



# Report on the macroeconomic forecasts in the Autonomous Regions' budgets for 2016

## Executive summary

**AIReF endorses as likely the forecasts for 2016 of all the Autonomous Regions that have submitted forecasts that are different from Spain's forecasts.** Page 6

**AIReF reiterates the importance of including a comparison with other independent forecasts and a more explicit explanation of the methodology, assumptions and parameters in the forecasts.** All the Autonomous Regions must comply with these requirements under EU legislation. Page 10

**AIReF stresses the importance of making the GDP and employment variables homogeneous.** All the Autonomous Regions that do not adopt in their future budgets identical forecasts to those included in the State General Budget should provide at least like-for-like GDP and employment forecasts. Page 10

The mission of AIReF, the Independent Authority for Fiscal Responsibility, is to ensure strict compliance with the principles of budgetary stability and financial sustainability contained in article 135 of the Spanish Constitution.

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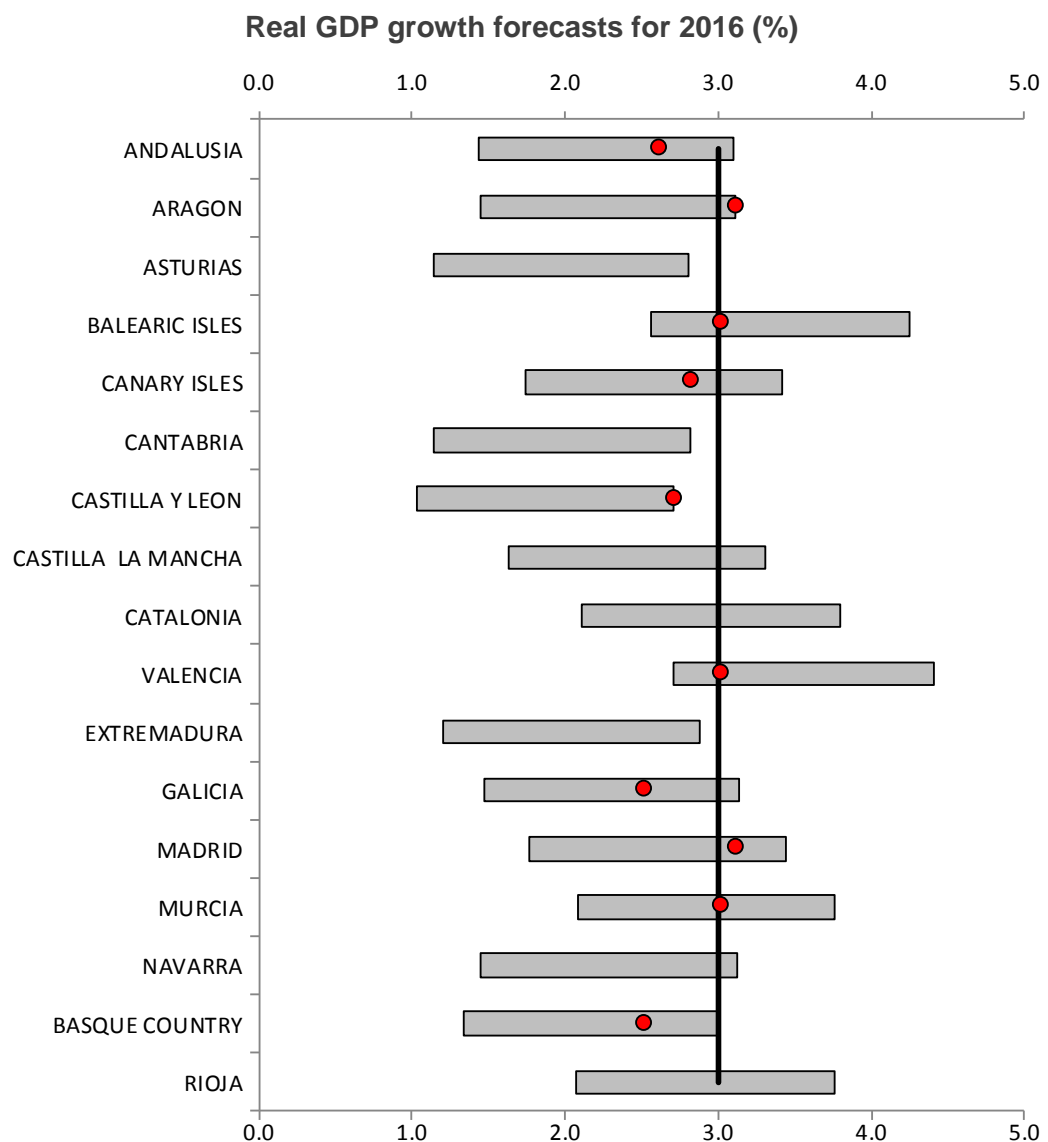
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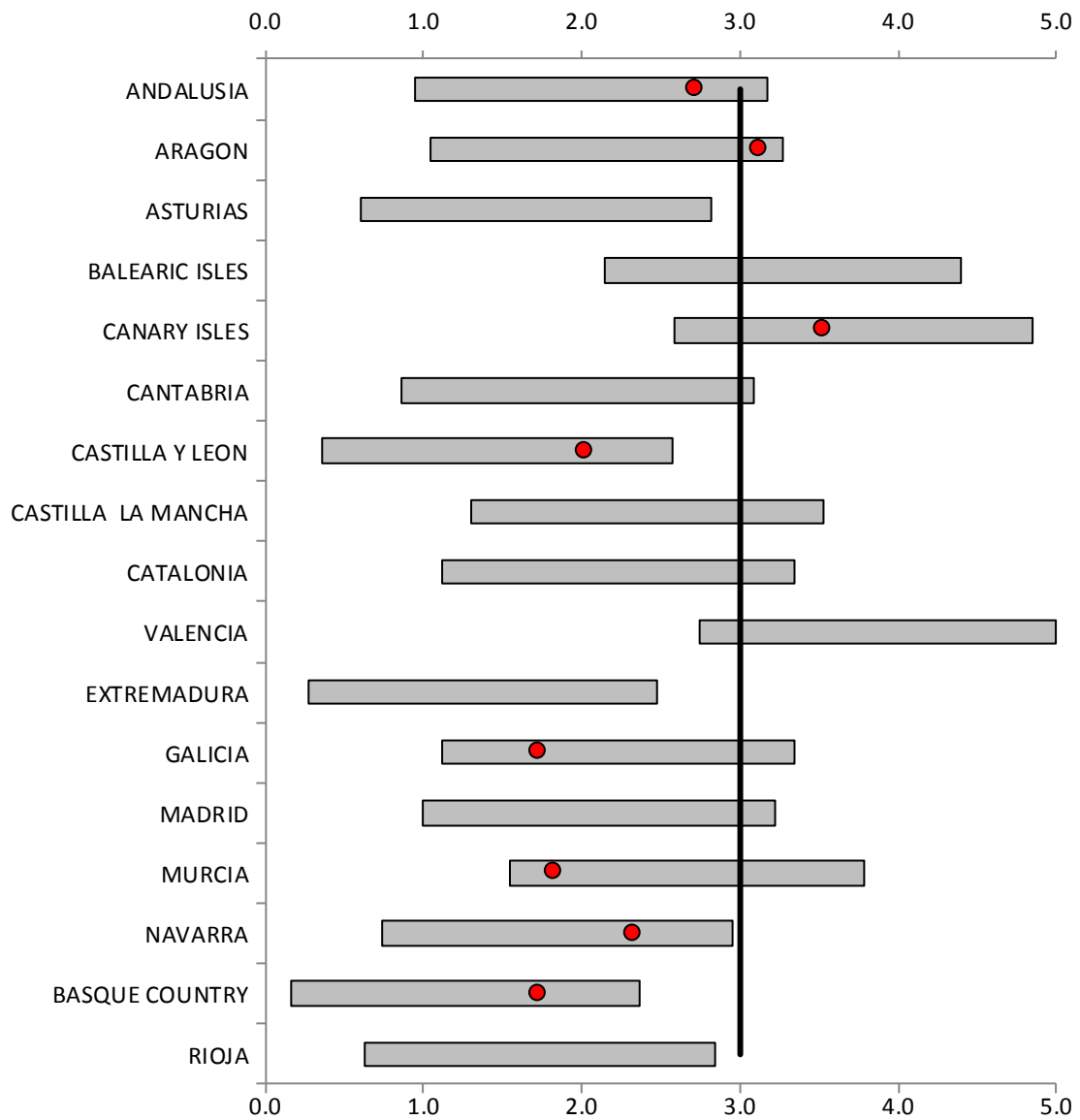
### METHODOLOGICAL ANNEX



