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

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# IMF Working Paper

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

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**On the Determinants of Fiscal Non-Compliance: An Empirical Analysis of Spain's Regions[1]**

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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). Fiscal non-compliance among Spain's regions increase with the size of growth forecast errors and fiscal adjustment needs, factors not fully under the control of regional governments. Non-compliance also tend to increase during election years, when vertical fiscal imbalances accentuate, and fiscal rules weaken. Fiscal non-compliance can be persistent, with stronger fiscal rules helping to reduce the observed inertia.

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## I. INTRODUCTION

The on-going process of fiscal consolidation in Europe in the aftermath of the global and Euro sovereign debt crisis 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 in the U.S. (Auerbach, 1999), among OECD countries (Forni and Momigliano, 2004), and in the EU (Strauch and others, 2009, Leal and others, 2008; Jonung and Larch, 2006). Optimistic fiscal forecasts have been attributed to difficulties in forecasting downturns and booms in real time and strategic reasons (Beetsma et, 2013). The other factor is 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). Institutional arrangements such as elections and the discretionary power of the Executive or the Ministry of Finance to set fiscal targets under the budget process has been found to generate biased forecasts (Frankel, 2011; Strauch and others, 2009, Giuriato and others, 2016).

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 fiscal events when SNG budget balance outturns are below corresponding targets. Our focus is to understand whether fiscal

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[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.

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 rules-based frameworks (Cordes and others, 2015, and Reuter, 2016). However, this 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 factors conducive to voluntary and involuntary fiscal non-compliance act mainly through political economy channels that jointly influence CGs' and SNGs' decisions to, respectively, enforce and comply with fiscal targets. Factors conducive to voluntary fiscal non-compliance act mainly by increasing CGs' political costs of enforcing and decreasing SNGs' costs of non-complying with SNG fiscal targets. Factors 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 it 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 determined by politics and political institutions at the supranational, national, and regional levels.

We construct an empirical model to test this framework. The empirical model identifies among a set of economic, institutional, and political factors, which ones are the most relevant to understand voluntary and involuntary fiscal non-compliance. Our 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) is an interesting case study for a number of reasons. Regional governments have gained significant political and fiscal autonomy over the last three decades through a process of decentralization (Leiceaga and others, 2016). During this period region have become increasingly accountable for the delivery of social services, in particular health and education.[7] The Spanish decentralization has been quite 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 regional governments have been subject to nominal budget balance targets over 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

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[7] Regions account for more than 2/3 of social spending, particularly in health and education (Lledo, 2015).

fiscal rules, regions have been subject to market-imposed discipline, as most regional government'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, 2010, 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 one of the main risks to Spain's fiscal consolidation process going forward (AIReF, 2016). Critical to our analysis, while widespread, fiscal non-compliance varied significantly across regions both in terms of frequency and margins.

Existing empirical literature has studied fiscal discipline among Spanish regions by assessing the determinants of fiscal deficit and public debt outturns.[8] This literature has mainly attempted to Analyses have typically looked at economic, institutional, and political factors affecting the size of fiscal outturns irrespective of the targets aimed at constraining them. Most analyses have identified positive links between lower tax autonomy and the size of regional fiscal deficits and public debts. Among institutional determinants, fiscal rules have not presented the expected constraining effect on regions fiscal deficit or debt outturns arguably as the result of inadequate monitoring and enforcement mechanisms. On the other hand, economic indicators of market-induced discipline in the form of higher borrowing costs and lower credit ratings have been associated with lower deficit and debt outturns. Other than elections, most political factors do not seem to have played a role on the size of fiscal outcomes. Lastly, 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 in what seems to indicate rigidities in spending allocations. A related literature has also looked at the determinants of budgetary deviations of the central government (Leal and Perez, 2011). To our knowledge Leal and López Laborda (2015) is the only empirical analysis looking at 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.

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[8] See among others Garcia-Milá and McGuire, 1993; Lago-Peñas, 2005; Argimón and Hernández de Cos, 2012; and Hernández de Cos and Pérez, 2013.

## 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 central government (CG) sets a fiscal target for the regional government knowing the regional government (RG) expected fiscal capacity. The fiscal target is ex-ante feasible. In the second stage, RG decides whether to comply or not with the fiscal target based on expectations about its fiscal capacity and on whether CG will enforce the fiscal target or not. In the third and final stage, the central government decides to enforce or not the target based on 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 regional government fiscal capacity and, therefore, the feasibility of the fiscal target.[9]

Voluntary and involuntary fiscal non-compliance may emerge as equilibrium outcomes under this game. Voluntary fiscal non-compliance occurs when RG is not willing to comply with the budget balance target regardless of whether CG is expected to enforce or not and even when fiscal capacity to comply with the target is highly expected. Under these circumstances, the shock can be assumed away, as the target is feasible both before and after the shock– i.e. target is both ex-ante and ex-post feasible – (Figure 1.b). Involuntary fiscal non-compliance occurs when RG is willing and ex-ante capable to comply, but does not have the ex-post fiscal capacity to do so (Figure 1.c).[10]

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

[10] Under an involuntary equilibrium, RGs must always be ex-ante capable of complying with fiscal targets (i.e., fiscal targets must be ex-ante feasible). Ex-ante unfeasible fiscal targets could not be credibly enforced, fostering involuntary non-compliance.

**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 not to comply→ CG may enforce or not→ Target ex-post feasible |
| **c. Involuntary Fiscal Non-Compliance** |
| CG chooses target → RG to comply → CG to enforce → Target ex-post unfeasible |

### 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 budget constraint problem arises from CG's lack of a credible no-bail out commitment that allows RGs to overspend in the expectation of an eventual bailout.[11]

Soft budget constraint and voluntary fiscal non-compliance are interconnected. The theoretical literature models soft budget constraints (SBC) 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 SBC game. In the first stage, the CG announces its intergovernmental transfer policy and sets RG budget balance target. In the second stage, RG does not believe on CG's transfer policy, expects a bailout, overspends, and thus deviates from the budget balance target. In the third stage, CG fulfils RG expectation by bailing it out thus not enforcing the breach in the budget balance target.[12] 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**

| **Sequencing** |
| --- |
| CG sets transfer/target → RG  expects bailout/overspends/ do not comply → CG bails out/ do not to enforce |

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 CG must find it optimal not to enforce the fiscal target and

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[11] A bailout is broadly defined to account for not only resources granted to subnational governments 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 change in the allocation of formula grants or simply unconditional gap filling transfers. A bailout may include situations where SNGs borrowing restrictions are lifted allowing them to borrow to finance above-the-target fiscal deficit levels.

