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On the Determinants of Fiscal Non-Compliance: An Empirical Analysis of Spain's Regions

by Mar Delgado-Téllez, Victor D. Lledó, and Javier J. Pérez

I N T E R N A T I O N A L M O N E T A R Y F U N D

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Fiscal Affairs Department

On the Determinants of Fiscal Non-Compliance: An Empirical Analysis of Spain's Regions¹

Prepared by Mar Delgado-Téllez, Victor D. Lledó, and Javier J. Pérez²

Authorized for distribution by Catherine Pattillo

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Abstract

This paper proposes an empirical framework that distinguishes voluntary from involuntary compliance with fiscal deficit targets on the basis of economic, institutional, and political factors. The framework is applied to Spain's Autonomous Communities (regions) over the period 2002-2015. Fiscal non-compliance among Spain's regions has shown to be persistent. It increases with the size of growth forecast errors and the extent to which fiscal targets are tightened, factors not fully under the control of regional governments. Non-compliance also tends to increase during election years, when vertical fiscal imbalances accentuate, and market financing costs subside. Strong fiscal rules have not shown any significant impact in containing fiscal non-compliance. Reducing fiscal non-compliance in multi-level governance systems such as the one in Spain requires a comprehensive assessment of intergovernmental fiscal arrangements that looks beyond rules-based frameworks by ensuring enforcement procedures are politically credible.

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Author's E-Mail Address: mar.delgado@bde.es; vlledo@imf.org; javierperez@bde.es.

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² Mar Delgado-Téllez is an Economist and Javier J. Pérez a Head of Division, both at the Bank of Spain. Victor Lledó is an IMF Senior Economist.

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I. INTRODUCTION

The process of fiscal consolidation in Europe in the aftermath of the global financial and Euro sovereign debt crises has brought to the forefront the challenges of enforcing fiscal discipline in federal or decentralized countries. The literature on fiscal federalism has attributed this challenge to the presence of soft budget constraints at the subnational level.³ That is, the inability of subnational governments (henceforth SNGs) to keep fiscal deficit outcomes within targets set as part of fiscal consolidation strategies at the general government level. Soft budget constraints have been shown to originate from the inability of central governments (hereafter CGs) to credibly commit to not bailing out SNGs and, as such, to constrain SNGs fiscal outcomes (Vigneault, 2007). Soft budgets have been shown to be driven by political motives, including re-election, government formation and stability (Sato, 2007). They are aggravated by flawed intergovernmental fiscal institutions, including large vertical fiscal imbalances, weak fiscal rules, and limited market discipline (Rodden and others 2003, Ter-Minassian, 2015). Flawed institutions act by raising expectations among voters and creditors that CG must be accountable in the event SNGs are not able to fulfill their spending mandates or debt obligations.⁴ Soft budget constraints have been typically assessed by exploring the determinants of fiscal outturns using fiscal reaction functions.⁵

A small but growing empirical literature on the implementation of fiscal consolidations offers a different perspective. Rather than searching for reasons for why fiscal outcomes cannot be constrained and targets enforced, it questions whether fiscal targets or the forecasts basing such targets are set appropriately in the first place.⁶ A number of papers have shown that official forecasts tend to be optimistic among advanced economies (Auerbach, 1999, Strauch and others, 2009, Leal and others, 2008; Jonung and Larch, 2006, Frankel and Schreger 2013). Optimistic fiscal forecasts have been attributed to difficulties in forecasting downturns and booms in real time and strategic reasons (Beetsma et, 2013). Another set of factors are related to strategic considerations, which have been shown to be salient in the EU among countries seeking to comply with the Maastricht convergence process (Strauch and others, 2009) and ex-ante deficit rules under the Stability and Growth Pact (SGP) (Bruck and Stepan, 2006 and Beestma et al 2009).

This paper contributes to both literatures by seeking to better understand the determinants of fiscal non-compliance at the subnational level. We define fiscal non-compliance as events when SNG budget balance outturns are below corresponding targets. Our focus is to understand whether fiscal non-compliance is the result of soft budgets or due to technical and institutional factors resulting in unrealistic fiscal targets. An emerging empirical literature has started to look at the determinants of compliance in rule-based frameworks (Cordes and others, 2015, and Reuter, 2015). However, this

³ See Ter-Minassian (2015) for a recent review of this vast literature.

⁴ Attempts to address some of the flaws in the context of the European Union (EU), in particular strengthening fiscal rules, without addressing others (e.g., vertical fiscal imbalances) have shown to be ineffective (Foremny 2014, Kotia and Lledo, 2015).

⁵ See Argimon and Hernandez de Cos (2012) for a review of this empirical literature.

⁶ Reuter (2015) shows that the introduction of numerical fiscal limits enforced through fiscal rules, even if not complied with, tilt fiscal policy outturns towards those numerical limits. So, in fact, compliance seems to matter less than whether the chosen numerical limit was set to an optimal or appropriate level.

literature has mostly focused on national policies and has not discussed the institutional and political considerations behind fiscal non-compliance.

This paper proposes a conceptual framework that tries to distinguish the impact of a soft budget constraint from that of fiscal forecast and target setting on fiscal non-compliance. Our framework looks at both the capacity and incentives to comply. It distinguishes between events when SNGs have the capacity but not the incentives to comply with fiscal targets from events when SNGs have the incentives but not the capacity for fiscal compliance. We define fiscal non-compliance as voluntary under the former and involuntary under the latter. We argue that voluntary fiscal non-compliance is triggered by factors conducive to soft budget constraints, whereas involuntary fiscal non-compliance is the result of factors conducive to unrealistic or ambitious fiscal targets.

Political economy channels and politics take a front seat in our framework. Our framework shows that both voluntary and involuntary fiscal non-compliance occurs mainly through political economy channels that jointly influence CGs' and SNGs' decisions to, respectively, enforce and comply with fiscal targets. Channels conducive to voluntary fiscal non-compliance act mainly by increasing CGs' political costs of enforcing and decreasing SNGs' costs of non-complying with SNG targets. Channels conducive to involuntary fiscal non-compliance are those that increase CGs' political cost of ensuring fiscal targets at the general government level are met, leading the CG to shift the burden of meeting these targets to SNGs. Such costs are determined by the impact such decisions have on the electoral, government formation, and other political objectives government officials and their parties have at the central and subnational levels, which is ultimately framed by politics and political institutions at the supranational, national, and regional levels.

We construct an empirical model to test this framework. From among a set of economic, institutional, and political factors, the model identifies the ones most relevant to an understanding of voluntary and involuntary fiscal non-compliance. The empirical model is estimated using data from Spain's Autonomous Communities. Spain's Autonomous Communities (hereafter also referred to as regions, regional governments, or simply RGs) makes for an interesting case study for a number of reasons. Regional governments have gained significant political and fiscal autonomy over the last four decades through a process of decentralization (Hernández de Cos and Pérez, 2013). During this period regional governments have become accountable for delivering more than two-thirds of social services, most in the health and education sectors (Lledó, 2015). The Spanish decentralization has been asymmetric with revenue and expenditure decentralization occurring at different paces depending on the region, leading to both temporal and cross-sectional variations in both fiscal and political autonomy indicators. Spain's RGs have been subject to nominal budget balance targets for the last two decades. Their record in meeting these targets, as discussed below, has also varied significantly. And so has the rule-based framework used to monitor and enforce compliance with those targets. In addition to fiscal rules, regions have been subject to market-imposed discipline, given that most RG's debt is regularly scrutinized by rating agencies. In this respect, Spain is one of the major sub-sovereign bond issuer world-wide, presenting a significant heterogeneity across regions in issuing practices and amounts (Canuto and Liu, 2013, and Pérez and Prieto, 2015).

The post-crisis period in Spain has been marked by widespread non-compliance. Regions as a group have missed their target systematically every year since 2010, accounting for the bulk of the fiscal non-compliance at the general government level and constituting one of the main risks to Spain's on-going fiscal consolidation process (AReF, 2016). Critical to our analysis, fiscal non-compliance, while widespread, varied significantly across regions in both frequencies and margins.

Existing empirical literature has studied fiscal discipline among Spanish regions by assessing the determinants of fiscal deficit and public debt outturns (for example, Argimón and Hernández de Cos, 2012; and Hernández de Cos and Pérez, 2013). This literature has typically looked at economic, institutional, and political factors affecting the size of fiscal outturns irrespective of the targets aimed at constraining them. Critical factors promoting fiscal discipline included greater tax autonomy, higher market-financing costs and credit ratings, and the electoral calendar, but fiscal rules and other political factors are excluded. Fiscal indiscipline appears to have a strong inertial component, with the size of regions' fiscal deficits in one year largely influenced by the corresponding size in the previous year. A related literature has also looked at the determinants of CG's budgetary deviations (Leal and Perez, 2011). To our knowledge Leal and López Laborda (2015) and Lago-Peñas and others (2016) are the only empirical analyses examining the regional determinants of compliance with fiscal deficit targets among Spanish regions.

The rest of this paper is organized as follows. The next section proposes a conceptual framework to identify economic, institutional, and political determinants of fiscal non-compliance in multi-level governance systems. Section 3 reviews key institutional elements in Spain's multi-level governance system, with a focus on how fiscal targets are set, monitored, and enforced. Informed by the framework and Spain's institutional features, Section 4 proposes alternative hypotheses, details the empirical methodology to test these hypotheses, and discusses our empirical results. Section 5 concludes with some policy considerations.

II. FISCAL NON-COMPLIANCE IN MULTI-LEVEL GOVERNMENTS: A CONCEPTUAL FRAMEWORK

A. Defining Fiscal Non-Compliance

The proposed framework defines fiscal non-compliance as the outcome when a government is unable to meet numerical fiscal targets or ceilings. The fiscal target or ceiling could be the numerical limit of a fiscal rule. A government unable or unwilling to meet a fiscal target or ceiling is defined as non-compliant.

