 (-3.17)***	-0.12 (-4.44)***
Mechanisms	4.60e-05 (2.05)**	5.22e-05 (1.94)*	5.47e-05 (2.40)**			
FLA				-2.55e-05 (-0.42)	-1.99e-05 (-0.35)	-2.53E-06 (-0.05)
Growth	-0.002 (-0.47)			0.001 (0.58)		
Growth-gap		-0.1 (-1.91)*	-0.02 (-2.06)**		-0.01 (-1.51)	-0.01 (-1.34)
Unemployment	0.01 (.864)***	0.01 (4.26)***	0.01 (8.01)	0.01 (9.63)***	0.01 (4.14)***	0.01 (7.55)***
Elections	0.01 (1.23)	0.005 (0.53)	0.007 (0.82)	0.01 (0.68)	0.01 (0.64)	0.02 (1.12)
Alignment	0.01 (0.84)	0.02 (1.51)	0.02 (1.81)*	-0.01 (-0.32)	-0.004 (-0.15)	0.0006 (0.02)
VFI		-0.0007 (0.29)			0.11 (0.46)	
Autonomy			0.37 (0.61)			0.35 (0.79)
Number of observations	90	90	90	90	90	90
Sargan test	0.37	0.47	0.43	0.39	0.28	0.27

Notes: ***, **, * indicate statistical significance at 1%, 5% and 10%, respectively. The instruments used are the variable debt in differences from the second lag, and lagged one period the variables growth, growth_gap unemployment, elections, alignment, mechanisms, FLA, VFI and autonomy. The regressions have been run with the econometric program Eviews 11.

6.1. Robust check: difference-in-differences econometric model

As highlighted above, the allocation of funds from the extraordinary liquidity mechanisms has not been random. In spite of having controlled for various factors and having taken into account possible endogeneity problems in the specification of the models presented in the previous section, it is plausible to think that there are omitted variables that simultaneously influence financially unwise behavior and the amount of resources finally obtained. In addition, there may be biases in the temporal sample analyzed, which implies that the causal effect of the funds is blurred.

For this reason, two difference-in-differences models have been run, in order to observe the variation experienced before and after the creation of the extraordinary liquidity funds in the groups considered as control and treatment groups. In other words, the aim is to answer the question of whether there has been a before and after in the financial behavior of the Autonomous Communities due to the creation of these funds.

To run the above models, the time sample has been extended from 2008 to 2019, and the cross-section sample includes foral regions, which have not had any funds at any time, so they will comprise de control group in the first model.

Since only two regions are included in the control group, a second differentiated model is run in which the treatment group will be those regions that have at some point received funds from FLA between 2012 and 2019, which allows the control group to be increased to 6 (foral regions, Galicia, Castilla y León, Madrid and La Rioja), in addition to considering as treated the regions that have most failed to meet the conditions of budgetary stability. For both models, the treatment period will be taken every year from 2012 onwards.

The econometric specification of the first model will be given by

$$Y_{it} = \propto + \beta Post_t * Mechanisms_i + \partial Post_t + \omega Mechanisms_i + \lambda x_{it} + \varepsilon_{it} \quad (2)$$

And the second model:

$$Y_{it} = \propto + \beta Post_t * FLA_i + \partial Post_t + \omega FLA_i + \lambda x_{it} + \varepsilon_{it} \quad (3)$$

Where Y_{it} is denoted by the variables compliance with deficit targets and debt growth for region i in the year t; $Post_t$ is a dummy variable that takes the value 1 for the years 2012 onwards and 0 in another case; $Mechanisms_i$ variable takes the value 1 when region i has received funds from extraordinary liquidity mechanism between 2012 and 2019, and 0 in another case; FLA_i takes the value 1 when region i has received funds from the Autonomous Liquidity Fund at some point between 2012 and 2019, and 0 in another case; x_{it} is a vector of socioeconomic variables (growth, unemployment, elections and alignment variables), and ε_{it} is the error term.

The following table presents the treatment effect for both models and for both dependent variables. Column 1 shows the results without including the control variables; column 2 includes them; column 3 adds weights in the cross section.

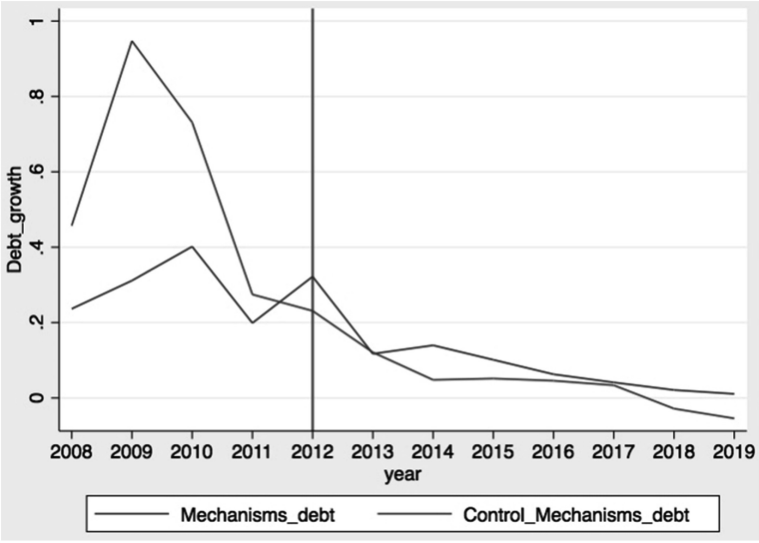
The results seem to be in line with those found in the previously estimated models, since the regions treated in the two difference-in-differences models do not seem to have a less prudent financial behavior, but even a significant opposite effect seems to be found, even controlling for the economic cycle and other socioeconomic variables. Figures 3-6 show the trends of the control and treated groups, noting an improvement in the behavior of the dependent variables in the last ones after 2012, and thus narrowing the differences with respect to the first ones.