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

to provide additional resources to RG in stage 3. It will do so if the economic and political costs of denying additional resources (see below), thus enforcing the target, exceed the bailout/non-enforcement costs in the form of administrative, legal or financial penalties, as well as 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/non-enforcement strategy is ex-post optimal. The second necessary condition is that RG, knowing that 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 (i.e., *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 (e.g., loss of fiscal autonomy, unpopular reforms). At the same time, by construction, an overspending optimal strategy cannot exist in the absence of an ex-post optimal bailout. In short, voluntary fiscal non-compliance to occur requires factors that raise both bailout and overspending incentives.

### D. Bailout and Overspending Incentives

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

- **Economic Motives**. Benevolent CGs that care for the welfare of the whole nation would choose to bailout 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 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 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 the bailout economic benefits. Pecuniary costs are expected to increase with the size of the region: the larger the region, the larger are the cost of the public goods and services it provides. The impact of region size on bailout economic benefits, on the other hand, is ambiguous and depends on assumptions about the "extensive" and "intensive" nature of the spillover. The larger the region, the larger is the "extensive" nature of the spillover: the larger are the number of regions and individuals benefitting from the public goods and services provided for that region, the larger are the bailout economic benefits (Wildasin, 1997). On the other hand, the smaller the region, the larger is the "intensive" nature of the spillover: the larger is 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 national legislature* thus influential for government stability and the passage of critical legislation (Porto and Sanguinetti, 2001). Similar motives may also lead CGs to bailout regions with which they are *politically aligned*—i.e., regions where government incumbents are from the same party or coalition of CG incumbents (Grossman, 1994).[13] CG may also offer bailouts to avoid secessions and ensure national unity (Leite-Monteiro and Sato, 2003). As a result, 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 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 bailout expectations and increasing overspending incentives. Rodden and others (2002) 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, 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 vertical fiscal imbalances. The capacity of financial markets to discipline RGs is undermined by regulatory incentives and lax prudential requirements to 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 applied based on clear and objective criteria (e.g., ability to service debt). Lastly, fiscal rules applied to RGs are often poorly designed and weakly enforced.

Common-pool financing incentivizes 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 as RGs will only bear 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 in such transfers to finance subnational public goods and services exacerbates overspending.[14]

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[13] 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 CGs follows a swing strategy, whereby CG will attempt to target regions that have previously voted for CG party or governing coalition by narrow margins (Dixit and Londregan, 1996). In some cases, such narrow margins may have not been sufficient for CG politically affiliated regional partners to win the election and form a government.

[14] See Ter-Minassian (2015) for a recent review.

### 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, both 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 the region economic structure (e.g., a bust in housing prices would affect regions where pre-shock median property values had been higher) or their exposure to fiscal risks (e.g., 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.[15]

- **_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).[16] This is particularly the case for the so-called Stability and Convergence Programs of Europe's Stability and Growth Pact (SGP). In such programs, fiscal targets need to show ex-ante compliance with SGP fiscal rules. Demanding but feasible general government targets in decentralized fiscal frameworks are, on turn, often reflected in demanding 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).[17] 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 CG accountable for GG fiscal non-compliance.

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[15] 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).

[16] The feasibility of targets could be gauged relative to a government fiscal capacity and fiscal effort history in previous adjustments.

[17] 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 from their own taxes. CGs may also raise subnational fiscal targets to build buffers for possible non-compliance at different subsectors, RGs included.

### III. THE SPANISH FISCAL GOVERNANCE FRAMEWORK

Numerical fiscal targets at the regional level go back more than two decades in Spain. They have been 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 (BCS) agreed with the central government after the publication of Spain's Convergence Program in 1992. The 1995 revision in Spain's Convergence Program reviewed the commitments under the BCS, setting new ceilings for the period 1995-97. These ceilings were once again changed with the approval of the first Stability and Growth Program in 1998. 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, i.e., all regions—and local governments—were obliged to post a budget outturn that is in balance or 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.

- ***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.[18] Fiscal deficit ceilings were also set in percent of regional rather than national GDP. The 2006 BSL was extended to local governments and included a non-bail out clause. It also introduced monitoring and enforcement mechanisms whereby the Ministry of Economy and Finance was required to submit a report to the government before the 1st October each year on the degree of compliance during the year and deviations from the initial forecast. If a risk of non-compliance is detected, a warning could be made to the government agent responsible. 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. Lastly, it stipulated that, if a deviation from targets prompts a breach of the Stability and Growth Pact, 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 for initiating any debt operations.

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[18] 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 regional government on the Fiscal and Financial Policy Council.

- ***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 rule monitoring and enforcement mechanisms to prevent, correct, and penalize deviations from fiscal rules and targets introduced in the 2006 BSL. Monitoring and enforcement was 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 (AIReF). Fiscal deficit limits continued to be measured in percent of regional GDP.

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

### A. Testable Hypotheses

The proposed multi-level governance framework can help understand fiscal non-compliance among Spain's regions. It can do so by helping identify to what extent regional fiscal non-compliance is voluntary or not. In the case of voluntary fiscal non-compliance, it can be the result of bailout or overspending incentives driven by welfare or political motives. The framework can also look at the role of 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 borderline feasible fiscal targets and adjustment plans. Table 1 summarizes some testable hypothesis that are relevant in the Spanish context.