Fiscal non-compliance can be voluntary or involuntary. Fiscal non-compliance is voluntary when the non-compliant government has the capacity, but not the incentives to comply with a fiscal target. Fiscal non-compliance is involuntary when the non-compliant government has the incentives but not the capacity to comply with a fiscal target. A government has the capacity to meet the target if it has sufficient fiscal resources or fiscal instruments to garner the necessary resources to meet the target—hereafter defined as fiscal capacity. A government has the incentives to meet the target when the costs of non-complying with the target outweigh the non-compliance benefits.

B. The Fiscal Non-Compliance Problem

The fiscal non-compliance problem can be characterized as a sequential game between a central and a regional government (Figure 1.a). In the first stage, the CG sets a fiscal target for the RG knowing the RG's expected fiscal capacity. The fiscal target is ex-ante feasible. In the second stage, the RG decides whether to comply with the fiscal target based on expectations about its fiscal capacity and on whether the CG will enforce the fiscal target. In the third and final stage, the CG decides whether to enforce the target based on the RG's compliance decision in the second stage and its expected fiscal capacity. Nature reveals itself only at the end of the game in the form of a shock affecting the RG's fiscal capacity and, therefore, the feasibility of the fiscal target.⁷

Voluntary and involuntary fiscal non-compliance may also emerge as equilibrium outcomes under this game. Voluntary fiscal non-compliance occurs when the RG is not willing to comply with the budget balance target regardless of whether the CG is expected to enforce it, and even when fiscal capacity to comply with the target is highly expected. Under these circumstances, the shock can be assumed away, because the target is feasible both before and after the shock— that is, the target is both ex-ante and ex-post feasible – (Figure 1.b). Involuntary fiscal non-compliance occurs when the RG is willing to and ex-ante capable of complying, but does not have the ex-post fiscal capacity to do so (Figure 1.c).⁸

Figure 1. The Fiscal Non-Compliance Problem

a. Sequencing
CG chooses target → RG chooses to comply or not → CG chooses to enforce or not → Shock
b. Voluntary Fiscal Non-Compliance
CG chooses target → RG chooses not to comply → CG may enforce or not → Target ex-post feasible
c. Involuntary Fiscal Non-Compliance
CG chooses target → RG chooses to comply → CG to enforce → Target ex-post unfeasible

Note CG= central government; RG= regional government

C. Voluntary Fiscal Non-Compliance and Soft Budget Constraints

Voluntary fiscal non-compliance could be the result of soft budget constraints. RGs with soft budgets are not constrained to finance their spending from an approved budget. Therefore, they would not feel constrained to deviate from fiscal targets set in this budget if doing so will prevent them from providing a desired level of public good and services. In the multi-level government context, the soft

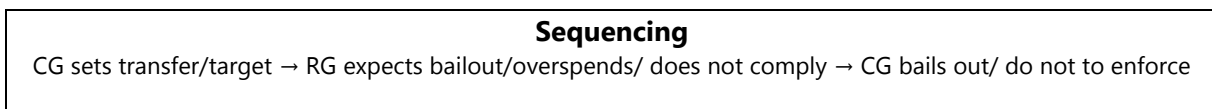
⁷ In practice fiscal target assessments usually occur at a time when factors underlying fiscal capacity such as nominal GDP are still only estimates.

⁸ Under an involuntary equilibrium, RGs must always be ex-ante capable of complying with fiscal targets (that is, fiscal targets must be ex-ante feasible). Ex-ante infeasible fiscal targets could not be credibly enforced, fostering involuntary non-compliance.

budget constraint problem arises from the CG's lack of a credible no-bail out commitment that allows RGs to overspend in the expectation of an eventual bailout.⁹

Soft budget constraints and voluntary fiscal non-compliance are interconnected. The theoretical literature models soft budget constraints as a sequential game (Inman, 2003; Rodden et al., 2003; Vigneault, 2007; Bordignon, 2006). Actions in the voluntary fiscal non-compliance game described above are logical extensions of the soft-budget-constraint game. In the first stage, the CG announces its intergovernmental transfer policy and sets the RG budget balance target. In the second stage, the RG does not believe on the CG's transfer policy, expects a bailout, overspends, and thus deviates from the budget balance target. In the third stage, the CG fulfils the RG's expectation by bailing it out, thereby not enforcing the breach in the budget balance target.¹⁰ Much like in the voluntary fiscal non-compliance game, nature's draw does not make a difference and the target remains feasible.

Figure 2. Soft Budget Constraint and Fiscal Non-Compliance Problems



Note: CG=central government; RG= regional government

Bailout and overspending incentives complement each other to spur voluntary fiscal non-compliance. Two necessary but not sufficient conditions characterize soft budgets and non-compliant governments. The first is that the CG must find it optimal not to enforce the fiscal target and to provide additional resources to the RG in stage 3. It will do so if the economic and political costs of denying additional resources (see below), thereby enforcing the target, exceed the bailout or non-enforcement costs in the form of administrative, legal or financial penalties, or if the bailout(non-enforcement) is triggered by deviations from national or supranational fiscal rules as well as reputational losses against financial markets and the public at large. Under these circumstances, the bailout or non-enforcement strategy is ex-post optimal. The second necessary condition is that the RG, knowing that the CG has an incentive to provide additional resources and not to enforce the target, finds it optimal to overspend and not comply in stage 2 (that is, *overspending is ex-ante optimal*). An ex-post optimal bailout will not lead to non-compliance if overspending is not optimal. This may occur, for instance, if a bailout comes with costly conditions attached (for example, loss of fiscal autonomy, unpopular reforms). At the same time, by construction, an overspending optimal

⁹ A bailout is broadly defined to account for not only resources granted to SNGs in the event of a fiscal or financial crisis, such as emergency liquidity funds and outright debt restructuring, but also less extreme situations observed outside crisis. For instance, it may take the form of a change in the allocation of formula grants or simply unconditional gap-filling transfers. A bailout may include situations in which SNG's borrowing restrictions are lifted, allowing them to borrow to finance above-the-target fiscal deficit levels.

¹⁰ A critical assumption here is that the compliance assessment takes place before the bailout (that is, in the second stage). Bailouts that occur before the compliance assessment period (for example, gap-filling transfers) would help to avoid or mitigate fiscal non-compliance. This requires corrective fiscal non-compliance measures or controlling the impact of alternative factors on uncorrected measures so as to take gap-filling transfers into account.

strategy cannot exist in the absence of an ex-post optimal bailout. In short, for voluntary fiscal non-compliance to occur, factors that raise both bailout and overspending incentives must be in place.

D. Bailout and Overspending Incentives

CGs may choose to bailout RGs for economic and political motives.

- **Economic motives.** A Benevolent CG that care for the welfare of the whole nation would choose to bail out a fiscally irresponsible RG to avoid the negative spillovers to other jurisdictions and to itself. Negative spillovers to other jurisdictions—referred to as horizontal spillovers—usually take the form of under-provision of goods and services by the non-rescued RG to other RGs. Negative spillovers to the CG, or more broadly, to the general government—referred to as vertical spillovers—may occur if default of a non-rescued RG endangers the banking system or the corporate sector nationwide because of their exposure to RG debt thereby increasing fiscal risks and lowering credit ratings at the central or general government levels (Inman, 2003). Bailout incentives are expected to decrease with bailout pecuniary costs for CGs and increase with bailout economic benefits. Pecuniary costs are expected to increase with the size of the region: the larger the region, the larger the cost of the public goods and services it provides. However, the impact of region size on bailout economic benefits is ambiguous and depends on assumptions about the “extensive” and “intensive” nature of the spillover. The larger the region, the larger the “extensive” nature of the spillover: the larger the number of regions and individuals benefitting from the public goods and services provided by that region, the larger the bailout economic benefits (Wildasin, 1997). But, the smaller the region, the larger the “intensive” nature of the spillover, and the larger the amount of public goods and services appropriated by each citizen in the bailout region (Crivelli and Stahl, 2013). Bailout incentives are, therefore, expected to increase with RG size if the bailout benefits from the extensive nature of the negative spillovers outweigh both the benefits from its corresponding intensive nature and the bailout pecuniary costs (Wildasin, 1997). Otherwise, bailout incentives are expected to decrease with RG size (Crivelli and Stahl, 2013).
- **Political motives.** CGs may also bailout RGs to create the conditions to govern, stay in power, and re-elect their principals. Bailout incentives are greater if directed towards *RGs that are well represented in the national legislature*, and thus influential for government stability and the passage of critical legislation (Porto and Sanguinetti, 2001). Similar motives may also lead CGs to bail out regions with which they are *politically aligned*— that is, regions where government incumbents are from the same party or coalition of CG incumbents (Grossman, 1994).¹¹ The CG may also offer bailouts to ensure national unity (Leite-Monteiro and Sato, 2003). As a result,

¹¹ CG preference for bailing out politically aligned regions could also reflect electoral strategies to target safe electoral districts, i.e., regions that had previously largely voted for and elected the CG party or governing coalition (Cox and McCubbins, 1986). Such preferences may not necessarily prevail if the CG follows a swing strategy, whereby it will attempt to target regions that have previously voted for the CG party or governing coalition by narrow margins (Dixit and Londregan, 1996). In some cases, such narrow margins may not have been sufficient for CG politically affiliated regional partners to win the election and form a government.

bailout incentives are likely to increase in regions where representation at the national or subnational level of *pro-autonomy parties* is larger (Bolton and Roland, 1997).