Table 11
DIFFERENCE-IN-DIFFERENCES MODEL

	(1)	(2)	(3)
Model 1: debt mechanisms	-0.24	-0.12	-0.14
	(-4.18)***	(-2.13)**	(-2.18)**
Model 1: non_compliance mechanisms	1.47	0.32	-0.12
	(3.40)***	(0.78)	(-0.40)
Model 2: debt FLA	-0.26	-0.03	-0.06
	(-5.32)***	(-0.67)	(-1.96)*
Model 2: non_compliance FLA	1.97	0.87	0.71
	(5.81)***	(2.57)**	(3.00)***
Number of observations	204	204	204

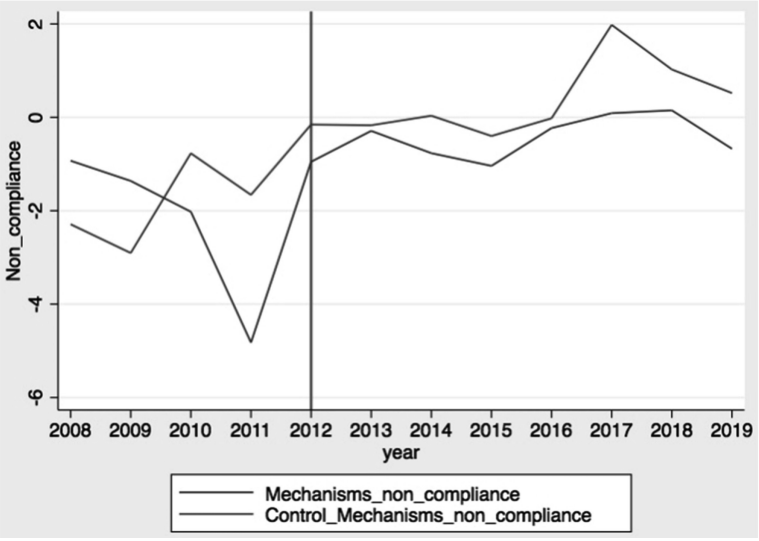
Notes: ***, **, * indicate statistical significance at 1%, 5% and 10%, respectively. The regressions have been run with the econometric program Eviews 11.

Figure 3
EVOLUTION OF DEBT GROWTH. TREATMENT GROUP: REGIONS THAT HAVE RECEIVED EXTRAORDINARY LIQUIDITY FUNDS



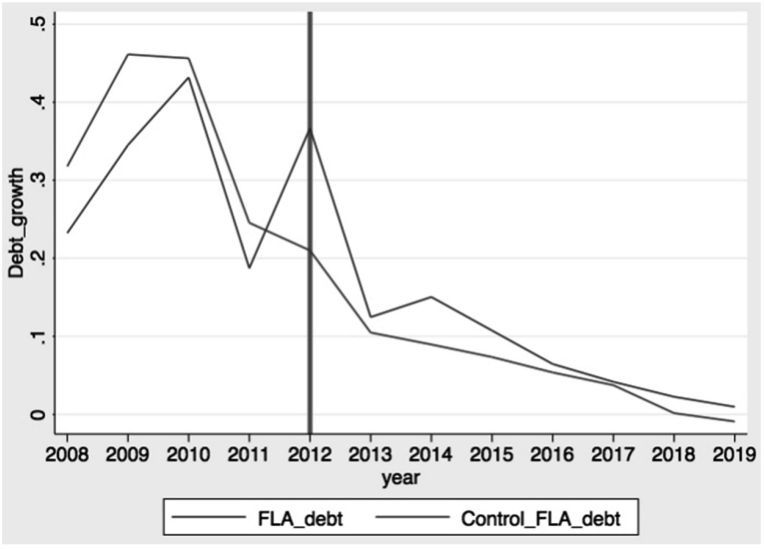
Source: Own elaboration from Ministerio de Hacienda and Banco de España.

Figure 4
EVOLUTION OF THE NON-COMPLIANCE OF THE DEFICIT TARGET. TREATMENT GROUP: REGIONS THAT HAVE RECEIVED EXTRAORDINARY LIQUIDITY FUNDS



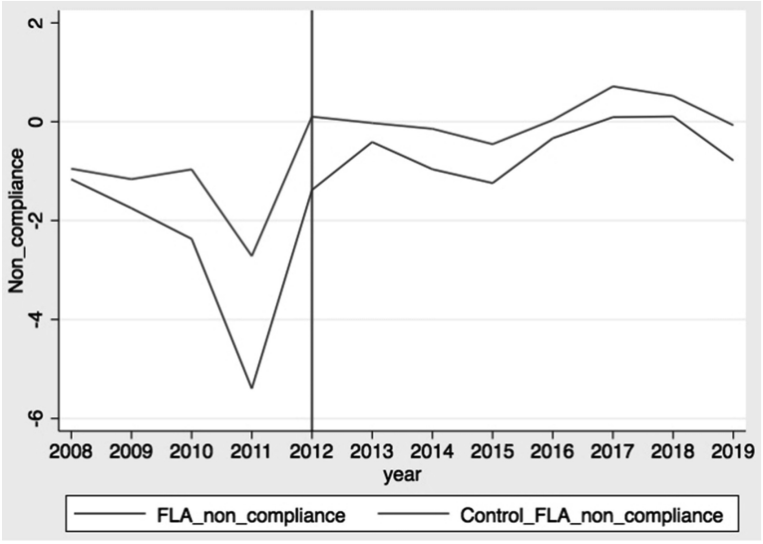
Source: Own elaboration from Ministerio de Hacienda and General Intervention of the State Administration.