### Table 1. Fiscal Non-Compliance Testable Hypotheses

| Channels | Testable Hypothesis |
|---|---|
| **I) Voluntary** | |
| *Spillovers* | Fiscal non-compliance increases/decreases with the size of regions |
| *Fiscal Autonomy* | Fiscal non-compliance decreases when regional financial arrangements increase regions' tax autonomy |
| | Fiscal non-compliance declines in regions with greater tax autonomy |
| | Fiscal non-compliance declines in regions with greater expenditure autonomy |
| *Market discipline* | Fiscal non-compliance is larger/smaller in regions with worse ratings and |
| | Fiscal non-compliance increases when acess to soft sources of market financing increases |
| *Fiscal Rules* | Fiscal non-compliance is smaller as fiscal rules strentgthen |
| *Political Representation* | Fiscal non-compliance is larger in regions with larger representation in national parliaments |
| | Fiscal non-compliance is larger in regions when regional governments are part of national government coalition |
| *Elections* | Fiscal non-compliance is larger during election years for all regional governments |
| *Political Autonomy* | Fiscal non-compliance is larger in regions with stronger preferences for political autonomy |
| **II) Involuntary** | |
| *Shocks* | Fiscal non-compliance increases in all regions as a result of common/nationwide shocks |
| | Fiscal non-compliance increases in regions exposed to region-specific negative shocks |
| *Adjustment Needs* | Fiscal non-compliance is larger among regions where initial adjustment needs are larger |

## B. Empirical Methodology

We assess these alternative hypotheses by looking at the frequencies and magnitude of non-compliance events. To gather some stylized facts, we start by looking at non-compliance empirical distributions and margins 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 non-compliance margins. Our sample includes 16 out of 17 Spanish regions over the period 2002-2015.[19] 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 (MHAP) to the Economic and Financial Council (CPFF). [20] The CPFF comprises the Minister of Finance and public finance authorities of each region. While MHAP 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 percentage 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.

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

Non-compliance margins are measured in percent of regional GDP. Fiscal non-compliance events were officially measured 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 onwards. To allow non-compliance margins to be compared over the years and across regions according to an homogenous metric that at the same time reflects regions' different fiscal capacities, we have re-calculated non-compliance events in percentage of regional GDP throughout the analysis period using the latest nominal GDP series.[21] We measure non-compliance margin on a homogenous basis in two steps: first, we uncover 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

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[19] Spain has 17 regions (*Comunidades Autónomas*). Nevertheless, two different centre-periphery financial arrangements are in place. A majority of regions, fifteen, 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*) whereby 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.

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

[21] 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).

divide the difference between nominal deficit outturns and targets by the latest nominal regional GDP series.

A dynamic panel regression analysis is used to look at 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 General Method of Moments (FD-GMM) estimator in order to allow for possible inertial patterns in non-compliance as well as endogeneity of dependent variables. The econometric analysis excludes the Basque Country, where, as discussed in footnote 12, lower government levels rather than regional governments are responsible for the provision of public services without necessarily being accountable for the compliance with regional targets. Equation 2 below summarizes the specification.

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

Where $f^e = f - f^*$, and $INVOL$ and $VOL$ are vectors with factors associated with involuntary and voluntary non-compliance events (hereby referred to as voluntary and involuntary factors), respectively; $\eta$ and $\rho$ are, respectively, country and time fixed effects, $\alpha$ governs the degree of persistence of RG fiscal compliance/non-compliance, and $\gamma$ and $\delta$ measure the relative contribution of involuntary and voluntary factors on fiscal compliance/non-compliance. In line with the empirical literature, we have also introduced the fiscal non-compliance margin at the central government level to control for interaction effects ( $f^{e,cg}$ ).[22]

Our estimation strategy aims at identifying operative economic, institutional, and political factors associated with voluntary and involuntary patterns of fiscal non-compliance. This 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 to a baseline that controls for lagged fiscal non-compliance and the more limited number of factors associated with involuntary compliance patterns.

## C.  Facts and Factors

Fiscal non-compliance between 2003-15 varied markedly across regions both in terms of 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 two thirds of the years

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[22] Large fiscal deficit at the central government level have been found to encourage public deficits at the regional government level (Foremny, 2014, for EU countries, and Molina-Parra and Martínez-López, 2015, for the case of Spain) through so-called copycat or yardstick effects (Besley and Case, 1995), whereby RGs have an incentive to mimic CGs's fiscal policy to signal competency among voters. Under copycat effects, we should, therefore, expect RG and CG fiscal non-compliances to be positively correlated. Central and regional fiscal non-compliance margins should be negatively correlated, on the other hand, if reputational effects are linked to compliance with general government fiscal targets strictly enforced by supranational institutions or financial markets. The latter should be particularly relevant in the case of European Union countries under the corrective arm of the Stability and Growth Pact such as post-crisis Spain.

during the analysis periods. This is a small group of three countries: Canary Islands, Galicia and Madrid. Then there is a large group that has not complied up to two thirds of the years. This is a group very heterogeneous both demographically, economically, and historically. It includes Asturias, Castilla and León, Extremadura, Basque Country, Andalucía, Aragón, Navarra, Rioja and Castilla la Mancha. Lastly, the Balearic Islands, Cantabria, Murcia, Valencia and Catalonia have missed their fiscal targets more than two thirds of the total 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.

Regions' fiscal non-compliance increased markedly in the post-crisis years. The number of non-compliant regions and their corresponding non-compliance margins have 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 3. Regions' Non-Compliance with Fiscal Deficit Targets**
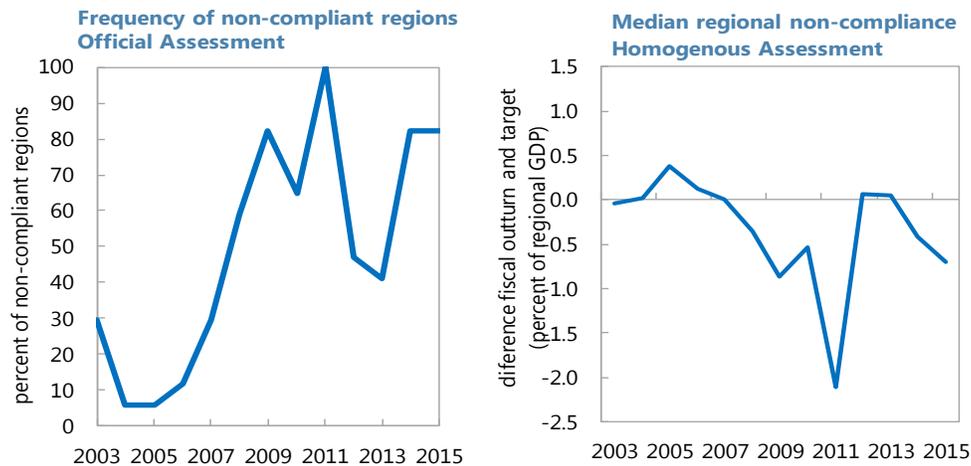


