Eurozone GDP forecasting with microdata:

The role of conditional conservatism*

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This draft: October 2022

Acknowledgements: An earlier version of this paper was presented and discussed in an internal seminar at *Universidad de Castilla-La Mancha* (Cuenca-SP, 2022) as well as at the World Finance Conference (Turin-IT, 2022). We appreciate all the comments and suggestions from attendees.

* Funding: Grant PID2020-114563GB-I00 by MCIN/AEI/10.13039/501100011033.

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Abstract

This paper focuses on the ability of aggregate income to forecast GDP growth in the Eurozone and, particularly, on the role that special items play in propitiating it by incorporating conditional conservatism. We contribute to the previous literature by discussing the ability of aggregate micro data to forecast real GDP growth in a major economic area other than the US. Moreover, as the Eurozone can be considered an economic region predominantly of civil law, we show evidence in a context where conditional conservatism is expected to be less important. The results support the previous evidence found in the US but tempered by the smaller effect of conditional conservatism on Eurozone microdata.

Keywords: Aggregate Earnings; Aggregate Special Items; GDP Growth; Asymmetric Timelines; Micro-to-macro accounting research.

JEL classification: E00, E01, E32, E60, M41.

I. Introduction

Micro-to-macro research encompasses an emerging financial literature concerned with the macroeconomic information content of corporate disclosures. This literature has grown to address the questions of whether, when, and how firm-level financial information can be used to explain and predict aggregate-level economic activity behaviour. In a recent work, Chen and Ogneva (2021) make an exhaustive compilation of the literature covering micro-to-macro research.

Related literature analyses the information contained in aggregate earnings about a wide spectrum of macroeconomic variables. Among others are inflation (Sadka and Sadka, 2009; Shivakumar and Urcan, 2017), financial markets and the cost of capital (Kothari *et al.*, 2006; Cready and Gurun, 2010; Patatoukas, 2014; Konchitchki and Patatoukas, 2014b; Kothari, *et al.*, 2014; He and Hu, 2014; Arif and Lee 2014; Ball and Shadka, 2015; Safdar, 2018; Kim *et al.*, 2020; Barth *et al.*, 2020), monetary policy (Crawley, 2015; Gallo *et al.*, 2016), unemployment (Rouxelin *et al.*, 2018; Hann *et al.*, 2021), and GDP growth.

In the GDP growth context, Konchitchki and Patatoukas (2014a) found that aggregate earnings contain macroeconomic information as an ex-ante proxy for corporate profits, a component of GDP, which consequently helps to predict future nominal GDP growth. From this pioneering paper, the research that delves into this association has intensified (Wang *et al.*, 2015; Yoshinaga, 2016; Nallareddy and Ogneva, 2017; Ball *et al.*, 2019; Bailey and Lai, 2020; Lalwani and Chakraborty, 2020; Sumiyana, 2020)

More recently, micro-to-macro research has focused on the role of accounting conditional conservatism on the relationship between aggregate accounting earnings and

GDP growth.[1] Conditional conservatism, one of the two concretions of accounting conservatism (Fullana *et al.*, 2021), refers to the higher degree of prudence required to recognize good news (gains) versus bad news (loses) (Basu, 1997).[2] From this, we infer that aggregate accounting earnings reflect bad economic news in a timelier manner than good news, i.e., timelines are asymmetric.

Gaertner *et al.* (2020) and Abdalla and Carabias (2022) argue that bad news is collected in a timely manner as expected losses in special items (inventory write-downs, asset impairments and restructuring charges): a component of accounting earnings. This fact permits them to disaggregate accounting earnings into two components: the one affected by conditional conservatism (special items) and the rest alien to it, and to test the role of unconditional conservatism to predict GPD growth. They conclude that aggregate special items convey more information about future real GDP growth than aggregate earnings before special items because the former transmits news about future economic information in a timelier manner.[3]

Both Gaertner *et al.* (2020) and Abdalla and Carabias (2022) are focused on the US market. For a non-US market, we only find the more recent work of Zhang and Farger (2022) focused on this issue. Their results support previous evidence found in the US market for Australia. Moreover, they show evidence of a greater relation between special items and GDP growth after International Financial Reporting Standards (IFRS) adoption

[1] Previously, Crawley (2015) and Laurion and Patatoukas (2016) analyse the effect of conditional conservatism on contemporary macroeconomic indicators.