Flawed intergovernmental fiscal frameworks increase bailout and overspending incentives. They do so by raising expectations among voters and creditors that the CG must be accountable in the event RGs are not able to fulfill their spending mandates or debt obligations (von Hagen and Eichengreen, 1996). Mindful of the political costs of not fulfilling those expectations, CG bailout incentives will likely increase, raising RG's bailout expectations and increasing overspending incentives. Rodden and others (2003) and Ter-Minassian (2015) list a number of institutional flaws that can be broadly categorized in: (i) *limited fiscal autonomy*; (ii) *lack of pre-conditions for market discipline*; and (iii) *weak administrative controls and fiscal rules*. Limited fiscal autonomy may be result of RGs limited taxing powers, spending discretion limited by minimum service standards or revenue earmarking, and overlapping and unclear revenue or spending assignment. Insufficient fiscal autonomy is usually reflected in large gaps between RG's mandated spending and revenue assignments—large VFIs. The capacity of financial markets to discipline RGs is undermined by regulatory incentives and lax prudential requirements on RG lending, RGs' access to non-competitive financing sources (CG on-lending, public and development banks, state-owned enterprises), and lack of transparent and comprehensive public accounts that blur RGs' creditworthiness. Administrative controls such as those guiding RG borrowing are usually not based on clear and objective criteria (for example, ability to service debt). Last, fiscal rules applied to RGs are often poorly designed and weakly enforced.

Common-pool financing provides incentives for overspending. When most RG spending is financed out of a common-pool of resources with little or few strings attached, overspending—and by implication non-compliance—will become an attractive option. This will be the case because RGs will bear only a fraction of the marginal costs of providing regional goods and services (Von Hagen, 2005). Common-pool financing is usually provided in the form of general purpose, open-ended, and equalization transfers or through debt-mutualization schemes. The literature shows that excessive dependency on such transfers to finance subnational public goods and services exacerbates overspending.¹²

E. Involuntary Fiscal Non-Compliance and Fiscal Stress

Involuntary fiscal non-compliance may become likelier in times of fiscal stress. These are periods marked by large negative fiscal shocks usually associated with significant economic downturns and large fiscal adjustment efforts. In combination, the two factors have been shown to undermine RG capacity to meet fiscal targets as follows:

- **Shocks and Forecast Errors.** Economic shocks commonly trigger fiscal stress, making ex-ante feasible targets ex-post unfeasible. Shocks could be region-specific (idiosyncratic shock) or they could affect the whole country (common-shock). A common-shock can affect regions differently depending of each region's economic structure (for example, a bust in housing prices would

¹² See Ter-Minassian (2015) for a recent review.

affect regions where pre-shock median property values had been higher) or exposure to fiscal risks (for example, size of explicit or implicit contingent liabilities assumed by RGs on behalf of public enterprises or regional banks). Large shocks are usually reflected in large forecast errors.¹³

- ***Feasible targets and adjustment plans.*** In times of fiscal stress, CGs, as guardians of fiscal sustainability, are under pressure from markets and supranational institutions to design and implement ambitious but credible fiscal adjustment plans. Such pressure often leads to ex-ante feasible, but very demanding fiscal targets for the general government (Beetsma and others, 2009). This is particularly the case for the so-called Stability and Convergence Programs of Europe's SGP. In such programs, fiscal targets need to show ex-ante compliance with SGP fiscal rules. Ambitious but feasible general government targets in decentralized fiscal frameworks are, in turn, often reflected in ambitious but feasible subnational fiscal targets, as CGs try to shift part of the fiscal adjustment effort to regions by "passing down the buck" (Vamalle and others, 2012).¹⁴ Involuntary fiscal non-compliance, as a result, is expected to become likelier as fiscal adjustment to meet a given fiscal target increases. RG adjustment efforts, on turn, may increase if fiscal targets are not revised following fiscal non-compliance in a given year, leading to persistent fiscal non-compliance patterns. Similar arguments explain why CG incentives to enforce RGs fiscal target also increase in times of fiscal stress. Failure to do so will increase the likelihood that general government fiscal targets will be breached and that markets and supranational institutions will hold the CG accountable for general government fiscal non-compliance.

III. THE SPANISH FISCAL GOVERNANCE FRAMEWORK

Numerical fiscal targets at the regional level go back more than two decades in Spain. They were subject to numerous changes before and after the global financial crisis:

- ***Budget consolidation scenarios and the 2002 Budget Stability Law.*** Regions were first subject to budget balance limits in the form of fiscal deficits ceilings as part of the Budget Consolidation Scenarios agreed to with the CG after 1992. Fiscal deficit ceilings at the regional level came into law four years later under the 2002 Budget Stability Law (BSL). The 2002 BSL set a single zero-deficit limit for all regions, that is, all regions were obliged to post a budget outturn that is either in balance or in surplus. It also envisaged an adjustment plan with corrective actions in the event of non-compliance. Throughout this period, fiscal deficit ceilings for each region were set in percent of national GDP.

¹³ Large forecast errors, as discussed in the introduction, could also be the result of strategic considerations to ensure ex-ante compliance with fiscal rules. In the context of the recent global financial crisis, they have also reflected larger-than-anticipated fiscal multipliers (IMF, 2015).

¹⁴ This allows CGs to minimize the political costs of fiscal consolidations by preserving the provision of public goods and services under their mandate, while avoiding increasing the burden of their own taxes. CGs may also raise subnational fiscal targets to build buffers for possible non-compliance at different subsectors, RGs included.

- **The 2006 Budget Stability Law.** The reform of the first BSL approved in 2006 entered in force in 2007, and was implemented as a consequence of an EU-wide reform of the SGP. The 2006 BSL enabled the CG and RGs to adapt their deficit and surplus targets to the economy's cyclical position. Specifically, it allowed the RGs to run a deficit of 0.75 percent of GDP if economic growth was below a certain threshold, to which a further 0.25 percent of GDP could be added to finance increases in productive investment.¹⁵ Fiscal deficit ceilings were also set as a percentage of regional rather than national GDP. The 2006 BSL included a non-bail out clause. It also introduced monitoring and enforcement mechanisms. If a risk of non-compliance was detected by the Ministry of Finance, a warning could be made to the responsible government unit. In the event non-compliance materialized, the non-compliant government was required to draw up an economic and financial rebalancing plan over a maximum term of three years. Last, it stipulated that, if a deviation from targets were to prompt a breach of the SGP, the tier of government involved should assume the attendant proportion of the responsibilities that should arise from the breach. In addition, RGs that fail to meet the deficit target would require CG authorization to initiate any debt operations.
- **The 2012 Budget Stability Law.** Regional fiscal targets were subject to further refinements to comply with EU-wide fiscal governance taking place in the context of the Six-Pack, Fiscal Compact, and Two-Pack. A constitutional reform approved in 2011 enshrined the rules-based framework in the Constitution. A new BSL approved in 2012 introduced structural budget balance, expenditure, and debt rules at the regional level. The 2012 BSL refined rules-based monitoring and enforcement mechanisms to prevent, correct, and penalize deviations from fiscal rules and targets introduced in the 2006 BSL. Monitoring and enforcement were also reinforced through improvements in the quality, coverage, and frequency of intra-year regional and local budget figures and the creation in 2013 of Spain's independent fiscal council—Autoridad Independiente de Responsabilidad Fiscal. Fiscal deficit limits continued to be measured as a percentage of regional GDP.

¹⁵ Under the second BSL, fiscal targets were set in three stages. In the first stage, a report assessing the cyclical phase for the following three years was prepared. Taking into account the cycle, in a second stage, fiscal targets for the general government and subsectors (central, regional, and local governments as well as to the Social Security System) taken together were set and submitted to Parliament. Once approved by Parliament and subject to the aggregate RG target, individual fiscal targets for each RG were set by means of bilateral negotiations between the Ministry of Finance and representatives of each RG on the Fiscal and Financial Policy Council.

IV. UNDERSTANDING FISCAL NON-COMPLIANCE AMONG SPAIN'S REGIONS

A. Empirical Methodology

Alternative drivers of fiscal non-compliance among Spanish regions are assessed by looking at non-compliance frequencies and compliance margins. To gather some stylized facts, we start by examining non-compliance empirical distributions across a number of different potential determinants of voluntary and involuntary fiscal non-compliance. We then perform an econometric analysis to identify whether fiscal non-compliance is likely to be voluntary by looking at the determinants of compliance margins. Our sample includes 16 out of 17 Spanish regions over the period 2002-15.¹⁶

Non-compliance events are defined as cases of negative deviations between fiscal outturns and fiscal targets for a given region and year. That is, $f_{it} - f_{it}^* < 0$, where f , f^* , i , and t are fiscal balance outturns, fiscal balance targets, years, and regions, respectively. Non-compliance events are sourced from the annual compliance report submitted by the Ministry of Finance to the Economic and Financial Council (CPFF).¹⁷ The CPFF comprises the Minister of Finance and public finance authorities from each region. While the Ministry of Finance is the ultimate body in charge of overseeing regional finances, the CPFF plays a formal role in the approval of regions' fiscal balance targets.