Source: AIReF

The red dots are the forecasts submitted by the Autonomous Regions (ARs) and the black line the forecast for Spain included in the 2016 State General Budget (SGB). The grey bands represent the 68% probability confidence intervals estimated by AIReF.

### Employment growth forecasts for 2016 (%)



Source: AIReF

The red dots are the forecasts submitted by the ARs and the black line is the forecast for Spain included in the 2016 SGB. The grey bands represent the 68% probability interval estimated by AIReF.

## I. Introduction

**AIReF has to prepare a mandatory report on the macroeconomic forecasts incorporated into the draft budgets of the General Government sector. The report must indicate whether or not it endorses these forecasts** in compliance with articles 14 of its Organic Law and 12 of its Statute. However, should any government entity incorporate into or apply to its budgetary plans a set of forecasts that correspond exactly to those incorporated by another government entity within whose territorial scope it falls, if AIReF has already endorsed those forecasts it is not necessary for a specific report to be published. In such event, it will be sufficient to expressly state that this is the case in the draft budgetary plan itself. On 31<sup>st</sup> July, AIReF issued and published on its website its report endorsing the macroeconomic forecasts contained in the draft State General Budgets for 2016 (SGB 2016).

**The Autonomous Regions that have published macroeconomic forecasts that do not exactly correspond to the forecasts for Spain in the SGB 2016 are: Andalusia, Balearic Isles, Basque Country, Canary Isles, Castilla León, Galicia, Madrid, Murcia, Navarra and Valencia.**

**The Autonomous Regions of Aragón, Asturias, Cantabria, Castilla La Mancha, Catalonia, Extremadura and La Rioja have not submitted their own updated forecasts.**

**The macroeconomic forecasts must satisfy certain requirements applicable to the budgetary frameworks of EU Member States**, as specified in article 4 of COUNCIL DIRECTIVE 2011/85/EU, of 8<sup>th</sup> November 2011. Article 14 of the Organic Law states that AIReF's report on macroeconomic forecasts should assess the degree to which the forecasts meet these requirements. This report interprets that in the case of the Autonomous Regions these requirements are that forecasts shall be:

- Realistic and use the most up-to-date information
- Be based on the most likely macrofiscal scenario or on a more prudent scenario
- Be compared with the forecasts of other independent bodies
- Include the methodology, assumptions and relevant parameters underpinning the forecasts

**This report compares the 2016 macroeconomic forecasts for GDP and/or employment made by the Autonomous Regions against those included in the SGB 2016 for the entire domestic economy in Spain, estimates the confidence level of the forecasts and analyses whether they contain any bias.** However, it does not present an ex-post assessment of the forecasts from previous years.

**A bias will be deemed to exist in the forecast of a variable if the variable deviates by more than one standard deviation from the forecasts in the statistical models used to contrast it.** This is a statistical forecasting model that incorporates all the relevant information on economic indicators in addition to the expected growth rates for Spain.

**The criteria to endorse the GDP and employment forecasts** of those Autonomous Regions that have made a forecast that differs from the forecast contained in the SGB 2016 are as follows:

- Forecasts will not be endorsed if they have an upward bias in both variables
- They will be endorsed as unlikely if they have a bias in one of the two variables
- They will be endorsed as likely if they do not have biases, and
- They will be endorsed as prudent if they do not have an upward bias against the forecasts contained in the SGB 2016

**The approach used in this report is explained in detail in the Annex on Methodology.**

## II. Endorsement of the macroeconomic forecasts made by the Autonomous Regions for 2016 and guidelines on good practices

**AIReF endorses as likely the macroeconomic forecasts that the Autonomous Regions have incorporated in their 2016 budgets.** None of the GDP and employment forecasts submitted by the ARs have been identified by the model used for checking purposes as biased according to table 1.