[2] Do and Nabar (2019) also discuss the effect on the GDP (per capita) growth of the other consequence of prudent financial reporting, the unconditional conservatism, which implies the systematic persistence to underestimate the net assets. They find inconclusive results.

[3] Other authors, as Dutta and Patatoukas (2017) and Hann *et al.* (2021), also find that information contained in special items stands out as one of the main sources of information from aggregate earnings.

by Australian firms. Interestingly, no paper is focused on the relationship between earnings (special items) and GDP growth in an economic area with an accounting system other than a market-oriented common-law system.

In this sense, we find several arguments in previous literature supporting the hypothesis of larger conditional conservatism in common-law-based countries than in code-law-based countries: the larger litigation risk faced by managers and auditors (Ball *et al.*, 2000); the lower smoothing of earnings (Leuz *et al.*, 2003); or the more real adjusted net assets valuation (Pope and Walker, 2003). Therefore, the robustness of the evidence found in the US in countries with a code-law-based accounting system remains an open question.

This paper is focused on the ability of aggregate earnings to forecast Eurozone GDP growth, and particularly on the role in it of aggregate special items as proxy of conditional conservatism. The Eurozone is the third largest economic area in the world by nominal GDP after the US and China. Thus, we contribute to the previous literature by analysing for the first time the ability of aggregate earnings (special items) to forecast GDP growth in a major economic area other than the US, providing new international evidence. Moreover, as all nineteen countries that compose the Eurozone except Ireland have a planning-oriented code-law accounting system, we can consider it an economic region predominantly of civil law, and consequently, the evidence shown in this paper constitutes the first found in a code-law context.

The rest of this paper is structured as follows. In Section II, we describe the methodology, including the econometric framework, the computation of the variables and the sources of data. Section III is dedicated to showing and discussing the main results and their robustness. In Section IV, we expand our analysis to examine the role of aggregate earnings information in professional forecasting. Section V is dedicated to

deeply examining the interaction between aggregate earnings information and macroeconomic news. Section 6 summarises the main conclusions.

II. Methodology

A. Econometric model

Following Abdalla and Carabias (2022), our empirical analysis is focused on analysing the explanatory power of aggregate earnings and aggregate special items on future real GDP behaviour. Therefore, we decompose aggregate earnings into aggregate special items and its complementary, aggregate earnings before special items. This permits us to conduct the first step of our analysis based on a time series regression of the following econometric linear model, in which we add two control variables to the variables of interest as regressors:

$$rgdp_{q+n} = \alpha + \beta_1 ebspi_q + \beta_2 spi_q + \lambda_1 rgdp_q^{adv} + \lambda_2 inf_q + \varepsilon_{q+n} \qquad (1)$$

where:

$rgdp_{q+n}$ is the real GDP growth rate for quarter q + n;

$ebspi_q$ is the value of the aggregate earnings before special items for quarter q;

spi_q is the aggregate special items for quarter q;

$rgdp_q^{adv}$ is the advance release of real GDP growth of quarter q performed 30 days after the end of quarter; and

inf_q is the inflation growth rate for quarter q.

Time series regression is estimated using ordinary least squares (OLS), and *t* statistics are reported based on the Newey-West HAC standard errors with a lag length of 4 because we use interannual quarterly overlapping data. In addition, we use Shapley values to indicate the contribution of each variable to the R squared.