Source: Ministry of Finance and authors' calculations

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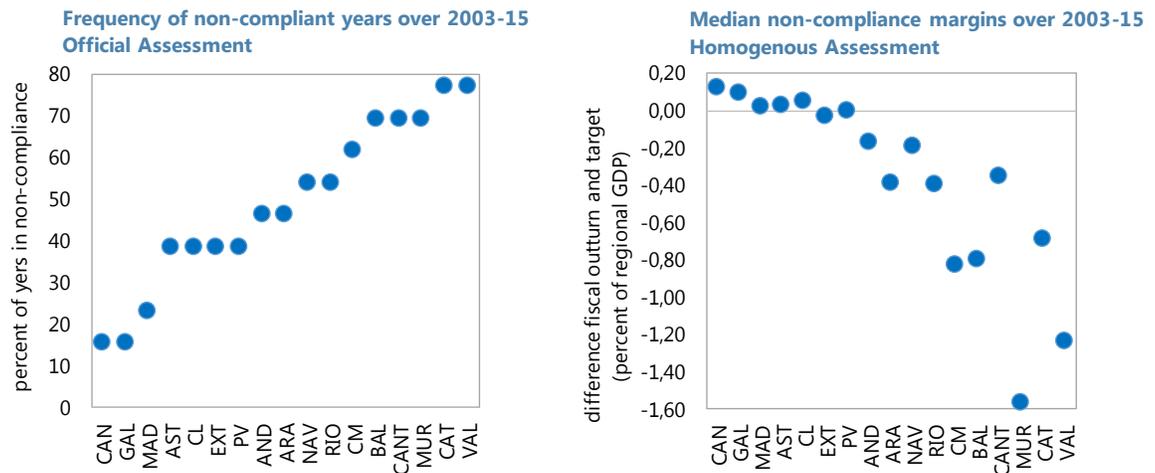


Source: Ministry of Finance and authors' calculations
Note: CAN=Canary Islands, GAL=Galicia, MAD=Madrid, AST=Asturias, CL= Castilla and Leon;
EXT=Extremadura, AND= Andalusia, ARA= Aragon, BASC =Basque Country, NAV=Navarra, RIO=Rioja;
CLM=Castilla La Mancha, BAL = Balearic Island, CANT=Cantabria, MUR=Murcia, CAT=Catalonia, VAL = Valencia

**Involuntary Channels and other Baseline Regressors**

Fiscal non-compliance, ***common shocks, and forecast errors*** are strongly linked. Common shocks are proxied by observed deviations between nominal (national) GDP growth outturns and forecasts set in annual budget laws (forecast errors).[23] 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.[24] Regression results seem to indicate that such positive correlations may indeed reflect the hypothesized causal link between forecast errors and involuntary fiscal non-compliance since regression estimates are positive and statistically significant under almost all estimated models (Table 2).

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[23] 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, and strategic motives (e.g., 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 can be ruled out and technical errors minimized to the extent that national growth forecasts are set by the center where forecasting capacity and data quality is expected to be on average above that of regions.

[24] 2010, 2015 (widespread non-compliance and positive forecast error) were exceptions.

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



Median non-compliance margin v.s. Forecast errors

Frequency of non-compliant regions v.s. Forecast errors
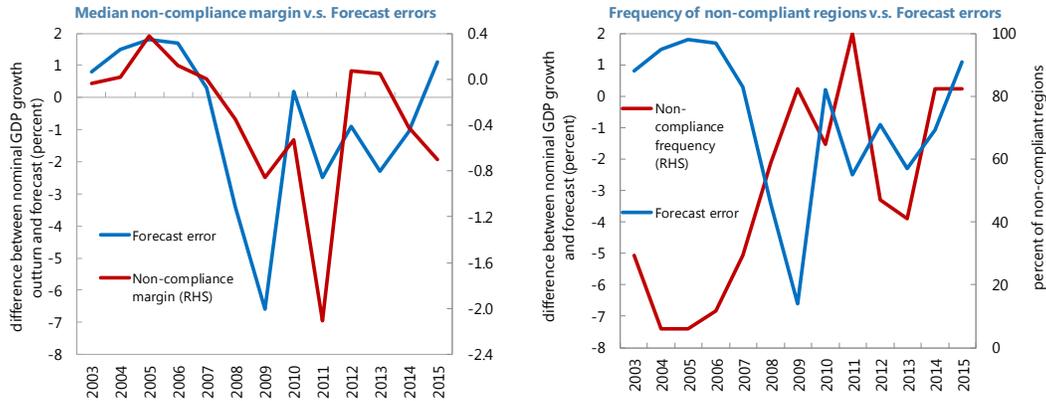
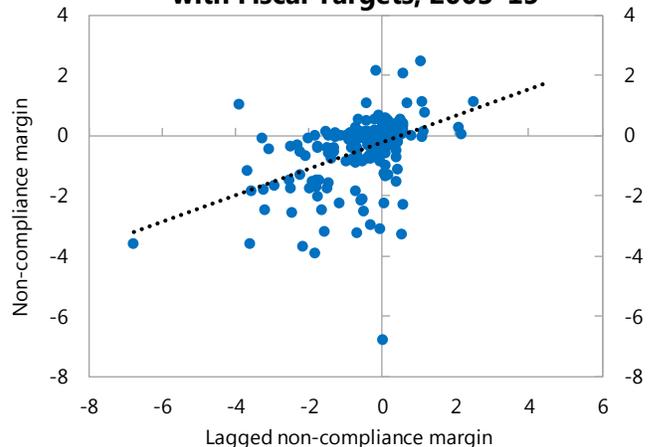Source: Ministry of Finance and authors' calculations

On the other hand, ***idiosyncratic shocks*** do not seem to play a role in determining fiscal non-compliance. Measured by differences between regions' real GDP growth, CPI and house price inflation and corresponding national averages, negative idiosyncratic shocks are expected to increase fiscal non-compliance (Figure 6). Contrary to expected, non-compliance was either equally (real GDP growth) or more prevalent (CPI and house inflation) among cases were idiosyncratic shocks were positive. Table 2, however, shows no significant impact of idiosyncratic shocks to non-compliance margins. As discussed below, this may be explained by the relatively limited tax autonomy observed in most regions and, more specifically, by that 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, therefore, to meet their fiscal deficit targets.