**Table 1. Bias and assessment of forecasts for 2016**

	GDP		EMPLOYMENT	
	Bias	ARs Forecast	Bias	ARs Forecast
ANDALUSIA	NO	HIGH	NO	HIGH
ARAGON	NO	HIGH	NO	HIGH
BALEARIC ISLES	NO	LOW	...	...
CANARY ISLES	NO	HIGH	NO	LOW
CASTILLA Y LEON	NO	HIGH	NO	LOW
VALENCIA	NO	LOW	...	...
GALICIA	NO	HIGH	NO	LOW
MADRID	NO	HIGH	...	...
MURCIA	NO	HIGH	NO	LOW
NAVARRA	NO	HIGH	NO	HIGH
BASQUE COUNTRY	NO	HIGH	NO	HIGH

**The GDP forecasts of the Balearic Isles and Valencia are prudent, as are the employment forecasts submitted by the Canary Isles, Galicia and Murcia.**

**The GDP forecasts of the other ARs tend to be slightly optimistic, as shown in table 2 and in graphs panel 1.**

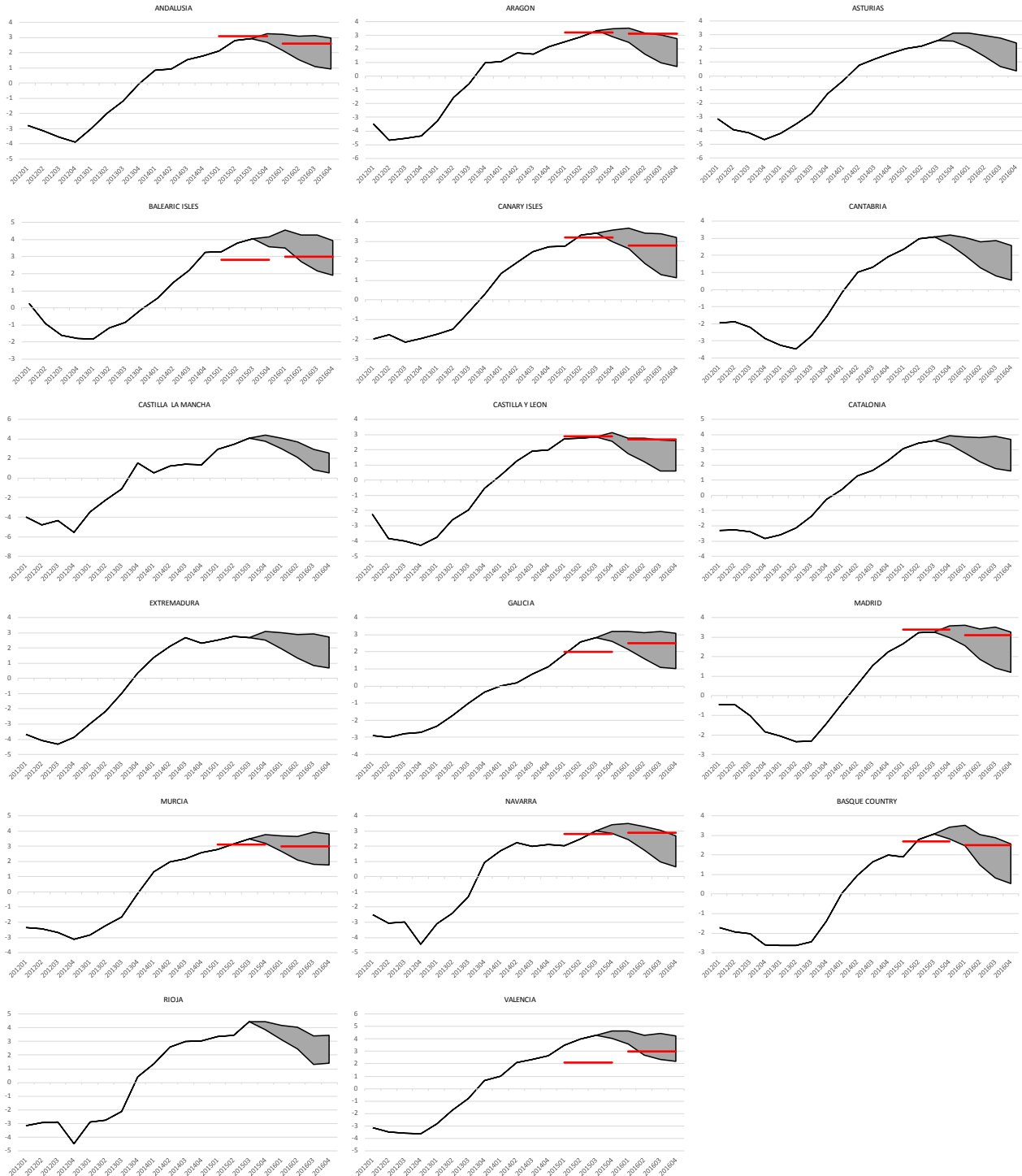
**Table 2. Real GDP growth forecast**

GDP	2015			2016		
	Lower Limit	Upper Limit	ARs Forecast	Lower Limit	Upper Limit	ARs Forecast
ANDALUSIA	2,5	2,9	3,1	1,4	3,1	2,6