B. Variable definition

1. Dependent Variable: Real Gross Domestic Product Growth Rate.

Three vintages of seasonally and working day adjusted volume GDP (quarter-on-quarter growth rates) series are published for each quarter: the flash release, at t + 45 days before January 2012 and t + 30 since 2012, is a preliminary estimate. The flash is followed by a first regular release approximately 65 days after the end of the quarter, and the second regular release scheduled at t + 100 days. For the dependent variable, $rgdp_{q+n}$, we use the latest data available for each quarter. As in Abdalla and Carabias (2022), we use the quarter-on-quarter growth rate annualized from quarterly growth data.

2. Variables of Interest: Special Items & Earnings Before Special Items.

Following Hsu *et al.* (2012), we define the special items (*spi*) variable as the difference between pretax income and operational income (*oi*) plus net interest charges (*nic*), where *nic* is defined as interest expense (*ie*) minus non-operating interest (*nii*) minus interest capitalized (*ic*):

$$spi = pi - (oi + nic) = pi - (oi + (ie - nii - ic)) \quad (2)$$

As in Abdalla and Carabias (2022), the special items have been considered in levels (scaled quarterly by total sales), since they are a component of the benefits that, by definition, are transitory and, therefore, already include changes in the circumstances of the companies.[4] Then, using the year-on-year change for each firm-quarter observation scaled data,[5] we compute the earnings before special items (*ebspi*) as the difference between the earnings before extraordinary items (*ebei*) and *spi*, being *ebei* the difference between pretax income (*pi*) and the income taxes (*it*):

$$ebpsi = ebei - spi = (pi - it) - spi \quad (3)$$

3. Control Variables: Flash Release of the Quarterly GDP Growth Rate & Quarterly Inflation Rate.

Using the variable $rgdp^{adv}$, we control for the first available information about the real GDP growth rate of the quarter to which the variables of interest belong. To do so, we use the flash release of the quarterly growth rate at 30 (45) days after the end of the quarter for quarters after (before) January 2012. We also control for the inflation growth rate of the quarter to which the variables of interest belong with the variable inf_{q}. We compute it using the Harmonized Consumer Index Prices (HCIP) (working day and

[4] We have also carried out our analyses using the interannual variation of the special items as in Gaertner *et al.* (2020). This specification is less significant, becoming unsignificant for the 2 and 3 lags relationships.

[5] As we have used total sales as a deflator for the variables, companies with a sales value of less than 1 million euros have been eliminated. Additionally, we have removed all companies with any missing data.

seasonally adjusted) of the Eurozone. We employ quarterly data of the year-to-year variation rate.

C. Data

Our sample period covers quarterly data from 2005Q1, when the EU requires listed companies to prepare their consolidated accounts following IFRS, to 2019Q4, avoiding multiple local GAAP-based data and the 2020 pandemic effect. This sample covers 60 quarterly periods, but as we perform the research with year-on-year variations, we lose 4 initial observations. Additionally, because the exogenous variables in the econometric model in Equation (1) are lagged from 1 to 3 quarters, the final quarter data available to estimate the model are from 55 to 53, respectively.[6]

All the data related to the Eurozone GDP come from the Eurostat database.[7] The Harmonized Consumer Index Prices (HCIP) of the Eurozone (working day and seasonally adjusted) from the ECB Statistical Data Warehouse.[8] The Eurozone has had a changing composition in the sample period. As Table 1 shows, the Eurozone was composed of 12 countries in 2005 and it has evolved until the current configuration that covers 19 states since 2015. For this changing composition, we have obtained data from the Thomson

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[6] The limited quarterly data available in the sample prevents the use of alternative methodologies, such as vector autoregressive models (VAR), which, although it has already been used in the empirical literature, specifically focused on the Eurozone. This has been done using monthly frequency data and considering a relatively small number of variables (Nave and Ruiz, 2015).

[7] Public data available on https://ec.europa.eu/eurostat/web/national-accounts/data/other.

[8] Public data available on https://sdw.ecb.europa.eu/.