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



(Frequency of non-compliant cases over 2003-15)
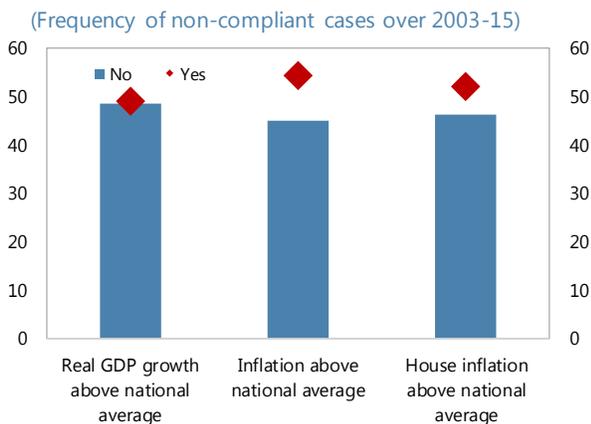
Source: Ministry of Finance and authors'

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



Source: Ministry of Finance and authors' calculations
Note: 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), fiscal non-compliance margins appear to be 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. Table 2 confirms such inertial patterns under some specifications, but in all of them.

Fiscal non-compliance tend to increase with the required ***adjustment effort***. Adjustment efforts are measured by differences between the fiscal deficit target in year t and the fiscal deficit outturn t-1, both in percent of regional GDP, a simple proxy of the required nominal adjustment. Adjustment efforts have been quite heterogenous 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, large adjustment efforts are found to have a negative impact on fiscal compliance margins (Table 2 model 2). In fact, if we replicate all the models including the fiscal effort as a core variable, it would have a negative relation with the dependent variable in almost all the models and the coefficient would be significant.

***Central-government fiscal non-compliance*** tends to discourage rather than promote fiscal non-compliance at the regional level. This is a relatively robust result with negative and statistically significant coefficients in most estimated models (Table 2). As discussed in footnote 22, results corroborate the hypothesis that fiscal compliance patterns at central and subnational levels are dictated by the need to comply with fiscal targets set at the general government level, which, in the case of Spain, have been prominent during the post-crisis period.

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 in percentage of the regional GDP. Non-compliance margins for a RG that receives more transfers than budgeted should be smaller. Therefore, we expected a positive coefficient for this variable. But, when we analyze the models' estimations including always this variable we obtain an ambiguous outcome, with only two models presenting a positive significant relation of the gap-filling transfers and the non-compliance margin. In fact, in table 2 the regression estimates for those specific models are negative and non-significant.

**Voluntary Channels**

The impact of regions' *size* on fiscal non-compliance is not clear cut. Regions' size is measured according to the weight of a region's population, GDP, and GDP per capita in their corresponding national figures. On one hand, fiscal non-compliance tends to be more frequent among larger regions (i.e., towards the end of the distribution) in all three measures, particularly with respect to GDP per capita (Figure 8). On the other hand, fiscal non-compliance margins are shown to decline as regional GDP and regional per capita income increases (Table 2, models 5 to 7).

**Figure 8. Regions' Size and Non-Compliance with Fiscal Deficit Targets**
*(Frequency of non-compliant cases over 2003-15 by quartiles)*
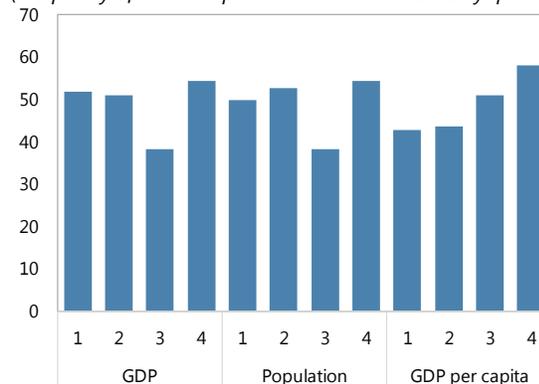


Source: Ministry of Finance, Ministry of Public Works and Transport, National Institute of Statistics, and authors' calculations.

Insufficient *fiscal autonomy* seems to play a role in determining fiscal non-compliance. To assess that, we estimate measures of tax and expenditure autonomy (responsibilities) as well as of the gap between the two (i.e., vertical fiscal imbalances, VFI). Tax autonomy is defined as the share of RG's total tax revenues over which RGs have some degree of regulatory autonomy.[25] The larger this share, the greater a region's tax autonomy or fiscal co-responsibility, as often referred to in the Spanish empirical literature. We use alternative measures to assess regions' expenditure autonomy or lack thereof. 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, the capacity of cutting spending decreases when the share of basic services over total expenditure of the regions raises. With that in mind and to proxy for the lack of capacity to cut spending, we compute the shares of regions' expenditures on essential public services (health, education, and social protection) and public investment in their total spending.[26] Lastly, following Eyraud and Lusinyan (2013), we estimate VFI indicators for each region.[27] As expected, non-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 non-compliance margins (Table 2, model 7). On the other hand, fiscal non-compliance frequencies are not necessarily the largest among regions in the top expenditure autonomy and VFI quartiles (i.e., regions with greater social mandates and less own resources to fund them).[28] As expected, fiscal

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[25] 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.

[26] Regions account for ⅖ of total general government spending on essential public services and more than 90 percent when it comes to health in education (Perez Garcia and others, 2015), but about 5 percent with respect to social protection.

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

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

non-compliance margins increase as a larger share regions' expenditures is allocated to social services and  public investment (Table 2, model 8) . Finally, larger vertical fiscal imbalances entailed higher non-compliance margins, as shown in table 2 (model 9).

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

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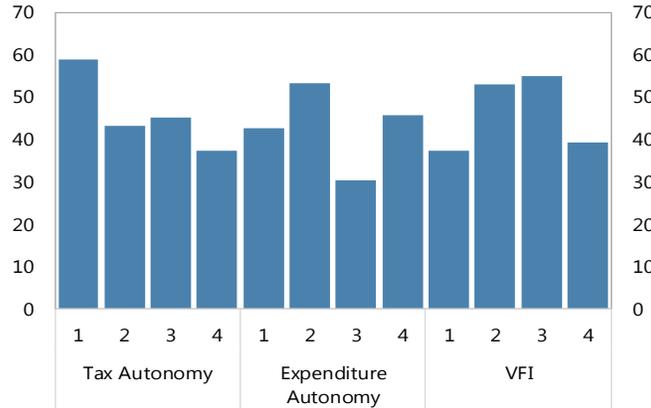


Source: Ministry of Finance and authors' calculations
Note: Tax autonomy is defined as the ratio between RGs own tax revenue to total tax revenues. Expenditure autonomy is the regions' share of general government spending on essential services.