Figure 5
EVOLUTION OF DEBT GROWTH. TREATMENT GROUP: REGIONS THAT HAVE RECEIVED FUNDS FROM FLA



Source: Own elaboration from Ministerio de Hacienda and Banco de España.

Figure 6
EVOLUTION OF DEBT GROWTH. TREATMENT GROUP: REGIONS THAT HAVE RECEIVED FUNDS FROM FLA



Source: Own elaboration from Ministerio de Hacienda and General Intervention of the State Administration.

7. Conclusions

Since 2012 the central government has transferred up to 245 billion euros to the Autonomous Communities through liquidity aid, included in the extraordinary liquidity funds. As the literature points out, the form and structure of these funds represents a soft budget constraint for the autonomous governments. In the present work tries to test if these amounts corroborate the hypothesis of the soft budget restriction according to which increasing the expectations of rescue encourages imprudent behaviors on the part of the subcentral governments.

The results obtained do not seem to corroborate this hypothesis, since there seem to be more decisive factors in explaining the unwise behavior of the Autonomous Communities between 2012 and 2019. Specifically, the financial insufficiency, unemployment, the level of effort in meeting deficit and debt targets, and the electoral years explain these performances. In a nutshell, the largest deviations from public deficit targets, ant the year-on-year growth levels of these variables depend, in light of the results obtained, on involuntary rather than voluntary factors. The models difference-in-differences confirm the results obtained.

It should be noted that the Autonomous Communities have managed to stabilize their debt levels since 2016, and the public deficits have remained relatively low in contrast to the balance of central government accounts. On the other hand, the regions with the worst financing rate per inhabitant, such as Comunidad Valenciana, Castilla-La Mancha, Andalucía and Murcia, have the greatest financial imbalances, and are also some of the regions that have made most use of extraordinary liquidity funds. These two facts may help explain the findings.

This reinforces two ideas that should be taken into account for the improvement in the design of this type of financial aid. First, as indicated above, the extraordinary liquidity funds seem to be working as a complement to the regional financing system, thus making evident the need to reform the latter in order to provide the Autonomous Communities with financial sufficiency.

Second, according to some authors[8], for a decentralized country not to increase its deficit, revenues and expenditures must be distributed similarly among the different subcentral governments. While it is true that, under certain circumstances, a bailout need not imply irresponsible behavior, everything will depend on the design of the supervision rules created ad hoc and their interaction with the level of vertical fiscal imbalance, which can guarantee a greater or lesser degree of compliance. (Ter-Minassian, 2007; Kotia and Lledó, 2016)

Future work could include an in-depth review of the conditions established for access to the extraordinary liquidity funds, especially with regard to the required adjustment plans, and the implication of compliances/noncompliance with these plans in improving the fiscal responsibility of the Autonomous Communities and the time they remain using these resources.

It also should continue to develop the hypotheses raised in this paper, since for the time being the number of years with available data is a significant limit to drawing more gen-

eral conclusions, particularly with regard to the electoral budget cycle and the effect that the economic cycle can have on the evolution of regional public finances. Additionally, the interaction of extraordinary liquidity funds, the use of fiscal capacity and the application of oversight standards should be taken into account in order to assess the need to implement rules limiting the use of these types of resources.

Appendix

Table A1

Dependent variable (method of estimation)	**Deficit growth (OLS)**	**Deficit growth (OLS)**	**Deficit growth (OLS)**
Constant	0.005 (0.72) [0.92]	0.07 (6.14)*** [2.98]***	-0.07 (-2.78)*** [-1.70]
Deficit_growth (-1)	-0.48 (-8.74)*** [-15.39]***	-0.40 (-8.34)*** [17.53]***	-0.47 (-9.05)*** [-18.86]***
Mechanisms	3.64 (0.92) [0.72]	6.47e-06 (1.92)* [1.65]	3.95e-06 (1.04)* [0.90]
Growth	-0.004 (-7.27)*** [-5.97] ***	-0.002 (-4.75)*** [-4.24]***	-0.004 (-7.12)*** [-6.21]***
Unemployment	0.0005 (1.84)* [2.56]**	0.001 (5.29)*** [5.67]***	0.0007 (2.69)*** [2.71]**
Elections	-0.005 (-2.22)** [2.82]**	-0.004 (-2.30)** [-3.35]***	-0.005 (-2.19)** [-2.96]**
Alignment	-0.002 (-1.10) [-1.60]	-0.002 (-0.80) [-1.21]	-0.003 (-1.11) [-1.79]*
VFI		-0.16 (-6.52)*** [-3.45]***	
Autonomy			0.16 (3.05)*** [1.81]*
Number of observations	120	120	120
R^2	0,69	0,79	0,72
Redundancy test of fixed individual effects	< 0.0001	< 0.0001	< 0.0001
Wooldridge AR(1) autocorrelation test	< 0.0001	< 0.0001	< 0.0001
Wald heteroscedasticity test	< 0.0001	< 0.0001	< 0.0001
Contemporary correlation test Pesaran CD	< 0.0001	< 0.0001	< 0.0001