Reuters Eikon database for the firm-specific data of Eurozone listed companies by country.[9]

The aggregated Eurozone accounting data have been computed as a weighted average, based on firms' market value at the end of the quarter, of the firm-specific data.[10] To properly take into account the quarters in which the Eurozone was enlarged, for analysis of the one-quarter ahead of real GDP growth, the aggregate accounting variables include the accounting information of the new countries' companies from one quarter prior to joining and from two and three quarters prior to joining for the two- and three-quarters-ahead of real GDP growth analysis, respectively. Additionally, for each quarter, 1% of the companies (top 0.5% and bottom 05%) have been removed, as in Gaertler *et al.* (2020).[11] Likewise, only companies whose fiscal quarter coincided with the calendar quarter were considered.

Table 2 shows the definitions of all the accounting items used to compute our variables of interest, as well as their codes from the Thomson Reuters Eikon database. Table 3 shows a summary of the main statistics of the variables. The Phillips Perron test in Panel A indicates that all variables are stationary at conventional levels. Pearson correlation coefficients between variables are shown in Panel B. Earnings before special items has a positive and nonsignificant relationship with the special items but a significant correlation with $rgdp^{adv}_{q}$ and $rgdp_{q+1}$. On the other hand, the special items variable has a significant correlation with $rgdp^{adv}_{q}$, inf_{q} and $rgdp_{q+1}$. In all cases, significance and the

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[9] The average number of companies in each quarter of the sample is 1972 with the minimum of 1562 (2006Q4) and the maximum of 2285 (2019Q1).

[10] As in Konchitchki and Patatoukas (2014) our results are not sensitive to whether we construct the aggregate accounting earnings series using cap-weighted or equal-weighted averages.

[11] All the analyses have been done with the total sample and the results do not vary.

sign of the correlation when it is significant coincide with those found in US data by Abdalla and Carabias (2022).

III. Results

A. Aggregate earnings, special items and future GDP growth

Table 4 shows the results from estimating Equation (1). We can observe how both variables $ebspi_q$ and spi_q contain relevant information related to future real GDP growth, $rgdp_{q+n}$. Nevertheless, the special items variable has a higher predictive power than the aggregate earnings variable for all the quarters considered. The coefficients for the one-quarter-ahead GDP growth are 0.0320 and 0.6336 for $ebspi_q$ and spi_q, respectively, with *t* statistics of 2.208 and 3.064. We highlight the contribution of the last variable to the R-square with a Shapley value of 35.61%, even higher than that obtained for the advanced real GDP growth, 26.03%, with the Shapley value for the earnings before the special items variable being only 10%.

These results are in line with the evidence found for the US by Abdalla and Carabias (2022) and for Australia by Zhang and Fargher (2022). Aggregate micro data related to firm earnings contain relevant information about real GDP growth of the Eurozone in the immediate future, but particularly aggregate special items, a direct measure of conditional accounting conservatism.

Table 4 also reports the coefficients for real GDP growth 2 and 3 quarters ahead. Only the special items variable maintains the predictive power when we are explaining the two-quarter-ahead real GDP growth, even though the coefficient and its significance decrease: now the slope coefficient is 0.2996 while the *t* statistic becomes 2.434. None of the two variables of interest remain significant when we analyse their association with

the three-quarter-ahead real GDP growth. The last result contrasts with the evidence found in the US, where both variables hold predictive power until three quarters ahead. However, this evidence supports our hypothesis that the lower intensity of conditional conservatism in a law-code-based economic region such as the Eurozone would reduce the explanatory power of the accounting variables, especially of the special items.