Stronger *rules* seem to have helped to improve fiscal compliance. 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 (EC) fiscal rule strength index. Apart from a mild deterioration in the overall strength index following the enactment of the second BSL, fiscal rule strengthening has trended upwards after 2011 (Figure 10). Stronger rules, however, have not always led to improvements in fiscal compliance, partly due to delays in bringing them into force. This has been particularly the case in 2011 and 2014 when the number of non-compliant regions increased despite noticeable legal improvements in fiscal rule enforcement (adoption of corrective measures in the 2011 BSL) and greater media visibility (reflecting the operationalization of AIReF in 2014). Regression results provide evidence that

**Figure 10. Fiscal Non-Compliance and Fiscal Rules**
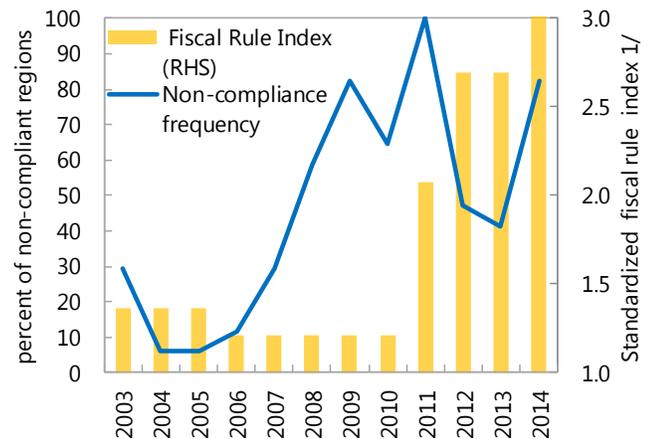


Source: Ministry of Finance and European Commission
Notes: Standardized fiscal rule index is computed by the European Commission. It is the weighted average of the fiscal rule strength index over all rules in force at any given years. Weights are given by the coverage of general government finances for a given rule.

on average stronger fiscal rules led to a decrease in fiscal non-compliance margins directly and indirectly by helping reduce inertial patterns (Table 2, models 9 and 10).

Evidence supporting the disciplinary role of ***financial markets*** in reinforcing fiscal compliance is mixed. Financial markets seem to affect non-compliance frequencies through complementary channels. On one hand, fiscal non-compliance frequencies are larger among regions with lower (poorer) ***credit ratings***, 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 11).[29] On the other, fiscal non-compliance becomes less prevalent among regions where ***reliance on market-issued securities vis a vis softer bank loans*** is greater, as regions internalize the impact fiscal non-compliance would have on credit ratings and market-financing costs. Our regression analysis of fiscal non-compliance margins contradicts or does not corroborate these results: lower (poorer) credit ratings reduce rather than increase non-compliance margins and greater access to securities has no statistically significant impact on margins (Table 2, model 11). With respect to credit ratings, one possible explanation is that rather than picking up the direct contemporaneous impact that they have on fiscal non-compliance through unanticipated increases in debt-servicing costs, estimated margin coefficients are reflecting the disciplinary impact of past poor credit ratings or downgrades.

**Figure 11. Financial Markets and Regions' Non-Compliance with Fiscal Targets**

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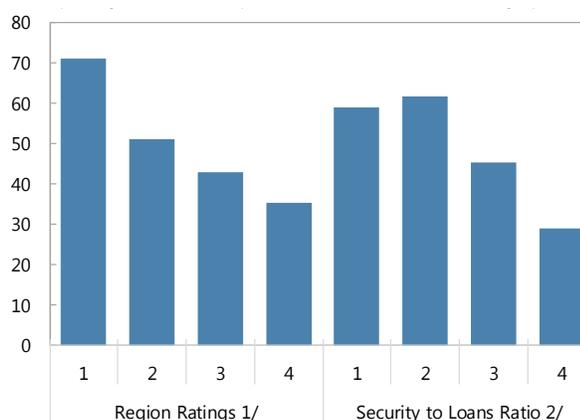


Source: Ministry of Finance and authors' calculations.
1/ Regional governments' credit ratings.
2/ Ratio of regions' public debt in government securities to banking loans, percent.

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***. In line with the empirical literature on fiscal discipline for Spain, fiscal non-compliance is more frequent and margins wider in election years (Figure 12, Table 2 models 12 and 13). Interestingly, more so in national than in regional elections years, possibly corroborating the stronger political costs central government face while enforcing targets in these years. 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

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[29] Although one cannot rule out the possibility of reverse causality with fiscal non-compliance leading to poorer credit ratings.

politically aligned to the center are shown to be near 1.5 times more likely to deviate from targets than non-aligned regions.[30] Nevertheless, the estimation results show the opposite outcomes: regions aligned with the center presented greater compliance margins. **Pro-autonomy** regions, defined by the percent of members of parliament from regional pro-autonomy parties – expected to deviate from center-imposed fiscal targets – turned to be only marginally likely to deviate from fiscal targets than regions with weaker pro-autonomy preferences, with deviations presenting no statistically significant margins. Lastly, regions with the largest **political representation in national parliament** are the most frequent non-compliers, albeit not necessarily by statically significant larger margins.