Table A2

Dependent variable (method of estimation)	**Non-compliance (OLS)**	**Non-compliance (OLS)**	**Non-compliance (OLS)**	**Non-compliance (OLS)**	**Non-compliance (OLS)**
Constant	1.14 (2.24)** [4.14]***	1.32 (1.12) [0.75]	1.32 (1.12) [0.75]	0.83 (0.36) [0.51]	0.83 (0.36) [0.51]
Non-compliance (-1)	-0.05 (-0.76) [-0.97]	-0.02 (-0.23) [-0.24]	-0.34 (-0.82) [-0.99]	-0.02 (-0.27) [-0.35]	-0.36 (-0.89) [-0.90]
Mechanisms_GDP	-8.10 (-1.18) [-1.57]	-7.54 (-1.06) [-1.33]	-7.54 (-1.062) [-1.33]	-7.70 (-1.10) [-1.48]	-7.70 (-1.10) [-1.48]
Effort 1		-0.32 (-0.74) [-0.82]		-0.34 (-0.78) [-0.78]	
Effort 2			0.32 (0.74) [0.82]		0.34 (0.78) [0.78]
Growth	0.03 (0.60) [0.45]	0.04 (0.77) [0.81]	0.04 (0.77) [0.81]	0.04 (0.74) [0.61]	0.04 (0.74) [0.61]
Unemployment	-0.07 (-2.96)*** [-5.15]***	-0.06 (-2.11)** [-1.81]*	-0.06 (-2.11)** [-1.81]*	-0.06 (-2.56)** [-3.72]***	-0.06 (-2.56)** [-3.72]***
Elections	-0.92 (-5.09)*** [-3.00]***	-0.89 (-4.84)*** [-2.61]**	-0.89 (-4.84)*** [-2.61]**	-0.89 (-4.82)*** [-2.65]**	-0.89 (-4.82)*** [-2.65]**
Alignment	0.24 (1.15) [1.06]	0.24 (1.18) [1.12]	0.24 (1.18) [1.12]	0.24 (1.17) [1.10]	0.24 (1.17) [1.10]
VFI		-0.51 (-0.19) [-0.12]	-0.51 (-0.19) [-0.12]		
Autonomy				0.62 (0.13) [0.18]	0.62 (0.13) [0.18]
Number of observations	120	120	120	120	120
R^2	0,47	0,48	0,48	0,48	0,48
Redundancy test of fixed individual effects	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Wooldridge AR(1) autocorrelation test	0,001	0,002	0,002	0,002	0,002
Wald heteroscedasticity test	0	0	0	0	0
Contemporary correlation test Pesaran CD	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001

Table A3

Dependent variable (method of estimation)	**Deficit growth (OLS)**	**Deficit growth (OLS)**	**Deficit growth (OLS)**
Constant	0.006 (1.038)	0.07 (6.30)*** [2.88]**	-0.07 (-2.73)*** [-1.63]
Deficit_growth (-1)	-0.49 (-9.35)***	-0.42 (-9.28)*** [-18.87]**	-0.49 (-9.73)*** [-21.88]***
FLA	5.81e-08 (0.02)	4.70e-06 (1.48) [1.60]	2.00e-06 (0.56) [0.56]
Growth	-0.004 (-7.08)***	-0.003 (-4.73)*** [-4.39]***	-0.004 (-7.037)*** [-6.57]***
Unemployment	0.0005 (1.95)*	0.001 (5.40)*** [5.45]***	0.0008 (2.80)*** [2.74]**
Elections	-0.005 (-2.13)**	-0.004 (1.97)* [-3.43]***	-0.004 (-2.04)** [-2.91]**
Alignment	-0.003 (-1.23)	-0.002 (-0.80) [-1.14]	-0.003 (-1.15) [-1.74]
VFI		-0.16 (-6.45)*** [-3.23]***	
Autonomy			0.17 (3.06)*** [1.75]
Number of observations	120	120	120
R^2	0,69	0,78	0,72
Redundancy test of fixed individual effects	< 0.0001	< 0.0001	< 0.0001
Wooldridge AR(1) autocorrelation test	< 0.0001	< 0.0001	< 0.0001
Wald heteroscedasticity test	< 0.0001	< 0.0001	< 0.0001
Contemporary correlation test Pesaran CD	< 0.0001	< 0.0001	< 0.0001

Table A4

Dependent variable (method of estimation)	**Non-compliance (OLS)**	**Non-compliance (OLS)**	**Non-compliance (OLS)**	**Non-compliance (OLS)**	**Non-compliance (OLS)**
Constant	1.07 (2.11)** [4.23]***	1.28 (1.067) [0.62]	1.28 (1.067) [0.62]	0.79 (0.34) [0.40]	0.79 (0.34) [0.40]
Non-compliance (-1)	-0.022 (-0.37) [-0.55]	0.009 (0.13) [0.12]	-0.33 (-0.80) [-0.94]	0.007 (0.09) [0.11]	-0.35 (-0.88) [-0.80]
FLA_GDP	-4.86 (-0.69) [-0.75]	-4.31 (-0.57) [-0.43]	-4.31 (-0.57) [-0.43]	-4.63 (-0.63) [-0.68]	-4.63 (-0.63) [-0.68]
Effort 1		-0.34 (-0.78) [-0.83]		-0.36 (-0.83) [-0.74]	
Effort 2			0.34 (0.78) 0.83]		0.36 (0.83) [0.74]
Growth	0.002 (0.43) [0.30]	0.04 (0.63) [0.68]	0.04 (0.63) [0.68]	0.03 (0.60) [0.47]	0.03 (0.60) [0.47]
Unemployment	-0.07 (-2.99)*** [-5.67]***	-0.06 (-2.11)** [-1.62]	-0.06 (-2.11)** [-1.62]	-0.06 (-2.59)** [-3.84]***	-0.06 (-2.59)** [-3.84]***
Elections	-0.95 (-5.22)*** [-2.87]**	-0.92 (-4.92)*** [-2.34]**	-0.92 (-4.92)*** [-2.34]**	-0.92 (-4.91)*** [-2.47]**	-0.92 (-4.91)*** [-2.47]**
Alignment	0.23 (1.098) [1.19]	0.24 (1.13) [1.36]	0.24 (1.13) [1.36]	0.24 (1.12) [1.24]	0.24 (1.12) [1.24]
VFI		-0.60 (-0.22) [-0.11]	-0.60 (-0.22) [-0.11]		
Autonomy				0.56 (0.11) [0.14]	0.56 (0.11) [0.14]
Number of observations	120	120	120	120	120
R^2	0,47	0,48	0,48	0,48	0,48
Redundancy test of fixed individual effects	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Wooldridge AR(1) autocorrelation test	0,002	0,003	0,003	0,005	0,005
Wald heteroscedasticity test	0	0	0	0	0
Contemporary correlation test Pesaran CD	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001