Non-compliance frequencies are defined in (1) as the ratio of non-compliance cases to the total number of cases within that particularly group X . Groups are partitioned by quartiles (q) if measured on the basis of a continuous variable.

$$P(f_{it} - f_{it}^* < 0 | X_q) \text{ where } q = 1, \dots, 4 \quad (1)$$

Compliance margins — $f^e = f^* - f$ — are measured in percent of regional GDP. Officially, they were measured as differences between fiscal outturns and targets as a percentage of national GDP between 2003 and 2007 and as a percentage of regional GDP from 2008 onwards. To allow compliance margins to be compared over the years and across regions according to a homogenous metric that at the same time reflects differences in regions' fiscal capacities, we have re-estimated official compliance margins in percentage of regional GDP using the latest nominal GDP series.¹⁸ We

¹⁶ Spain has 17 regions (*Comunidades Autónomas*). Nevertheless, two different center-periphery financial arrangements are in place. A majority of regions, 15, share the Common Regime of regional finances (*Comunidades Autónomas de Régimen Común*), with partial devolution of expenditure and revenues, while the remaining two (Navarre and Basque Country) enjoy a special status referred to as the Foral Regime of regional finances (*Régimen Foral*) under which they enjoy almost full spending and revenue autonomy. Within the latter two regions, though, the Basque Country is further decentralized, with revenue-raising responsibilities distributed to lower government levels (*Diputaciones Forales*) broadly resembling the provincial structure within the region. The latter region is therefore excluded from the subsequent econometric analysis because of the absence of comparable data.

¹⁷ Available at www.minhap.gob.es/esES/CDI/SeguimientoLeyEstabilidad/Paginas/InformesCompletoLEP.aspx. Two annual compliance assessments have been conducted since 2013. Non-compliance events are defined based on the second and final assessment.

¹⁸ The regional GDP series used is measured in market prices and in accordance with the new European System of National and Regional Accounts (ESA 2010).

did that in two steps: first, we uncovered nominal deficit values by multiplying targets and outturns by the nominal GDP available around the time targets and outturns were, respectively, set and assessed and second, we divided the difference between nominal deficit outturns and targets by the latest nominal regional GDP series.

A dynamic panel regression analysis is used to examine potential determinants of non-compliance margins. Non-compliance margins are regressed on the same variables conditioning non-compliance frequencies. Estimates are derived using Arellano-Bond first-difference generalized method of moments (FD-GMM) estimator to allow for possible inertial patterns in non-compliance as well as endogeneity of dependent variables. Equation 2 summarizes the specification.

$$f_{it}^e = \alpha f_{it-1}^e + \gamma INVOL_{it} + \delta VOL_{it} + \eta_i + \rho_t + \epsilon_{it} \quad (2)$$

where *INVOL* and *VOL* are vectors with factors associated with involuntary and voluntary non-compliance events (hereafter referred to as voluntary and involuntary factors), respectively; η and ρ are, respectively, country and time fixed effects, α governs the degree of persistency of RG fiscal compliance/non-compliance, and γ and δ measure the relative contribution of involuntary and voluntary factors to fiscal compliance and non-compliance.¹⁹

Our estimation strategy aims at identifying operative economic, institutional, and political factors associated with voluntary and involuntary patterns of fiscal non-compliance. In light of our relatively short cross-sectional dimension, our identification strategy is implemented in a parsimonious way by individually assessing the impact of a larger set of variables expected to encourage voluntary fiscal non-compliance on a baseline that controls for lagged fiscal non-compliance and the more limited number of factors associated with involuntary compliance patterns. To address the problem of overfitting and biased estimates in small cross-section samples stemming from the proliferation of GMM instruments, we use only lags t-2 and t-3 and combine our instruments into smaller sets by using the collapse option in Roodman's *xtabond2* package for Stata. The robustness of the results is checked using two-stage least square (2SLS) estimators.

¹⁹ The literature suggests that fiscal deficit at the central government level can encourage deficits at the RG level (see Molina-Parra and Martínez-López, 2015, for the case of Spain) through the so-called copycat or yardstick effect. Nevertheless, this analysis did not find robust statistically significant evidence to support the hypothesis that fiscal compliance at the CG level influences fiscal compliance patterns at the subnational level. The results are excluded from the paper for the sake of simplicity.

B. Testable Hypotheses

The proposed multi-level governance framework developed in Section 2 can help us understand fiscal non-compliance among Spain's regions. It can do so by helping identify to what extent regional fiscal non-compliance is voluntary. Voluntary fiscal non-compliance can be the result of bailout or overspending incentives driven by welfare or political motives. The framework can also look at the role political, fiscal, and financial market institutions play in shaping such incentives. Fiscal non-compliance could have also been involuntary because of common or asymmetric shocks, and because of feasible fiscal targets and adjustment plans were borderline feasible. Drawing from this framework and empirical analysis referenced in the previous section, Table 1 summarizes some testable hypothesis that are relevant in the Spanish context.

Table 1. Fiscal Non-Compliance Testable Hypotheses

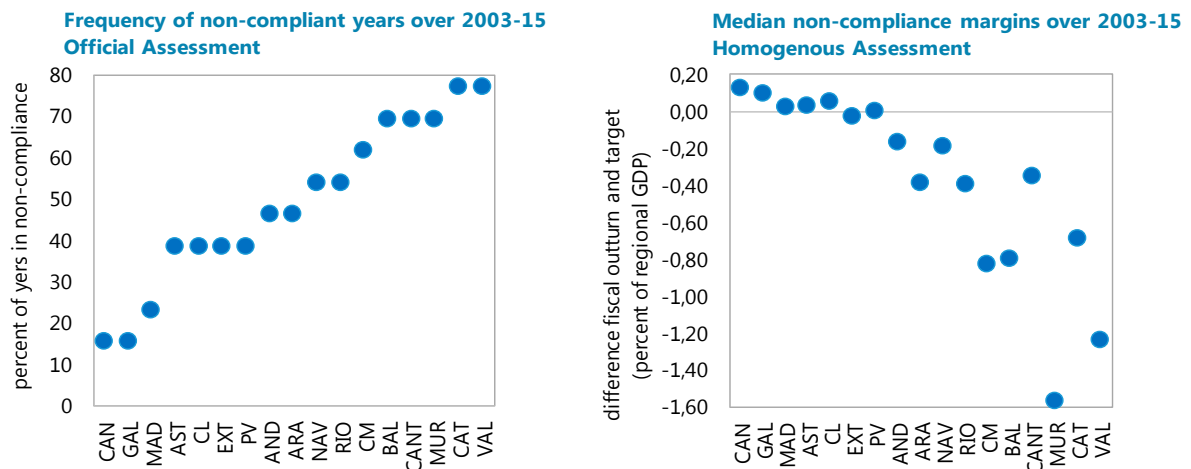
Channel	Variable	Expected Sign	
		Non-Compliance Frequency	Compliance Margin
I) Voluntary			
Spillovers	Region size	Negative/Positive	Positive/Negative
Fiscal Autonomy	Tax autonomy	Negative	Positive
	Expenditure discretion	Negative	Positive
Market discipline	Financing costs	Negative	Positive
	Access to soft financing	Positive	Negative
Fiscal Rules	Fiscal rule strength	Negative	Positive
Political Representation	Size of parliament representaion	Positive	Negative
	Congruence of regional and national government coalitions	Positive	Negative
Elections	Election year	Positive	Negative
Political Autonomy	Regional representaion of pro-autonomy parties	Positive	Negative
II) Involuntary			
Shocks	Common/natiowide positive shocks	Negative	Positive
	Region-specific positive shocks	Negative	Positive
Fiscal Target Adjustment	Annual changes in fiscal deficit targets	Positive	Negative
III) Other			
Inertia	Compliance margin in previous year	—	Positive

Note: See Annex for a detailed description of the variables.

C. Facts and Factors

Fiscal non-compliance between 2003 and 2015 varied markedly across regions in both how frequently regions missed the target and by how much these targets have been missed (Figure 3). Fiscal non-compliance frequencies appear to be stratified in at least three groups: (i) broadly compliers; (ii) broadly non-compliers; and (iii) largely non-compliers. The broadly compliers comprise regions that have stuck to their fiscal targets in at least half of the years during the analysis periods. This is large and heterogenous group both demographically, economically, and historically. It includes the Canary Islands, Galicia, Madrid, Asturias, Castilla and León, Extremadura, Andalucía, Aragón, and the Basque Country. Navarra, Rioja, Castilla la Mancha, the Balearic Islands, Cantabria, and Murcia are among the broadly non-compliers—regions missing their targets up to two-thirds of the years. Finally, Valencia and Catalonia have missed their fiscal targets in three out every four years during this period. Just like the first group, regions in the last two groups have very distinct attributes. Non-compliance frequencies and margins appear to be broadly correlated in the sense that more frequent non-compliers tend to breach their targets by wider margins than less frequent ones.

Figure 3. Regions' Non-Compliance with Fiscal Deficit Targets



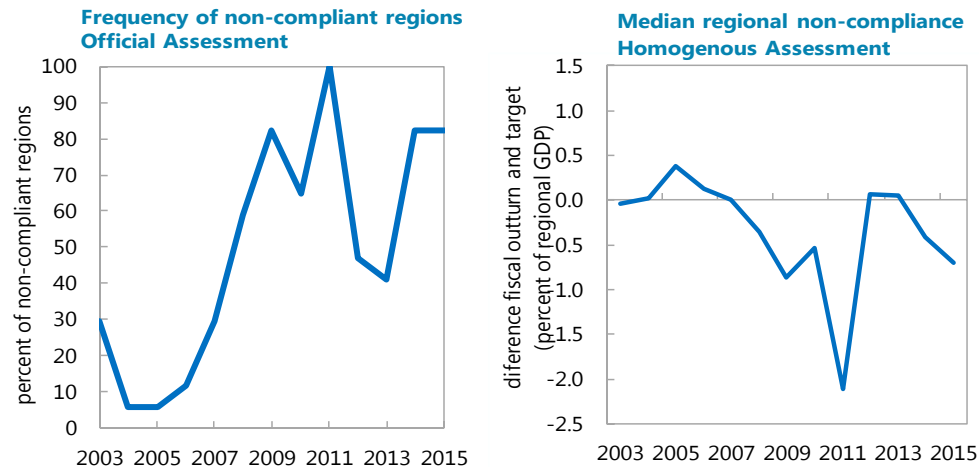
Source: Ministry of Finance and authors' calculations

Note: Under the official assessment, fiscal non-compliance events are defined as differences between fiscal targets and outturns in percent of national GDP between 2003 and 2007 and as a percent of regional GDP from 2008-15. Under the homogenous assessment, fiscal non-compliance events are defined as differences between fiscal targets and outturns in percent of regional GDP between 2003-15 (see Annex). CAN=Canary Islands, GAL=Galicia, MAD=Madrid, AST=Asturias, CL= Castilla and Leon; EXT=Extremadura, AND=Andalusia, ARA= Aragon, PV=Basque Country, NAV=Navarra, RIO=Rioja; CLM=Castilla La Mancha, BAL = Balearic Island, CANT=Cantabria, MUR=Murcia, CAT=Catalonia, VAL = Valencia.