**Figure 12. Politics and Regions' Non-Compliance with Fiscal Deficit Targets**

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



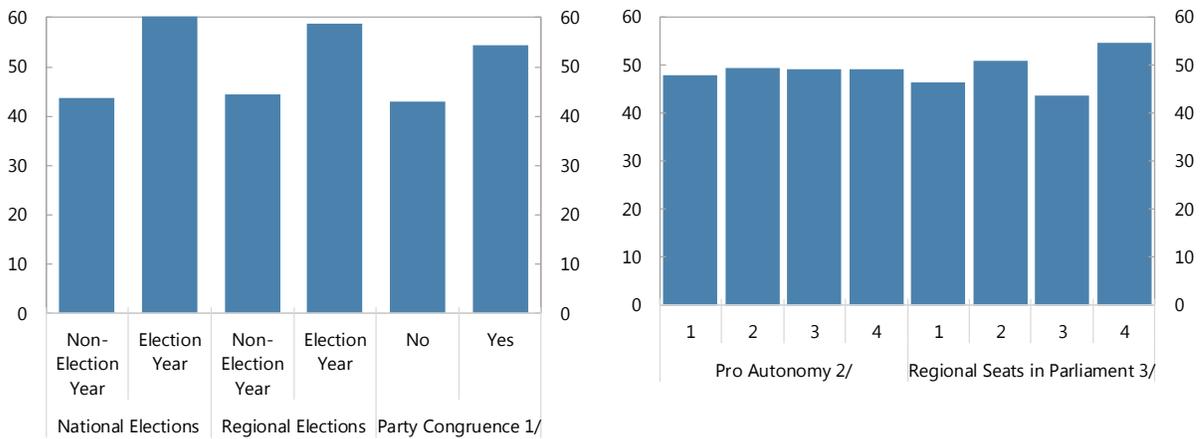Source: Ministry of Finance and authors' calculations.
1/ Regional government led by same party or government coalition leading central government
2/ Percent of members of regional parliaments from regional/pro-autonomy parties
3/ Seats in national parliament (lower house) allocated to each region

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[30] 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.

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

Table 2 : First-Difference GMM Estimates of Fiscal Non-Compliance Margins

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (13) | (14) | (15) | (16) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lagged non-compliance margin | 0.16* | 0.00 | 0.07 | 0.17* | 0.14 | 0.09 | 0.08 | 0.55* | -0.26 | 0.06 | 1.70* | -0.05 | -0.37*** | 0.17 | -0.14 | -0.33* |
| Growth forecast errors | 0.32*** | -0.01 | 0.19 | 0.56*** | 0.26* | 0.68*** | 0.66** | 0.34* | 0.30** | 0.73*** | 0.59*** | 0.21** | -0.06 | 0.44*** | 0.19 | 0.35** |
| Region-National growth differential | 0.31 | -2.53* | -1.51 | 1.48* | 0.20 | 1.20 | 1.04 | 0.63 | 1.92*** | 1.89** | 2.13** | 1.20** | 0.49 | 0.35 | 0.87 | 1.38 |
| Region-National inflation differential | 0.79 | -1.10 | -1.30 | -0.05 | 0.28 | 2.87* | 2.08 | -0.32 | -1.69 | 2.07 | 0.17 | 1.64 | -0.67 | 3.08*** | -0.94 | |
| Central government non-compliance margin | -0.16*** | 0.08 | -0.12 | -0.38** | -0.12 | -0.46*** | -0.44** | -0.16 | -0.16 | -0.49*** | -0.39*** | -0.13 | 0.15 | -0.28*** | -0.05 | -0.23*** |
| Adjustment effort | | -0.87** | -0.80** | | | | | | | | | | | | | -0.18 |
| Execution minus budgetary transfers (in regional GDP) | | | -0.54 | -0.62 | | | | | | | | | | | | |
| Region weight in national population | | | | | -13.43 | | | | | | | | | | | |
| Region weight in national GDP | | | | | | 12.68 | | | | | | | | | | 1.57 |
| Region weight in national percapita GDP | | | | | | | 0.79** | | | | | | | | | |
| Tax autonomy | | | | | | | | | 0.05 | | | | | | | |
| Social spending share in regional government spending | | | | | | | | | -0.43* | | | | | | | |
| Investment share in total regional spending | | | | | | | | | -0.26** | | | | | | | |
| Vertical fiscal imbalances | | | | | | | | | -0.14*** | | | | | | | -0.15*** |
| Fiscal Rule Index | | | | | | | | | | 0.09** | 0.06 | | | | | -0.17 |
| Fiscal Rule Index X Lagged non-compliance margin | | | | | | | | | | | -0.06* | | | | | |
| Region Ratings | | | | | | | | | | | | -0.09** | | | | -0.35 |
| Lagged Region Ratings | | | | | | | | | | | | | 1.26*** | | | |
| Lagged Implicit interest rates | | | | | | | | | | | | | 0.04 | | | |
| Ratio of security to loans | | | | | | | | | | | | 0.00 | 0.00 | | | |
| National election dummy | | | | | | | | | | | | | | -0.82*** | | |
| Regional election dummy | | | | | | | | | | | | | | | -0.82*** | -0.22 |
| Party congruence dummy | | | | | | | | | | | | | | 0.27 | 0.57 | -0.27 |
| Pro-autonomy party share | | | | | | | | | | | | | | | 0.03 | |
| Regions' seats in national parliament | | | | | | | | | | | | | | -0.86 | -9.22 | |
| Number of observations | 176 | 176 | 160 | 160 | 176 | 176 | 176 | 160 | 160 | 160 | 160 | 163 | 161 | 176 | 176 | 147 |
| Number of regions | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 |
| Hansen | 0.19 | 0.81 | 0.59 | 0.24 | 0.18 | 0.43 | 0.28 | 0.28 | 0.43 | 0.27 | 0.48 | 0.12 | 0.17 | 0.26 | 0.56 | 0.47 |
| m1 | 0.01 | 0.13 | 0.13 | 0.06 | 0.09 | 0.16 | 0.10 | 0.04 | 0.02 | 0.06 | 0.03 | 0.12 | 0.20 | 0.02 | 0.16 | 0.08 |
| m2 | 0.22 | 0.52 | 0.42 | 0.95 | 0.64 | 0.57 | 0.64 | 0.25 | 0.91 | 0.67 | 0.82 | 0.86 | 0.21 | 0.08 | 0.53 | 0.99 |

Note: Dependent variable is the difference between regions' fiscal deficit outturns and fiscal deficit targets. The smaller (less positive or more negative) this difference is, the larger is the fiscal non-compliance margin. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.  Hansen is the p-value of the test of the over-identifying restrictions (see Sargan, 1958; Hansen, 1982), which is asymptotically distributed chi square under the null hypothesis that these moment conditions are valid. m1 and m2 are the p-values of serial correlation tests of order 1 and 2, respectively, using residuals in first differences.

The baseline model includes as instrumental variable the second lag and third lag of the dependent variable. We have also estimated the models taking into account only the second lag but there were no significant differences. The models also consider the following exogenous variables: dummies for each year, the dummy for the year of regional elections, the party congruence dummy and the pro-autonomy party share.