ARAGON	2,8	3,2	3,2	1,4	3,1	3,1
ASTURIAS	2,2	2,6	NA	1,1	2,8	NA
BALEARIC ISLES	3,5	4,0	2,8	2,6	4,3	3,0
CANARY ISLES	3,0	3,4	3,2	1,7	3,4	2,8
CANTABRIA	2,6	3,1	NA	1,1	2,8	NA
CASTILLA Y LEON	2,6	3,0	2,9	1,0	2,7	2,7
CASTILLA LA MANCHA	3,4	3,8	NP	1,6	3,3	NP
CATALONIA	3,2	3,7	NP	2,1	3,8	NP
VALENCIA	3,8	4,2	2,1	2,7	4,4	3,0
EXTREMADURA	2,5	2,9	NA	1,2	2,9	NA
GALICIA	2,3	2,8	2,0	1,5	3,1	2,5
MADRID	2,9	3,3	3,4	1,8	3,4	3,1
MURCIA	3,0	3,4	3,1	2,1	3,8	3,0
NAVARRA	2,4	2,9	2,8	1,5	3,1	2,9
BASQUE COUNTRY	2,5	2,9	2,7	1,3	3,0	2,5
RIOJA	3,6	4,1	NA	2,1	3,8	NA

NA: Not available NP: Not presented

## PANEL 1: GDP GROWTH FORECASTS

### Y-on-Y variation



The horizontal lines represent the forecasts of the different ARs.

Source: AIReF

The employment forecasts of Andalusia, Aragón, Castilla y León, Navarra and the Basque Country also tend to be slightly optimistic, as shown in table 3 and graphs panel 2.