Regions' fiscal non-compliance increased markedly in the post-crisis years. The number of non-compliant regions and their corresponding non-compliance margins also increased significantly following the global financial crisis (Figure 4). Non-compliance peaked in the post-EU sovereign debt crisis in 2011 when virtually all regions were unable to meet their fiscal deficit targets, most of them

by very large margins. This deviation was corrected in the following years through more realistic projections of shared revenues advanced to the regions and supported by fiscal adjustment plans.

Figure 4. Evolution of Regions' Non-Compliance with Fiscal Deficit Targets



Source: Ministry of Finance and authors' calculations

Note: Under the official assessment, fiscal non-compliance events are defined as differences between fiscal targets and outturns in percent of national GDP between 2003 and 2007 and as a percent of regional GDP from 2008 to 2015. Under the homogenous assessment, fiscal non-compliance events are defined as differences between fiscal targets and outturns in percentage of regional GDP between 2003 and 2015 (see Annex).

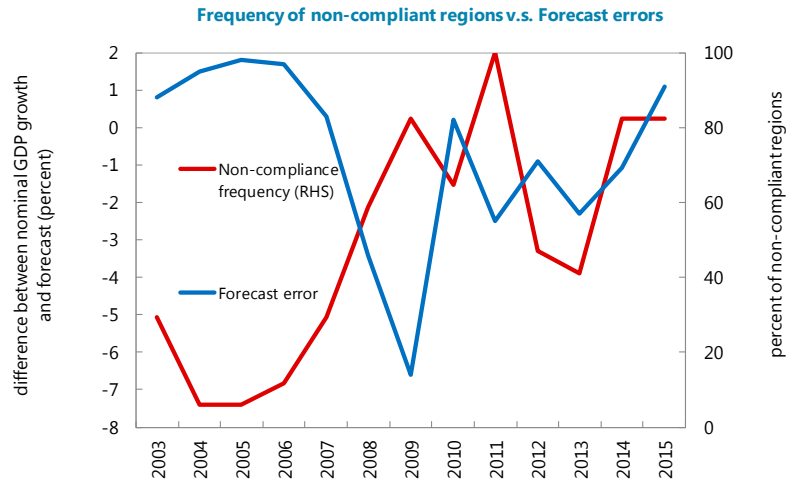
Involuntary Channels and Baseline Specifications

Fiscal non-compliance, **common shocks, and forecast errors** are linked. Common shocks are proxied by observed deviations between nominal (national) GDP growth outturns and forecasts set in annual budget laws (forecast errors).²⁰ Negative (positive) forecast errors in nominal GDP growth should undermine (bolster) compliance with fiscal deficit targets through corresponding revenue shocks. Non-compliance margins and frequencies have clearly moved in tandem with forecast errors (Figure 5). Years when fiscal non-compliance was widespread (2008-11 and 2014-15) have usually been years when forecast errors have been negative.²¹ Regression results provide support for the positive correlations between forecast errors and involuntary fiscal compliance, with positive and statistically significant estimates in about half of all estimated models (Tables 2 and 3).

²⁰ The key assumption here is that forecast errors are mostly driven by unanticipated changes in fundamentals and not by technical errors, weak or untimely data, or strategic motives (for example, overestimated nominal GDP growth forecasts to inflate revenue projections and make ex-post excessive spending levels ex-ante compatible with existing fiscal targets). Strategic motives and technical errors should play less of a role here to the extent that national growth forecasts are set by the center where forecasting capacity and data quality are expected to be on average better than that of regions.

²¹ 2010 and 2015 (widespread non-compliance and positive forecast error) were exceptions.

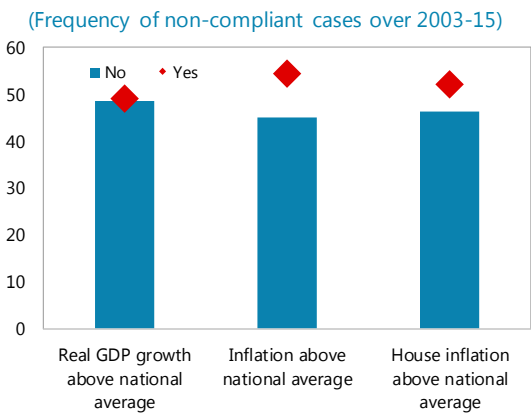
Figure 5. Forecast Errors and Regions' Non-Compliance with Fiscal Targets



Source: Ministry of Finance and authors' calculations

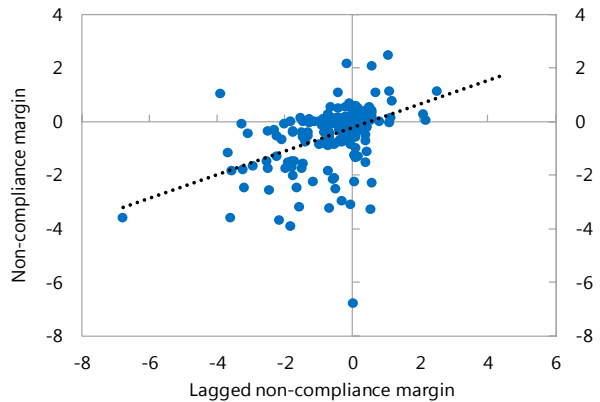
Idiosyncratic shocks seem to play a limited role in determining fiscal non-compliance. Measured by differences between regions' real GDP growth, consumer price inflation, and house price inflation and corresponding national averages, positive idiosyncratic shocks are expected to reduce fiscal non-compliance frequencies (Figure 6). Contrary to expectations non-compliance frequencies were either the same (real GDP growth) or larger (consumer price inflation and house inflation) among cases in which idiosyncratic shocks were positive. Equally unexpected, positive idiosyncratic growth shocks seem to reduce rather than increase fiscal compliance margins. However, country-specific inflation differentials are not shown to be statistically significant (Tables 2 and 3). As discussed below, this finding may be explained by the relatively strong transfer dependency observed in most regions and, more specifically, by the fact that a significant share of regional finances comes in the form of transfers from the center allocated with the objective of equalizing regions' fiscal capacity to meet their spending mandates. Thus, reliance on equalization transfers mitigates the revenue impact of region-specific shocks, helping regions safeguard their fiscal capacity and to meet their fiscal deficit targets.

Figure 6. Fiscal Non-Compliance and Regions' Idiosyncratic Exposure to Shocks



Source: Ministry of Finance and authors' calculations

Figure 7. Inertia in Regions' Non-Compliance with Fiscal Targets, 2003-15



Source: Ministry of Finance and authors' calculations
 Note: Non-compliance margins measured in percent of regional GDP. Nominal GDP growth forecasts set in the budget law.

Fiscal non-compliance has displayed some ***inertial patterns***. In line with Leal and Lopez-Laborda (2015) and Lago Peñas and others (2016), fiscal compliance margins appear to be positively auto-correlated (Figure 7). As mentioned by Argimón and Hernández de Cos (2012), this could reflect budget rigidities due to incremental budget processes or multi-year expenditure commitments. Tables 2 and 3 confirms such inertial patterns under several specifications.

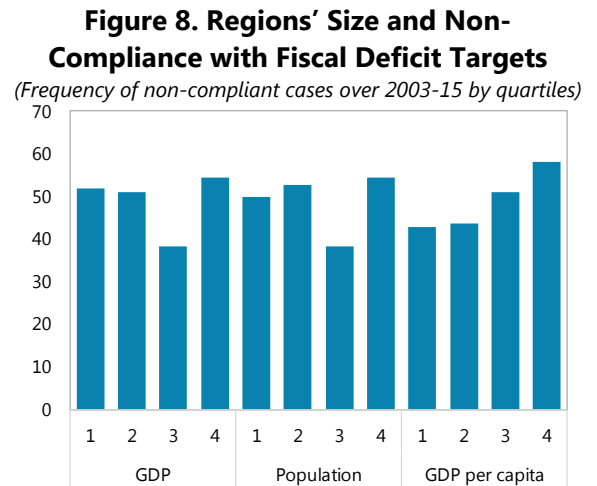
Fiscal non-compliance increases with the required ***adjustment effort***. Adjustment effort is measured by the difference between the fiscal deficit target in years t and $t-1$, both in percentage of regional GDP, a simple proxy for the required nominal adjustment.²² Adjustment efforts have been quite heterogeneous across regions given that fiscal deficit targets, despite the existence of different starting fiscal positions, have been set uniformly across regions in most years. As expected, adjustment efforts are found to have a negative and statistically significant impact on fiscal compliance margins in most specifications (Tables 2 and 3). Estimated coefficients range from 0.5 to 1, implying that for each percentage point increase in RGs fiscal deficit targets, we should expect compliance margins to decline between 0.5 and 1 percentage points.