Table A5

Dependent variable (method of estimation)	**Non-compliance debt (OLS)**	**Non-compliance debt (OLS)**	**Non-compliance debt (OLS)**	**Non-compliance debt (OLS)**	**Non-compliance debt (OLS)**
Constant	0.34 (0.64) [0.46]	6.37 (5.14)*** [3.49]***	6.37 (5.14)*** [3.49]***	-0.38 (-0.17) [-0.14]	-0.38 (-0.17) [-0.14]
Non-compliance debt (-1)	0.005 (0.02) [0.03]	0.33 (1.87)* [2.69]**	-0.20 (-1.16) [-1.55]	0.38 (2.03)** [2.46]**	-0.15 (-0.87) [-0.93]
Mechanisms	-0.0004 (-1.012) [-1.28]	-0.0007 (-2.20)** [-2.31]**	-0.0007 (-2.20)** [-2.31]**	-0.0008 (-2.70)*** [-2.86]**	-0.0008 (-2.70)*** [-2.86]**
Growth	0.16 (1.85)* [1.81]*	0.15 (2.35)** [1.76]	0.15 (2.35)** [1.76]	0.17 (2.46)** [0.17]*	0.17 (2.46)** [0.17]*
Effort 1_Debt		0.53 (6.80)*** [6.14]***		0.53 (6.44)*** [5.15]***	
Effort 2_Debt			-0.53 (-6.80)*** [-6.14]***		-0.53 (-6.44)*** [-5.15]***
Unemployment	-0.03 (-0.97) [-0.90]	-0.14 (-4.39)*** [-4.77]***	-0.14 (-4.39)*** [-4.77]***	-0.18 (-5.1)*** [-4.41]***	-0.18 (-5.1)*** [-4.41]***
Elections	-0.34 (-1.93)* [-1.32]	0.07 (0.49) [0.32]	0.07 (0.49) [0.32]	0.02 (0.12) [0.08]	0.02 (0.12) [0.08]
Alignment	-0.25 (-1.32) [-0.91]	-0.30 (-2.052)** [-1.36]	-0.30 (-2.052)** [-1.36]	-0.34 (-2.20)** [-1.30]	-0.34 (-2.20)** [-1.30]
VFI		-7.59 (-3.05)*** [-2.26]	-7.59 (-3.05)*** [-2.26]		
Autonomy				7.94 (1.57) [1.14]	7.94 (1.57) [1.14]
Number of observations	90	90	90	90	90
R^2	0,73	0,85	0,85	0,83	0,83
Redundancy test of fixed individual effects	0,08	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Wooldridge AR(1) autocorrelation test	0,17	0,56	0,56	0,51	0,51
Wald heteroscedasticity test	0	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Contemporary correlation test Pesaran CD	0,59	0,4	0,4	0,35	0,35

Table A6

Dependent variable (method of estimation)	**Non-compliance debt (OLS)**	**Non-compliance debt (OLS)**	**Non-compliance debt (OLS)**	**Non-compliance debt (OLS)**	**Non-compliance debt (OLS)**
Constant	0.24 (0.47) [0.35]	6.83 (5.24)*** [4.09]***	6.83 (5.24)*** [4.09]***	-0.47 (-0.19) [-0.14]	-0.47 (-0.19) [-0.14]
Non-compliance debt (-1)	0.02 (0.07) [0.08]	0.24 (1.31) [1.79]*	-0.26 (-1.45) [-2.21]	0.29 (-1.48) [1.59]	-0.19 (-1.02) [-1.12]
FLA	-0.0002 (-0.75) [-0.95]	9.19e-05 (0.35) [0.74]	9.19e-05 (0.35) [0.74]	-4.59 (-0.17) [-0.37]	-4.59 (-0.17) [-0.37]
Growth	0.15 (1.75)* [1.43]				
Effort 1_Debt		0.50 (6.28)*** [5.39]***		0.48 (5.66)*** [4.53]***	
Effort 2_Debt			-0.50 (-6.28)*** [-5.39]***		-0.48 (-5.66)*** [-4.53]***
Unemployment	-0.03 (-0.97) [-0.82]	-0.14 (-4.00)*** [-4.54]***	-0.14 (-4.00)*** [-4.54]***	-0.17 (-4.98)*** [-4.05]***	-0.17 (-4.98)*** [-4.05]***
Elections	-0.39 (-2.2)** [-1.48]	0.08 (0.56) [0.42]	0.08 (0.56) [0.42]	-0.02 (-0.11) [-0.09]	-0.02 (-0.11) [-0.09]
Alignment	-0.24 (-1.26) [-0.87]	-0.33 (-2.20)** [-1.56]	-0.33 (-2.20)** [-1.56]	-0.37 (-2.34)** [-1.51]	-0.37 (-2.34)** [-1.51]
VFI		-8.89 (-3.38)*** [-2.31]**	-8.89 (-3.38)*** [-2.31]**		
Autonomy				7.68 (1.40) [0.97]	7.68 (1.40) [0.97]
Number of observations	90	90	90	90	90
R^2	0,73	0,83	0,83	0,81	0,81
Redundancy test of fixed individual effects	0,1	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Wooldridge AR(1) autocorrelation test	0,15	0,3	0,3	0,21	0,21
Wald heteroscedasticity test	0	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Contemporary correlation test Pesaran CD	0,55	0,52	0,52	0,62	0,62