**Table 3. Employment growth forecast**

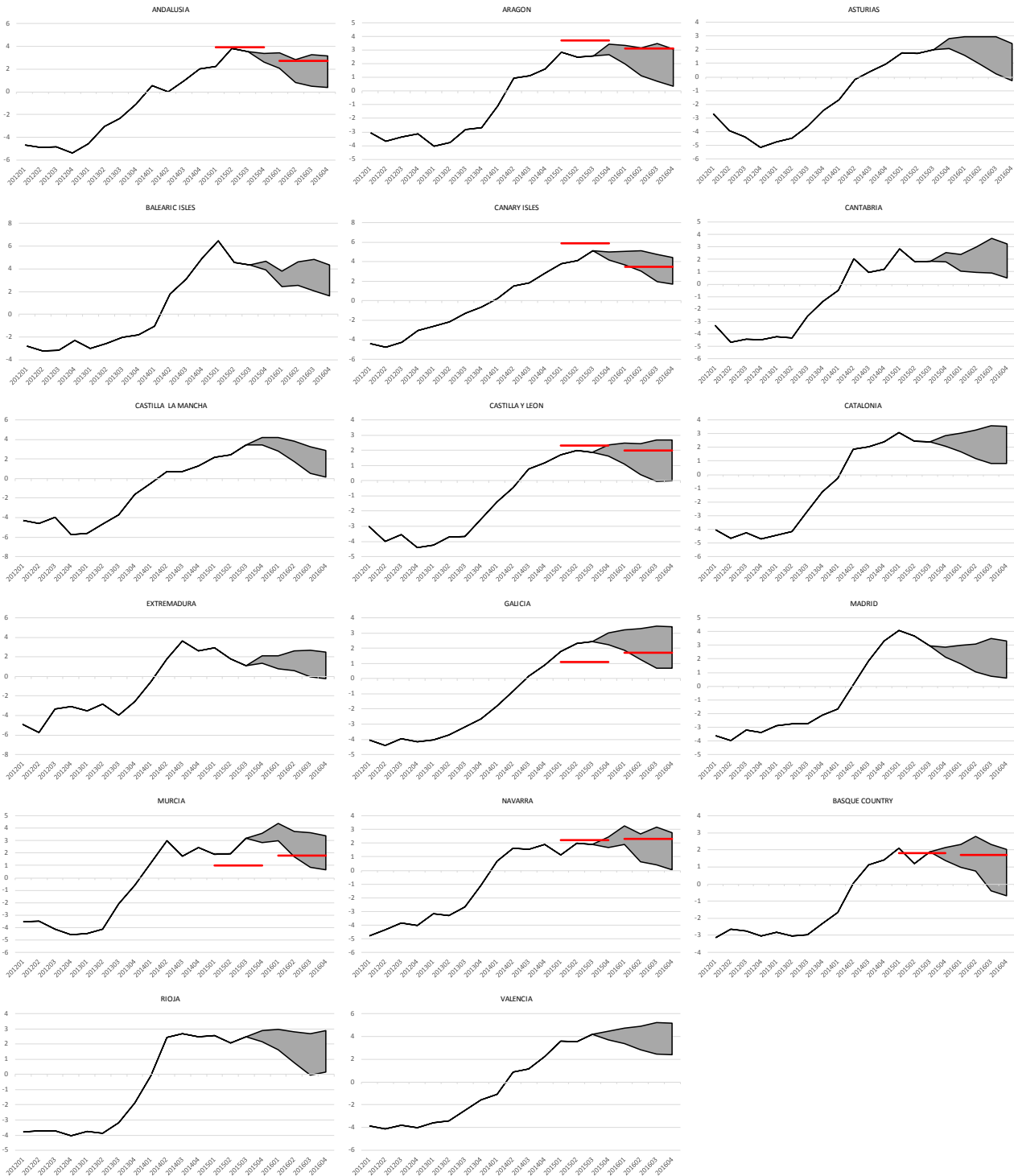
Employment	2015			2016		
	Lower Limit	Upper Limit	ARs Forecast	Lower Limit	Upper Limit	ARs Forecast
ANDALUSIA	2,9	3,4	3,9	0,9	3,2	2,7
ARAGON	2,5	3,0	3,7	1,0	3,3	3,1
ASTURIAS	1,7	2,2	NA	0,6	2,8	NA
BALEARIC ISLES	4,6	5,2	NA	2,1	4,4	NA
CANARY ISLES	4,2	4,7	5,9	2,6	4,8	3,5
CANTABRIA	1,9	2,4	NA	0,9	3,1	NA
CASTILLA Y LEON	1,6	2,1	2,3	0,4	2,6	2,0
CASTILLA LA MANCHA	2,7	3,2	NP	1,3	3,5	NP
CATALONIA	2,4	2,9	NP	1,1	3,3	NP
VALENCIA	3,6	4,1	NA	2,7	5,0	NA
EXTREMADURA	1,6	2,1	NA	0,3	2,5	NA
GALICIA	2,0	2,5	1,1	1,1	3,3	1,7
MADRID	3,1	3,6	NA	1,0	3,2	NA
MURCIA	2,3	2,8	1,0	1,6	3,8	1,8
NAVARRA	1,5	2,0	2,2	0,7	3,0	2,3
BASQUE COUNTRY	1,5	2,0	1,8	0,2	2,4	1,7
RIOJA	2,2	2,7	NA	0,6	2,8	NA