Fiscal non-compliance may decrease if regions benefit from ***gap-filling transfers*** before the assessment date, as discussed in Section II. To verify that we look at differences between actual transfers received by the RG from the CG and those originally budgeted. Non-compliance margins for a RG that receives more transfers than budgeted should be smaller. This hypothesis has been rejected, with regression estimates not significant and with the wrong sign (Tables 2 and 3, model 2). One interpretation is that, while improving regions' fiscal capacity and thus stave off involuntary fiscal non-compliance, additional unbudgeted transfers reinforce expectations of further gap-filling transfers by end-year thus boosting voluntary fiscal non-compliance and more than outweighing the initial deterrent effect.

²² Adjustment efforts could also be measured by differences between fiscal deficit in year t and fiscal outturns in $t-1$. Unlike annual changes in fiscal targets, this measure is highly correlated with lagged fiscal compliance margins and for this reason we have opted to exclude it from our baseline specification. Replacing it with our chosen adjustment effort proxy deliver qualitatively similar results at the expense of rendering lagged fiscal compliance margins statistically insignificant.

Voluntary Channels

We find some tentative evidence of a positive impact of regions' **size** on fiscal non-compliance. Regions' size is measured according to the weight of a region's population, GDP, and GDP per capita in their corresponding national figures. Fiscal non-compliance tends to be more frequent among larger regions (that is, towards the end of the distribution) in all three measures, particularly with respect to GDP per capita (Figure 8). Fiscal compliance margins are shown to increase in a statistically significant way with regional GDP and regional GDP per capita only under 2SLS models (Tables 2 and 3, models 3 to 5).



Source: Ministry of Finance, Ministry of Public Works and Transport, National Institute of Statistics, and authors' calculations.

Insufficient **fiscal autonomy** to adjust seems to play a role in determining regions' fiscal non-compliance. To assess the impact of fiscal autonomy, we estimate measures of tax and expenditure autonomy as well as of vertical fiscal imbalances (VFI). Tax autonomy (in line with the terminology in the local public finance literature) is defined as the share of an RG's total tax revenues over which the RG has some degree of regulatory autonomy.²³ The larger this share, the greater a region's tax autonomy or fiscal co-responsibility, as it is often referred to in the Spanish empirical literature. However, in contrast with the local public finance literature, expenditure autonomy is defined here by the degree of discretion over mandated expenditures. With health and education mostly mandated to regions under center-imposed minimum standards and social protection shared with the center, a larger share of regions' spending on these basic services limits regions' ability to adjust and comply with fiscal targets once their revenue-raising capacity is taken into account. That is, a region's autonomy to cut expenditures is expected to decrease as a region's spending share in basic services increases. With that in mind, we compute the shares of regions' spending on essential public services (health, education, and social protection) and public investment in their total spending.²⁴ Last, following Eyraud and Lusinyan (2013), we estimate VFI indicators for each region to capture the extent to which regions are unable to finance their own spending with own revenues, regardless of whether they have regulatory power of the corresponding tax bases or not.²⁵ As expected, non-

²³ Regions have regulatory autonomy over personal income taxes (schedules, allowances, credits), wealth and estate taxes and property transfer taxes (schedules, deductions, credits), gambling (exemption, base, rate, credit), and vehicle registration (rates). Significant tax decentralization took place following the 1997, 2002, and 2009 reforms of the regional financing system.

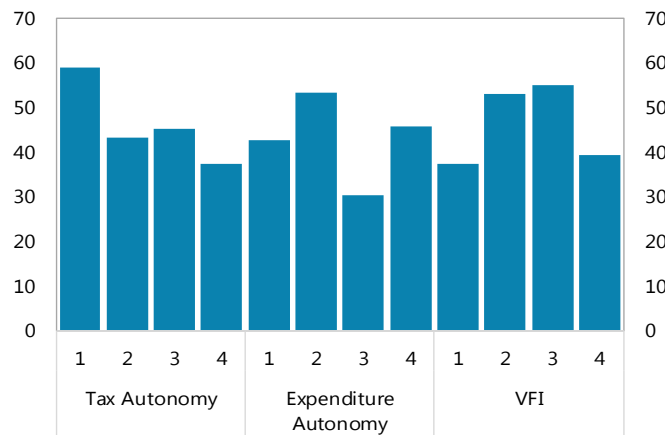
²⁴ Regions account for 2/3 of total general government spending on essential public services and more than 90 percent when it comes to health in education (Pérez García and others, 2015), but about 5 percent with respect to social protection.

²⁵ VFIs are defined as $[1 - \text{Own Revenue} / \text{Own Spending}]$. Own revenue (spending) corresponds to region's total revenue (spending) minus transfers received by RGs from the central government and other public entities (transfer paid by RGs to the central government and other public entities).

compliance frequencies tend to be smaller among regions in the top tax autonomy quartiles (Figure 9). Although the relation is not significant with respect to fiscal compliance margins (Table 2 and 3, model 6). On the other hand, fiscal non-compliance frequencies are not necessarily the largest among regions in the top expenditure autonomy and VFI quartiles (that is, regions with greater social mandates and less own resources to fund them).²⁶ That said, as expected, fiscal compliance margins decrease as a larger share of regions' expenditures is allocated to social services and public investment – that is, as regions' expenditure autonomy decreases (Tables 2 and 3, model 6). Finally, regions with large VFIs tend to display lower compliance margins, as shown in Tables 2 and 3 (model 7 and 13).

Figure 9. Regions' Fiscal Autonomy and Non-Compliance with Fiscal Deficit Targets

(Frequency of non-compliant cases over 2003-14 by quartiles)



Source: Ministry of Finance and authors' calculations

Note: VFI= vertical fiscal imbalances. Tax autonomy is defined as the ratio between RGs own tax revenue to total tax revenues. Expenditure autonomy is the regions' share of general government spending on essential services.

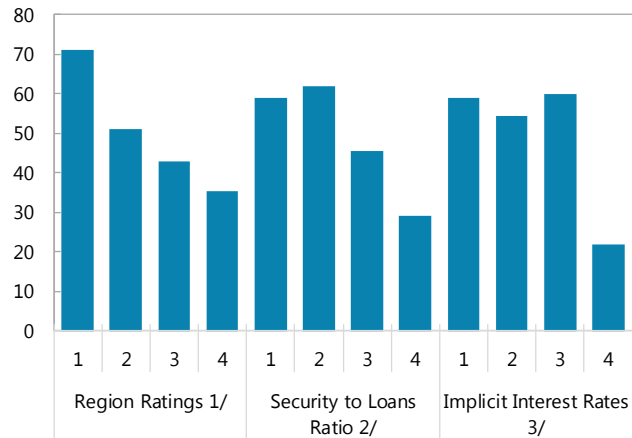
The impact of stronger **rules** on fiscal compliance is not clear cut. As described in the previous section, fiscal rules in Spain have become increasingly stronger over the years. They are currently among the strictest fiscal rules in Europe, as measured by the European Commission fiscal rule strength index. Stronger rules, however, have not always led to improvements in fiscal compliance, partly because delays in enforcing existing monitoring and enforcement procedures (Lledó, 2015). Our regression results seem to reinforce this point. Under our baseline GMM specification, stronger fiscal rules do not show any direct impact on fiscal compliance margins directly. Instead, they seem to have an indirect impact on compliance margins by helping reduce inertial patterns (Table 2, models 8 and 9). These results are reversed under the 2SLS specification, which show fiscal rules having a direct rather than indirect impact on fiscal compliance margins (Table 3, models 8, 9, and 13).

²⁶ Although in the case of VFI, non-compliance frequencies tended to increase up to the third quartile.

Financial markets seem to affect fiscal non-compliance through two different channels. On the one hand, fiscal non-compliance frequencies are larger among regions with lower (poorer) **credit ratings** and, to some extent, facing larger **market-financing costs**, which seems to provide some support to the idea that financial markets undermine fiscal compliance by raising the financing costs of regions that are not perceived as creditworthy (Figure 10).²⁷ On the other hand, fiscal non-compliance becomes less prevalent among regions where **reliance on market-issued securities rather than softer bank loans** is greater. This finding indicates that greater market exposure helps to deter fiscal non-compliance because regions internalize the impact fiscal non-compliance would have on credit ratings and market-financing costs. Our regression analysis of fiscal non-compliance corroborates the latter channel: increases in the financing costs faced by regions in the previous year leads tends to increase rather than reduce compliance margins in the following year (Tables 2 and 3, model 10). However, greater reliance on market securities has no statistically or economically significant impact on compliance margins (Tables 2 and 3, model 10).

Figure 10. Financial Markets and Regions' Non-Compliance with Fiscal Targets

(Frequency of non-compliant cases over 2003-15 by quartiles)



Source: Ministry of Finance and authors' calculations.

1/ Regional governments' credit ratings.

2/ Ratio of regions' public debt in government securities to banking loans, percent.