Table A7

Dependent variable (method of estimation)	**Debt growth (OLS)**	**Debt growth (OLS)**	**Debt growth (OLS)**	**Debt growth (OLS)**	**Debt growth (OLS)**	**Debt growth (OLS)**
Constant	-0.17 (-4.00)*** [-6.39]***	0.11 (1.36) [0.90]	-0.85 (-4.59)*** [-3.26]***	-0.14 (-3.05)*** [-5.07]***	0.11 (1.19) [0.72]	-0.73 (-3.59)*** [-2.49]**
Debt (-1)	-0.18 (-2.17)** [-3.67]***	-0.17 (-2.016)** [-3.04]***	-0.17 (-1.85)* [-3.08]	-0.28 (-3.19)*** [-4.05]***	-0.26 (-2.88)*** [-3.69]***	-0.26 (-2.72)*** [-3.34]***
Mechanisms_GDP	2.16 (4.18)*** [4.66]***	2.15 (4.16)*** [3.72]***	2.04 (3.60)*** [3.40]***			
FLA_GDP				-0.93 (-1.56) [-1.37]	-0.47 (-0.75) [-0.81]	-0.98 (-1.52) [-1.57]
Growth	-0.02 (0.09)*** [-5.82]***			-0.02 (-4.69)*** [-4.16]***		
Growth-gap		-0.007 (-0.80) [-0.67]	-0.009 (-0.97) [-0.81]		-0.01 (-1.16) [-0.87]	-0.01 (-1.23) [-0.90]
Unemployment	0.01 (5.59)*** [8.13]***	0.02 (9.86)*** [9.66]***	0.02 (8.43)*** [9.47]***	0.02 (6.90)*** [8.85]***	0.02 (10.72)*** [9.34]***	0.02 (9.56)*** [8.88]***
Elections	0.006 (0.40) [0.60]	0.0003 (0.02) [0.04]	-0.003 (-0.17) [-0.28]	0.009 (0.59) [0.81]	0.005 (0.33) [0.52]	0.0004 (0.02) [0.03]
Alignment	0.001 (0.09) [0.11]	0.02 (1.31) [1.67]	0.02 (1.35) [1.78]*	-0.02 (-0.05) [-1.16]	0.005 (0.29) [0.34]	0.004 (0.23) [0.29]
VFI		-0.90 (-5.48)*** [-3.29]***			-0.82 (-4.39)*** [-2.69]**	
Autonomy			1.20 (2.98)*** [2.16]**			1.02 (2.34)** [1.57]
Number of observations	120	120	120	120	120	120
R^2	0,71	0,71	0,66	0,67	0,66	0,61
Redundancy test of fixed individual effects	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Wooldridge AR(1) autocorrelation test	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Wald heteroscedasticity test	0	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Contemporary correlation test Pesaran CD	< 0.0001	0,04	< 0.0001	< 0.0001	0,002	< 0.0001

Table A8

Dependent variable (method of estimation)	Deficit growth (GMM)	Deficit growth (GMM)	Deficit growth GMM)
Deficit-growth (-1)	-0.02 (-0.41)	-0.02 (-0.51)	-0.01 (-0.22)
Mechanisms	-5.12e-06 (-3.10)***	-3.66e-06 (-1.99)**	-5.24e-06 (-3.07)***
Growth	0.0002 (0.19)	0.0003 (0.28)	0.0003 (0.23)
Unemployment	-0.0005 (-0.99)	-0.0002 (-0.47)	-0.0005 (-0.94)
Elections	-0.005 (-2.29)**	-0.005 (-2.34)**	-0.005 (-2.27)**
Alignment	-0.002 (-1.25)	-0.003 (-1.75)*	-0.002 (-1.18)
VFI		-0.02 (-1.07)	
Autonomy			-0.008 (-0.28)
Number of observations	90	90	90
Sargan test	0,33	0,2	0,24

Table A9

Dependent variable (method of estimation)	Non-compliance (GMM)	Non-compliance (GMM)	Non-compliance (GMM)	Non-compliance (GMM)	Non-compliance (GMM)
Non-compliance (-1)	-0.01 (-0.44)	-0.04 (-1.43)	-1.06 (-3.54)***	-0.04 (-1.44)	-1.12 (-2.81)***
Mechanisms_GDP	-2.30 (-0.41)	1.58 (0.22)	1.58 (0.22)	-1.24 (-0.17)	1.24 (-0.17)
Effort 1		-1.02 (-3.31)***		-1.08 (-2.64)**	
Effort 2			1.02 (3.31)***		1.08 (-2.64)**
Growth	-0.11 (-1.94)*	-0.06 (-1.29)	-0.06 (-1.29)	-0.07 (-1.27)	-0.07 (-1.27)
Unemployment	-0.11 (-3.72)***	-0.04 (-1.51)	-0.04 (-1.51)	-0.07 (-2.24)**	-0.07 (-2.24)**
Elections	-0.44 (-3.18)***	-0.32 (-2.98)***	-0.32 (-2.98)***	-0.30 (-2.22)**	-0.30 (-2.22)**
Alignment	-0.06 (-0.39)	0.25 (1.78)*	0.25 (1.78)*	0.23 (1.84)*	0.23 (1.84)*
VFI					
Autonomy		-7.05 (-2.85)***	-7.05 (-2.85)***	6.89 (1.69)*	6.89 (1.69)*
Number of observations	90	90	90	90	90
Sargan test	0,71	0,7	0,7	0,69	0,69