NA: Not available NP: Not presented



## GRAPHS PANEL 2: EMPLOYMENT GROWTH FORECASTS

### Y-on-Y variation



The horizontal lines represent the forecasts of the different ARs.

Source: AIReF

All the forecasts use the latest available information, but none of them specifies the methodology, assumptions and parameters used in sufficient detail. The Balearic Isles, Castilla y León and Galicia do not give comparisons against other forecasts.

Advice on good practices:

**AIReF reiterates the importance of including a comparison with other independent forecasts and a more explicit explanation of the methodology, assumptions and parameters used in the forecasts. All the Autonomous Regions must comply with these requirements under EU legislation.**

**AIReF stresses the importance of making the GDP and employment variables homogeneous. All the ARs that do not adopt in their future budgets identical forecasts to those included in the State General Budget should provide at least like-for-like GDP and employment forecasts.**

## METHODOLOGICAL ANNEX

The quantitative methodology used in the prediction model combines three kinds of statistical data available for regional analysis: monthly data on short-term economic indicators broken down to a territorial level, annual data compiled in national accounting terms by Spain's Regional Accounts (SRA) and finally, the estimates for Spain as a whole published in Spain's National Quarterly Accounts (CNTE). This combines the latest and most up-to-date short-term indicators, the structural information provided by the SRA and the national reference to ensure the consistency of the individual regional estimates.

In order to integrate these sources of information that differ in both the compilation procedures and their publishing timelines (monthly, quarterly and annual), a three-stage procedure has been designed that allows their integration in an econometrically sound and operative manner; see Cuevas et al (2013) and Cuevas and Quilis (2015).

The first stage consists of extrapolating short-term regional indicators by using their ARIMA univariate representations. The extrapolated series are corrected for seasonal and calendar effects using the same methodology as the CNTE. Finally, the short-term indications are merged using factorial analysis that gives rise to a synthetic quarterly index for each Autonomous Region.

The short-term relevance and responsiveness of the indicators is integrated in the second stage, in the form of the synthetic index estimated in the previous stage, with the structural soundness of the SRA estimates in three main dimensions:

- Consistency, for each region, between the macroeconomic aggregate (GDP, employment) and its component parts
- Coherence, for each region, between the estimates of their operations in nominal terms (at current prices) and in terms of volume (chain-linked indices)
- Coherence for the regions as a whole, between individual estimates and the total domestic estimate (transversal consistency)

Benchmarking methods (temporal disaggregation) allows quarterly aggregate series (GDP, employment) to be estimated for each Autonomous Region using the short-term information condensed in the regional high-frequency synthetic indices, giving rise to time series that are consistent with SRA annual series.

Lastly, transversal coherence is ensured in the third stage between the quarterly estimates of the macroeconomic aggregate (GDP, employment) calculated for each Autonomous Region and the nationwide information provided by the CNTE and the forecasts for these variables for Spain as a whole calculated by AIReF. Once again, benchmarking techniques are used (multivariate temporal disaggregation) to guarantee transversal consistency without losing the temporal consistency attained in the previous stage.

In the specific case of GDP, temporal consistency requires giving consideration to the non-additive character of the chain-linked volume figures used by Spain's National Accounts. This procedure means that the links have to be obtained for each Autonomous Region and for Spain as a whole (quarterly and annual flows assessed at average prices for the previous year), the benchmarking procedures have to be applied to these variables and the volume indices have to be reconstructed using the chain-linking formulae used by CNTE.

## References

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