In the table we have also included the Sargan-Hansen test p-value as well as the p-value of the serial autocorrelation of order 1 and 2 (m1 and m2). The null hypothesis of the Sargan-Hansen Test is the joint validity of the moment conditions (identifying restrictions). This means that the instrumental variables are valid instruments because they are uncorrelated with the error term. Therefore if the p-value is higher than 0.05, the instruments are supposed to be valid. The m2 results are essential to the validity of the model. In all the models, we use the second lag as an instrumental variable. However, this instrumental variable is only valid if there is no correlation between the contemporaneous error term and the variable. The m2 hypothesis is that there is no correlation with the second lag. There is no evidence to refuse the hypothesis and therefore we can conclude that the second lag of the dependent variable is a reasonable instrumental variable.

## V. CONCLUSIONS

This paper has argued that fiscal non-compliance has many faces. In particular, it claimed that deviations from center-imposed fiscal targets might occur voluntarily or involuntarily driven by economic, institutional, and political factors. It then proposed a framework to identify the nature of fiscal non-compliance on the basis of underlying determinants. The framework delivered testable hypothesis, which were empirically assessed in the case of Spain's regions. The ensuing analysis helped unveil some of the key facts and potential factors influencing Spain's regions to comply or not with their fiscal deficit targets.

Fiscal non-compliance among Spain's regions has been shown to have both involuntary and voluntary straits. This paper found some evidence that fiscal non-compliance has been involuntary to the extent that it has been driven by factors partly outside the control of Spanish regions, namely common macroeconomic shocks and center-imposed fiscal targets and adjustment efforts. The paper also identified a number of determinants expected to trigger voluntary fiscal non-compliance. Fiscal deficit targets have been shown to be missed more frequently and by wider margins the larger are the responsibilities of regions vis-a-vis the central government in delivering essential public services, the lower is their tax autonomy, and the larger is the gap between the two (i.e., the larger are vertical fiscal imbalances). Stronger and well-enforced fiscal rules and, to some extent, reliance on financial markets have shown to make fiscal non-compliance less likely or reduce non-compliance margins. Fiscal non-compliance frequencies and margins unambiguously increased during election. Other factors expected to induce voluntary fiscal non-compliance such as regions' size, political autonomy preferences, political alignment with the center, and political representation have shown ambiguous or non-significant regression estimates.

The econometric analysis has provided some evidence on the persistency of fiscal non-compliance. Interestingly, such inertial patterns cease to exist once variables capturing adjustment needs, vertical fiscal imbalances, the strength of fiscal rules, and financial market's credit ratings are controlled for. The adoption of stronger fiscal rules has explicitly shown to reduce fiscal non-compliance inertial patterns. The econometric analysis shows robust negative correlation between central and regional fiscal non-compliance patterns that deserves further investigation.

A key conclusion of the paper is that fiscal non-compliance may be driven by political motives, which can be either contained or exacerbated by fiscal rules and, to some extent, financial markets. The empirical analysis of Spain's regions has shown voluntary fiscal non-compliance to be mainly driven by factors that increase CG's political costs of enforcing SNG fiscal targets and, by immediate implication, reduce SNG political costs of deviating from such targets. Lack of subnational fiscal autonomy does that to the extent that CGs are hold accountable for any disruption in public services or debt service payments that may arise as the result of strictly enforced subnational fiscal targets. The analysis also shows RG fiscal compliance to be particularly weak during election periods, when, in principle, strict CG enforcement should weaken CG's political support from enforced regions. Stronger fiscal rules, by increasing SNGs' financial or reputational costs of fiscal non-compliance, may help defray some of CG's political costs thus helping improve SNG fiscal compliance. That said,

strong enforcement mechanisms may not be sufficient and may even backfire if enforced fiscal targets or numerical limits are not chosen in accordance with regions' fiscal capacity. The negative impact of large adjustment needs on the fiscal compliance of Spain's regions supports this last point.

Our analysis offers a number of potential policy implications. Future work, in the context of Spain and other fiscally decentralized countries, should take a closer look at them to help formulate clear policy recommendations. Some areas worth consideration are:

- ***Common shocks and fiscal forecasting***. The impact of negative growth shocks on fiscal compliance calls for a closer look at how fiscal forecasts are formulated both at the central and subnational level. It will be particularly important to identify whether the source of forecast bias are technical ( e.g. macro-fiscal forecasting methods, timeliness and quality of data available to formulate these forecasts), procedural (e.g. information sharing across subnational governments and between central and subnational governments , restrictions on the timing and methodology of forecast), strategic (e.g. impact of rules, elections, and other political institutions on fiscal forecasts), reversible (e.g. role of  fiscal councils in enhancing the realism of forecasts) . Furthermore, one basic problem for the compliance is the lack of regional GDP forecasting when defining regional targets. The unanimity of the targets for all regions make it very hard for some of them to comply with the targets, because they are not adapted to the particular economic situation of each region.

- ***Fiscal autonomy and spending mandates***. A closer look at the differences of vertical fiscal imbalances across subnational governments and over time and more refined measures of expenditure and revenue autonomy would be important to check whether spending mandates are compatible with regions' available resources and are not unduly constraining subnational governments control of their own budgets.

- ***Financial markets and fiscal compliance***. The ambiguous role of financial markets as deterrent and as enabler of fiscal non-compliance at the regional level deserves further scrutiny.

- ***Fiscal rules, automatic enforcement mechanisms, and elections***. As discussed above, the positive impact of stronger fiscal rules on fiscal compliance in the regression analysis calls for a closer look at what specific elements in the design of the rules have mattered. For instance, was it really the case that improvements in enforcement mechanisms reduced fiscal non-compliance? It would also be interesting to further explore the interaction between political variables, including proximity to elections, and key fiscal rule elements such as automatic enforcement mechanisms to better assess the robustness of fiscal rules to political circumstances.

- ***Adjustment needs and fiscal targets***. As highlighted above, the negative impact of adjustment needs on fiscal compliance margins and its apparent role in explaining persistency in fiscal non-compliance patterns warrants a closer look at how to share the burden of adjustment across and within government levels. In the case of Spain, it also reinforces the call for adopting differentiated fiscal targets across regions so as to balance adjustment needs and capacity.

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