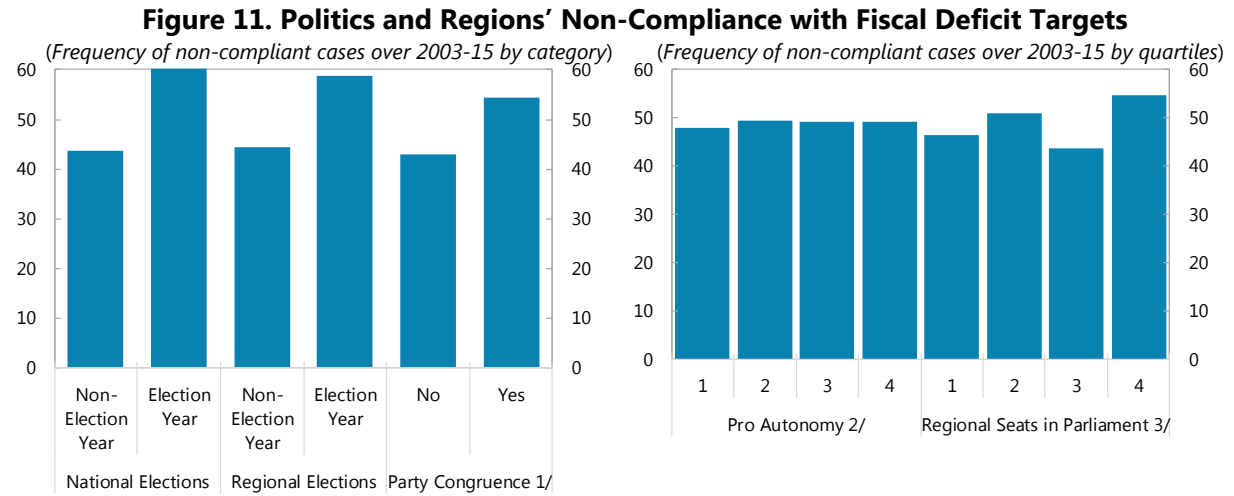
3/ Region's interest payments in percentage of end-of-year region public debt stock.

Fiscal compliance is weakened during election years, but the role played by politics in other areas is less clear-cut. Fiscal non-compliance seems to increase during **election years**. As expected, fiscal non-compliance is more frequent and display wider margins during election years (Figure 11; Tables 2 and 3, models 11, 12, and 13). Unlike previous fiscal discipline analyses for Spain, but as expected in our framework, political alignment or **party congruence** between central and regional governments notably increases the likelihood of fiscal non-compliance. In particular, regions politically aligned to the center are shown to be near 1.5 times more likely to deviate from targets than non-aligned regions.²⁸ Our regression results provide only tentative support to these hypothesis: regions aligned with the center presented smaller, albeit statistically insignificant, compliance margins, under most specifications (Figure 11; Tables 2 and 3, models 11, 12, and 13).

²⁷ Although one cannot rule out the possibility of reverse causality with fiscal non-compliance leading to poorer credit ratings, higher risk premiums, and costlier market financing.

²⁸ As discussed in Section B, this may be the result of CG following a "safe" electoral strategy. Simon-Cosano and others (2012) shows that strategy to be the preferred by national incumbents running in national elections, as reflected in the distribution of transfers to regions where the incumbent performs better.

Pro-autonomy regions, defined by the percentage of members of parliament from regional pro-autonomy parties – expected to deviate from center-imposed fiscal targets – turned out to be only marginally more likely to deviate from fiscal targets than regions with weaker pro-autonomy preferences, with pro-autonomy regions presenting smaller but statistically insignificant margins under most specifications (Figure 11; Tables 2 and 3, models 11, 12, and 13). Last, regions with the largest **political representation in the national parliament** are the most frequent non-compliers, albeit not necessarily with compliance margins that are statistically significantly smaller (Figure 11; Tables 2 and 3, models 11, 12, and 13).



Source: Ministry of Finance and authors' calculations.

1/ Regional government led by same party or government coalition leading central government

2/ Percentage of members of regional parliaments from regional/pro-autonomy parties

3/ Seats in national parliament (lower house) allocated to each region

Table 2. First-Difference GMM Estimates of Fiscal Compliance Margins

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Lagged non-compliance margin	0.74*	1.09**	0.76*	0.83*	0.76	0.70***	0.37	0.91**	2.42***	0.31*	0.73*	0.49	0.24
Growth forecast errors	0.09*	0.04	0.09	0.10*	0.10*	0.12***	0.04	0.09	0.06	0.05	0.09	0.12***	0.04
Region-National growth differential	-2.09*	-2.67*	-2.16*	-2.13	-2.00	-0.73	-0.60	-2.32*	-1.82*	-0.36	-2.17*	-1.19	0.24
Region-National inflation differential	-0.36	-2.08	-0.39	-1.10	-1.28	-1.27	-2.41**	-1.23	-1.68	-2.83*	0.86	-1.29	-1.19
Fiscal Target Adjustment	-0.80**	-1.13**	-0.81**	-0.94**	-0.85*	-0.35	-0.82***	-1.02**	-0.99***	-0.51***	-0.68*	-0.52	-0.49
Execution minus budgetary transfers (in regional GDP)		-0.48											
Region weight in national population			3.86										
Region weight in national GDP				7.12									
Region weight in national percapita GDP					0.36								
Tax autonomy						0.03							
Social spending share in regional government spending						-0.33**							
Investment share in total regional spending						-0.24***							
Vertical fiscal imbalances							-0.15***						-0.13**
Fiscal Rule Index								0.05	0.02				0.01
Fiscal Rule Index X Lagged non-compliance margin									-0.06**				
Region Ratings													
Lagged Annual Change Region Ratings										-0.09			
Lagged Annual Change in Implicit interest rates										1.03***			
Ratio of security to loans										0.00			0.19
National election dummy											-0.60***		
Regional election dummy												-0.36*	-0.50*
Party congruence dummy											-0.18	0.40	-0.41***
Pro-autonomy party share											-0.03	0.02	
Regions' seats in national parliament											-0.31	-0.86	
Number of observations	176	160	176	176	176	160	160	160	160	145	176	176	144
Number of regions	16	16	16	16	16	16	16	16	16	15	16	16	16
Number of instruments	16	15	16	16	16	15	15	15	15	15	17	17	14
Hansen	0.60	0.80	0.44	0.87	0.66	0.28	0.37	0.82	0.65	0.14	0.68	0.15	0.05
m1	0.12	0.11	0.13	0.15	0.23	0.02	0.09	0.10	0.06	0.14	0.12	0.20	0.00
m2	0.39	0.61	0.43	0.49	0.42	0.48	0.61	0.66	0.77	0.16	0.28	0.22	0.67

Note: Dependent variable is the difference between regions' fiscal deficit outturns and fiscal deficit targets. The larger this difference is, the larger is the fiscal compliance margin. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively. Instrument set in all models includes the second and third lag of the explanatory variables. Hansen is the p-value of the test of the over-identifying restrictions (see Hansen, 1982), which is asymptotically distributed chi square under the null hypothesis that these moment conditions are valid. A p-value equal or higher than 0.05 indicates that the instrument set is valid, which is confirmed under all models. m1 and m2 are the p-values of serial correlation tests of order 1 and 2, respectively, using residuals in first differences. The null hypothesis under both m1 and m2 tests is that there is no correlation between variables in the instrument set and the residuals. Observed p-values higher than 0.05 under the m2 test for all models indicates that there is no correlation with the instrument set defined in second lags.

Table 3. Two-Stage Least Square (2SLS) Estimates of Fiscal Compliance Margins

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Lagged non-compliance margin	0.49**	0.57**	0.49**	0.41**	0.39**	0.52**	0.75**	0.49**	0.46	0.14	0.30*	0.42**	0.79*
Growth forecast errors	0.04*	0.01	0.04*	0.05***	0.05**	0.03	-0.03	0.03	0.05*	0.07**	0.04**	0.05**	-0.02
Region-National growth differential	-0.42**	-0.46**	-0.42**	-0.44***	-0.46***	-0.42**	-0.41*	-0.39**	-0.12	-0.26	-0.27**	-0.38**	-0.40*
Region-National inflation differential	-0.47	-0.50	-0.45	-0.54	-0.55	-0.28	-0.50	-0.46	-0.17	-0.44	0.00	-0.51	-0.55
Fiscal Target Adjustment	-0.71***	-0.77***	-0.71***	-0.66***	-0.66***	-0.62***	-1.05***	-0.78***	-0.44***	-0.53***	-0.48***	-0.62***	-1.04***
Execution minus budgetary transfers (in regional GDP)		-0.22											
Region weight in national population			-2.59										
Region weight in national GDP				2.73***									
Region weight in national percapita GDP					0.21***								
Tax autonomy						0.02							
Social spending share in regional government spending						-0.29***							
Investment share in total regional spending						-0.06***							
Vertical fiscal imbalances							-0.16***						-0.15***
Fiscal Rule Index								0.14***	0.04				0.07*
Fiscal Rule Index X Lagged non-compliance margin									-0.02				
Lagged Annual in Change Region Ratings										-0.15			
Lagged Annual Change in Implicit interest rates										0.26***			-0.07
Ratio of security to loans										0.00***			
National election dummy											-0.64***		
Regional election dummy												-0.20	-0.27*
Party congruence dummy											0.04	0.13	-0.19
Pro-autonomy party share											-0.00	-0.00	
Regions' seats in national parliament											-0.58**	-0.78*	
Number of observations	144	128	144	144	144	128	128	128	128	131	144	144	128
Number of regions	16	16	16	16	16	16	16	16	16	16	16	16	16
Number of instruments	6	7	7	7	7	9	7	7	8	9	10	10	11
Hausman test for endogeneity	21.27	24.21	21.1	15.99	12.73	10.28	15.97	12.64	0.01	1.6	9.77	12.68	12.7
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.01)	(0.00)	(0.00)	(0.93)	(0.23)	(0.01)	(0.00)	(0.00)

Note: Dependent variable is the difference between regions' fiscal deficit outturns and fiscal deficit targets. The larger this difference is, the larger is the fiscal non-compliance margin. All variables defined in level differences. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively. Instrument set in all models includes the second and third lag of the explanatory variables. Standard errors allow for correlation within regions but not among regions (cluster robustness specification).