Table A10

Dependent variable (method of estimation)	**Deficit growth (GMM)**	**Deficit growth (GMM)**	**Deficit growth (GMM)**
Deficit-growth (-1)	0.02 (0.27)	-0.04 (-0.69)	-0.01 (-0.22)
FLA	5.54e-06 (1.95)*	1.03e-05 (1.93)*	7.45e-06 (1.45)
Growth	-0.0006 (-0.59)	-0.0007 (-0.50)	-0.001 (-0.98)
Unemployment	-0.0008 (-1.58)	-0.0003 (-0.34)	-0.0008 (-1.33)
Elections	-0.001 (-0.52)	-0.0007 (-0.23)	-0.0006 (-0.22)
Alignment	-0.002 (-0.65)	0.002 (-0.72)	-0.002 (-0.63)
VFI		-0.08 (-1.47)	
Autonomy			0.05 (0.60)
Number of observations	90	90	90
Sargan test	0,37	0,33	0,3

Table A11

Dependent variable (method of estimation)	**Non-compliance (GMM)**	**Non-compliance (GMM)**	**Non-compliance (GMM)**	**Non-compliance (GMM)**	**Non-compliance (GMM)**
Non-compliance (-1)	0.02 (0.93)	-0.02 (-0.30)	-0.74 (-1.49)	-0.03 (-0.69)	-1.14 (-2.44)**
FLA_GDP	5.29 (0.96)	12.00 (1.16)	12.00 (1.16)	7.26 (0.75)	7.26 (0.75)
Effort 1		-0.73 (-1.56)		-1.11 (-2.54)**	
Effort 2			0.73 (1.56)		1.11 (2.54)**
Growth	-0.15 (-2.97)***	-0.11 (-1.21)	-0.11 (-1.21)	-0.10 (-1.21)	-0.10 (-1.21)
Unemployment	-0.12 (-4.21)***	-0.06 (-1.23)	-0.06 (-1.23)	-0.08 (-1.56)	-0.08 (-1.56)
Elections	-0.34 (-1.90)*	-0.16 (-0.89)	-0.16 (-0.89)	-0.17 (-0.95)	-0.17 (-0.95)
Alignment	-0.07 (-0.36)	0.24 (1.92)*	0.24 (1.92)*	0.27 (2.67)***	0.27 (2.67)***
VFI		-9.73 (-2.30)**	-9.73 (-2.30)**		
Autonomy				9.28 (1.61)	9.28 (1.61)
Number of observations	90	90	90	90	90
Sargan test	0,62	0,81	0,81	0,74	0,74

Table A12

Dependent variable (method of estimation)	Debt growth (GMM)	Debt growth (GMM)	Debt growth (GMM)	Debt growth (GMM)	Debt growth (GMM)	Debt growth (GMM)
Debt (-1)	-0.12 (-2.66)***	-0.11 (-3.51)***	-0.10 (-3.61)***	-0.11 (-3.59)***	-0.11 (-3.52)***	-0.12 (-4.45)***
Mechanisms_GDP	1.08 (3.14)***	1.05 (1.87)*	1.16 (2.69)***			
FLA_GDP				-0.39 (-0.39)	-0.34 (-0.32)	0.01 (0.01)
Growth	-0.002 (-0.73)			0.002 (0.71)		
Growth-gap		-0.02 (-1.98)*	-0.02 (-2.10)**		-0.01 (-1.80)*	-0.01 (-1.51)
Unemployment	0.01 (7.94)***	0.01 (4.10)***	0.01 (8.29)***	0.01 (8.19)***	0.01 (3.98)***	0.01 (6.80)***
Elections	0.01 (1.52)	0.007 (0.79)	0.01 (1.14)	0.01 (0.98)	0.01 (0.68)	0.02 (1.15)
Alignment	0.01 (1.01)	0.03 (1.60)	0.03 (2.05)**	-0.006 (-0.20)	-0.002 (-0.09)	0.003 (0.12)
VFI		-0.05 (-0.18)			0.10 (0.35)	
Autonomy			0.41 (0.71)			0.35 (0.75)
Number of observations	90	90	90	90	90	90
Sargan test	0,37	0,45	0,64	0,35	0,26	0,25

Table A13

Dependent variable (method of estimation)	Non-compliance debt (GMM)	Non-compliance debt (GMM)	Non-compliance debt (GMM)	Non-compliance debt (GMM)	Non-compliance debt (GMM)
Non-compliance debt (-1)	0.24 (0.65)	0.57 (2.30)**	-0.14 (-0.44)	0.98 (1.51)	0.41 (0.82)
Mechanisms	0.0004 (0.59)	-0.0002 (-0.34)	-0.0002 (-0.34)	0.0008 (0.91)	0.0008 (0.91)
Growth	0.03 (0.33)	-0.04 (-0.51)	-0.04 (-0.51)	-0.09 (-0.74)	-0.09 (-0.74)
Effort 1_Debt		0.71 (6.23)***		0.57 (2.78)***	
Effort 2_Debt			-0.71 (-6.23)***		-0.57 (-2.78)***
Unemployment	-0.04 (-2.33)**	-0.14 (-3.96)***	-0.14 (-3.96)***	-0.17 (-2.32)**	-0.17 (-2.32)**
Elections	-0.15 (-0.85)	0.16 (-3.14)	0.16 (-3.14)	-0.22 (-1.49)	-0.22 (-1.49)
Alignment	-0.17 (-0.78)	-0.63 (-3.14)***	-0.63 (-3.14)***	-0.25 (-0.58)	-0.25 (-0.58)
VFI		-14.71 (-2.27)	-14.71 (-2.27)		