V. CONCLUSIONS AND POLICY DISCUSSION

This paper argues that in multi-level governance systems SNGs tend not to comply voluntarily with fiscal targets the larger are their compliance costs as well as the costs the CG is expected to incur in enforcing these targets. It proposes a conceptual framework in which these costs can be, first, political and thus determined by factors directly undermining CGs' condition to be elected and form stable government coalitions (for example, the national or regional electoral calendar and RGs' political representation, affiliation, and political autonomy preferences). Second, compliance and enforcement costs are also linked to intergovernmental fiscal frameworks –fiscal rules, tax and expenditure assignments, borrowing controls – and, more specifically, to how these arrangements shape perceptions among voters, creditors, and politicians of SNGs' fiscal autonomy and whether they rather than CGs should be held politically accountable for any disruption in regions' fiscal obligations in the event of non-compliance. Lack of fiscal autonomy shifts political accountability to CGs – thereby raising enforcement costs – while stronger rules and access to financial markets tips the political barometer towards RGs – thereby raising non-compliance costs.

In our framework involuntary fiscal non-compliance occurs when SNGs are unable to be fiscally compliant even when they are willing to be. This pattern becomes more likely in times of fiscal stress, defined as periods with large negative fiscal shocks. Fiscal stress times are also periods of increasing (domestic or supranational) political pressures on CGs' to ensure that fiscal consolidation targets at the general government level are met. To minimize the political costs such pressures entail, CGs tend to "pass the buck" of the adjustment down to RGs. This leads to ambitious but feasible center-imposed SNG fiscal targets that become infeasible once the fiscal shock materializes.

Applied to Spain's regions, this conceptual framework shows that fiscal non-compliance displays involuntary traits. We find fiscal non-compliance to be driven by factors partly outside the control of Spanish regions, namely common macroeconomic shocks and large adjustment efforts. The latter is arguably attributable to ambitious and rigid fiscal targets set by the center as a result of national and supranational pressures for general government consolidation referred to above.

Fiscal non-compliance among Spain's regions has also been shown to have a voluntary dimension, with fiscal rather than political arrangements playing a somewhat more prominent role. Fiscal deficit targets were missed more frequently and by wider margins the lower a region's autonomy to cut spending due to expenditure mandates and the larger the gap between the resources they can raise to deliver these mandates and their actual costs (that is, the larger VFIs are). Contrary to expectations, stronger and well-enforced fiscal rules have not made fiscal compliance more frequent or compliance margins wider. The analysis has also identified some tentative support for the disciplinary role of financial markets, with increases in regions' market financing costs reducing fiscal non-compliance margins. The frequencies and margins of fiscal non-compliance have also been shown to increase during election years. Other political factors expected to induce voluntary fiscal non-compliance such as political autonomy preferences, political alignment with the center, and political representation demonstrate ambiguous or non-significant regression estimates.

The main policy lesson in our analysis is that enhancing fiscal compliance in multi-level governance systems requires a more comprehensive assessment of intergovernmental fiscal arrangements that goes beyond strengthening formal rule-monitoring and enforcement procedures. This assessment should include not only rule-based fiscal frameworks but also (i) the assignment of revenue-raising and spending mandates and (ii) the burden-sharing of fiscal consolidation efforts and related setting of fiscal deficit targets. All that should be accompanied by a focus on making CG enforcement politically credible. In particular,

- **Rule-based frameworks.** To strengthen fiscal compliance at the national level, much emphasis has been placed on the need to bolster rule-based fiscal frameworks with formal enforcement procedures such as financial and administrative sanctions and automatic mechanisms that correct for past deviations from fiscal targets (Schaechter and others, 2012). That has been the case in Spain, particularly after the most recent reforms which, as discussed, introduced some of these procedures, aimed at tackling regional fiscal non-compliance. Looking ahead, there is still some scope to further strengthen existing procedures by making their activation more automatic and by tightening the legal requirements to publicly explain deviations from fiscal targets (Lledó, 2015). Such measures may come in particularly handy during election years when the political costs for the CG in enforcing targets are more salient and non-compliance has been shown to be more pervasive than in non-election years.
- *Intergovernmental fiscal responsibilities.* In line with previous work looking at the effectiveness of subnational fiscal rules (Kotia and Lledó, 2015), our analysis stresses the need to revisit and, possibly reduce, existing VFIs by ensuring SNG's revenue-raising and borrowing mandates are consistent with their spending mandates. These measures would help strengthen SNG fiscal autonomy and policy accountability, including for fiscal deficit targets. In doing so, it would make the enforcement of SNG fiscal deficit targets politically less costly and more credible.
- *Fiscal consolidation burden-sharing.* The negative impact of increases in fiscal targets on compliance margins warrants a review of how the burden of fiscal consolidation is shared across and within government levels and, correspondingly, how realistically fiscal deficit targets are set. SNG reputational costs for non-compliance with fiscal targets that are widely perceived as infeasible among voters, markets, and politicians are minimal, rendering even well-designed and well-implemented enforcement mechanisms toothless. In the case of Spain, this may call for the adoption of differentiated fiscal targets across regions to balance adjustment needs with existing fiscal capacity. In light of the impact of negative growth shocks on fiscal compliance, a review is also warranted of how appropriate is the technical capacity and procedures behind the formulation of macroeconomic forecasts informing central and subnational budgets and fiscal plans.

Two additional qualifications are worth mentioning as regards the normative proposals outlined above, that go beyond the scope of our paper:

- First, while the adoption of differentiated fiscal targets might be efficient when conditioning on a given fiscal starting position (that is, a given level of regional deficit and debt), in a more general, dynamic setting, moral hazard arguments dictate that SNGs may develop incentives not to conduct sound fiscal policies in good times. This might be the case when SNGs anticipate that additional room for fiscal maneuver is to be granted in crisis times to those governments with weaker initial fiscal positions. The strict implementation of fiscal rules is crucial for the development of ex-ante fiscal margins against adverse shocks, and to guarantee that the heterogeneity of structural fiscal positions among regions in normal times is minimized.
- Second, international experience shows that the occurrence of subnational fiscal crisis cannot be ruled out even in a setting in which national fiscal rules were fully credible and intergovernmental fiscal responsibilities are set at an *optimal* level. In the later regard, the recent Spanish experience indicates that granting to regions additional instruments to prevent liquidity crisis is warranted, so that pressure on the CG to financially support or bail out SNGs is reduced. In particular, the possibility of designing *rainy day* funds with regular contributions during periods of economic prosperity could be studied, along with the development of tools that guarantee the regular access of regions to financial markets even in periods of fiscal stress (Delgado-Téllez and others, 2016).

ANNEX

Table A-1. Variables Used in the Empirical Analysis

Variable	Description	Source
Fiscal Non-Compliance Margin (Official Assessment)	Difference between fiscal deficit targets and outcomes in percent of national GDP between 2003-7 and in percent of regional GDP from 2008-15	Ministry of Finance
Fiscal Non-Compliance Margin (Homogenous Assessment)	Difference between fiscal deficit targets (homogenous assesment) and outcomes in percent of regional GDP	Authors' own calculation
Fiscal deficit targets (Homogenous Assessment)	Equal to (Fiscal deficit targets (official assessment) X Nominal GDP (CG budget))/Regional GDP between 2003-07 and to fiscal deficit target (official assesment) from 2008-15	Authors' own calculation, Ministry of Finance (Nominal and Regional GDP)
Growth Forecast Errors	Real GDP growth outturn - Real GDP forecast	National Institute of Statistics (outturn), Ministry of Finance (forecast)
Region-National growth differential	Regional GDP growth - National GDP growth	National Institute of Statistics
Region-National inflation differential	Percent change in regional CPI growth - Percent change in national CPI	National Institute of Statistics
Fiscal Target Adjustment	Difference between fiscal deficit target (homogenous assesment) in the current and previous year	Authors' own calculation
Execution minus budgetary transfers (in regional GDP)	Transfers from CG (outturns) - Transfers from CG (budget)	Ministry of Finance and National Institute of Statistics
Region weight in national population	Ratio of regional to national population	National Institute of Statistics
Region weight in national GDP	Ratio of regional to national GDP	National Institute of Statistics
Region weight in national percapita GDP	Ratio of regional to national percapita GDP	National Institute of Statistics
Tax Autonomy	Ratio of regional own revenues (regulatory power) to total regional revenues	Authors' own calculation and Ministry of Finance
Social spending share in regional government spending	Ratio of regional spending in basic social services (health education and others) to total regional spending.	Valencia's Institute of Economic Research (IVIE) and Ministry of Finance
Investment share in total regional spending	Ratio of regional investment to total regional spending	Ministry of Finance
Vertical fiscal imbalances	[1 - Regional Own Revenues/Regional Own Spending], where own regional revenue (spending) corresponds to a region's total revenue (spending) minus transfers received by the CG and other public entitites (transfer paid to the CG and other public entitites)	Authors' own calculation
Fiscal Rule Index	Numerical fiscal rule strengthen index	European Commission
Fiscal Rule Index X Lagged non-compliance margin	Interactions between the lag of non-compliance margin and the Fiscal rule index	Authors' own calculation
Region Ratings	Average rating numerical index, taking into account three rating agencies: Fitch, S&P and Moody's	Authors' own calculation using Fitch, S&P, and Moody's databases.
Implicit interest rates	Regional interest payments in percent of end-of-year regional public debt stock	Ministry of Finance
Ratio of security to loans	Ratio of total outstanding government securities issued by the regions to outstanding loans from commercial banks	Bank of Spain
National election dummy	Dummy that equals 1 for the year of national parliament elections.	Webpages of the national and regional parliaments.
Regional election dummy	Dummy that equals 1 the year of regional parliament elections.	Webpages of the national and regional parliaments.
Party congruence dummy	Dummy that equals 1 if regional and national government led by same party or party coalition	Webpages of the national and regional parliaments.
Pro-autonomy party share	Percent of members of regional parliaments from regional/pro-autonomy parties	Webpages of the national and regional parliaments.
Regions' seats in national parliament	Share of members of the national parliament elected in each region	Webpages of the national and regional parliaments.

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