(Continued)

Dependent variable (method of estimation)	Non-compliance debt (GMM)	Non-compliance debt (GMM)	Non-compliance debt (GMM)	Non-compliance debt (GMM)	Non-compliance debt (GMM)
Autonomy				7.99 (0.51)	7.99 (0.51)
Number of observations	75	75	75	75	75
Sargan test	0,58	0,18	0,18	0,46	0,46

Table A14

Dependent variable (method of estimation)	Non-compliance debt (GMM)	Non-compliance debt (GMM)	Non-compliance debt (GMM)	Non-compliance debt (GMM)	Non-compliance debt (GMM)
Non-compliance debt (-1)	0.02 (0.12)	0.66 (2.76)***	-0.08 (-0.48)	0.70 (1.70)*	0.11 (0.40)
FLA	0.0002 (0.72)	8.38e-05 (0.27)	8.38e-05 (0.27)	0.0002 (0.51)	0.0002 (0.51)
Growth	0.09 (0.82)	-0.09 (-1.10)	-0.09 (-1.10)	-0.07 (-0.62)	-0.07 (-0.62)
Effort 1_Debt		0.73 (5.99)***		0.58 (3.86)***	
Effort 2_Debt			-0.73 (-5.99)***		-0.58 (-3.86)***
Unemployment	-0.04 (-3.34)***	-0.16 (-3.04)***	-0.16 (-3.04)***	-0.20 (-3.69)***	-0.20 (-3.69)***
Elections	-0.17 (-1.67)*	0.13 (1.04)	0.13 (1.04)	-0.17 (-1.42)	-0.17 (-1.42)
Alignment	-0.20 (-0.85)	-0.56 (-3.27)***	-0.56 (-3.27)***	-0.41 (-1.60)	-0.41 (-1.60)
VFI		-14.35 (-3.48)***	-14.35 (-3.48)***		
Autonomy				10.42 (1.03)	10.42 (1.03)
Number of observations	75	75	75	75	75
Sargan test	0,79	0,14	0,14	0,18	0,18

Notes

1. The term hard/soft budget constraint was first introduced by Kornai (1980) when he referred to inefficient ex post aid and loans that companies in the planned economies of Eastern Europe could receive, despite being considered efficient ex ante.

2. See Goodspeed (2017) for a review of the literature based on theorical models on the effects of a soft budget constraint.

3. For an analysis of the finances of Autonomous Communities during the crisis see Lago-Peñas and Fernández (2013) and Fuente (2019b).

4. See Fernández *et al*. (2013), Medina (2013), Ruiz and Cuenca (2014), and Herrero *et al*. (2019).

5. For a review of the effects of liquidity mechanisms on the financial condition of the Autonomous Communities see Castedo *et al*. (2019).

6. The problem of endogeneity is especially relevant in the case of the FLA, since it is those regions that do not comply with the objectives of budgetary stability, public debt and average payment period that are obliged to access this mechanism and not the Financial Facility compartment. In other words, imprudent behavior leads to requesting more funds from the FLA, and in turn the funding obtained may encourage unwise behavior, which is the hypothesis to be tested.

7. Two additional dependent variables have been used: deficit_growth and non_compliance debt. The first variable measures the year-to-year growth of the deficit in terms of GDP; the second variable is defined as the difference between the level of public debt as a percentage of GDP and the debt target. For this last one two control variables have been introduced which gauge the degree of effort in the meeting of the debt objectives, calculated in an identical manner to the variables Effort 1 and Effort 2. Additionally, the variables Mechanisms and FLA in terms of GDP have been taken to evaluate if the change in scale affected the estimates. All the estimations made for the purposes of robustness with these variables show similar results to the main regressions, namely, the level of unemployment, the effort to meet deficit and debt targets, elections, and VFI are the factors that explain the more imprudent behavior of the Autonomous Communities. The results of the estimates are available upon request from authors.

8. See Eyrayd and Lusinyan (2011) and Lago-Peñas (2012).

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Resumen

Según la Segunda Generación de Teorías del Federalismo Fiscal, si los gobiernos subcentrales pueden aumentar el nivel de gasto sin responsabilizarse del coste debido a la existencia de una restricción presupuestaria blanda, se crean incentivos para un comportamiento financieramente irresponsable.

Desde 2012, el Gobierno central en España ha creado varios fondos con el objetivo de mejorar la liquidez de las Comunidades Autónomas, pero su diseño ha hecho que éstas puedan obtener recursos a bajo coste. Este trabajo pone a prueba la hipótesis bajo la cual las regiones que han recibido más fondos extraordinarios de liquidez han tenido un comportamiento fiscal menos prudente, no encontrando evidencia de ello. El nivel de desempleo, la insuficiencia financiera y el ciclo electoral del presupuesto son los factores determinantes para explicar el mayor incumplimiento de los objetivos de déficit y deuda y las mayores tasas de crecimiento de la deuda y del déficit.

Palabras clave: restricción presupuestaria blanda, financiación autonómica, Comunidades Autónomas, mecanismos extraordinarios de liquidez.

Clasificación JEL: H63, H74, H77.