B. Robustness.

To check the robustness of the results, we analyse the effect of control proxies' selection by using several alternatives collected by the following more general econometric model that relates the one quarter ahead real GDP growth rate with our variables of interest related to aggregate firm earnings:

$$rgdp_{q+1}^{act} = \alpha + \beta_1 ebspi_q + \beta_2 spi_q + \lambda_1 rgdp_q^{(\cdot)} + \lambda_2 inf_q^{(\cdot)} + \varepsilon_{q+1} \qquad (4)$$

Now, the quarterly inflation rate is alternatively computed using the percentage change of the Eurozone Producer Price Index with respect to the same quarter in the previous year. We use only data available from Eurostat, seasonal and calendar unadjusted. Table 5 shows the results that do not vary with respect to those shown in the first column of Table 4. Perhaps the only remarkable fact is the lower explanatory power of the new proxy of the quarterly inflation rate, probably due to the use of unadjusted data.

Regarding the real GDP growth rate contemporary with the variables of interest, we now use as an alternative to the advanced flash release, the first (t + 65) and the second

(t + 100) regular releases. Additionally, we use the latest data available for each quarter, i.e., the dependent variable lagged one quarter. The results are also shown in Table 5.

When we use the first and second regular releases, the results remain qualitatively invariant with respect to the results shown in Table 4 for the one-quarter ahead real GDP growth rate. The aggregated special items variable is significant at the 1% level and has the highest marginal contribution to the explanatory power of the model. When we fully control for the autoregressive effect using the dependent variable lagged one quarter, the significance of the aggregated special items is slightly reduced, keeping a marginal contribution to R^2 of approximately 33%.

In Table 6, we show the results of two additional robustness tests to further ensure that the results are not driven by persistence in variables. In Table 6 Panel A, we use serially uncorrelated shocks computed from autoregressive models of different orders of the raw data in the GDP predictive regression. We can see how special items remain significant while the other variables lose explicative power. These results are confirmed in Table 6 Panel B, when we include lagged values (up to three periods) of all variables as additional controls.

IV. Aggregate earnings information in professional forecasting

We enlarge the analysis to check if analysts include aggregate earnings information in their real GDP growth rate forecasts. We are interested in revealing to what extent they incorporate the information contained in the two aggregate earnings components analysed throughout our work: aggregate earnings before special items and aggregate special items. To do so, we include their forecasts as a control variable in the following econometric model:

$$rgdp_{q+n} = \alpha + \beta_1 ebspi_q + \beta_2 spi_q + \lambda_1 E_t(rgdp_{q+n}) + \lambda_2 inf_q + \varepsilon_{q+n} \quad (5)$$

where $E_t(rgdp_{q+n})$ gathers the expected value of professional forecasters related to the real GDP growth rate for the next quarter (n = 1, 2, 3).

We use data from Consensus Economics, which is considered the macroeconomic forecast benchmark by investment and planning managers, as well as government and public sector institutions. Consensus Economics provides quarterly Consensus Forecasts data files of the real GDP growth rates for the Eurozone. This average (mean) of forecaster predictions is published at the end of the quarter, when most of the companies' quarterly results are already published. The quarterly real GDP growth forecasts for the Eurozone are percentage changes over the same quarter of the previous year.

The results for the slope coefficients from the estimation of the econometric model in Equation (5) are shown in Table 7. Two completely opposite results are shown in Table 7. While professional forecasts properly subsume the information content in the aggregate earnings before special items, the same does not occur with the information contained in the aggregate special items. This result confirms the evidence found for the US by Abdalla and Carabias (2022).

Concretely, aggregate earnings before special items lose marginal contribution to Model R-squared and significance in the three model specifications. In fact, this variable is now not significant for all terms analysed. In contrast, the aggregate special items variable not only maintains the explanatory power it had, but it increases it slightly, reflecting higher marginal contributions to R-squared of each specification and higher *t* statistics.

V. Aggregate earnings information and macro news

Finally, we explore whether the aggregate earnings components are sensitive to the arrival of macro news, which is an accurate measure of accounting conditional conservatism. To this end, we add to the model in Equation (1) a *news* variable that collects the macro news arrived during the qth-quarter, interacting with aggregate earnings before special items and aggregate special items. In this analysis, we focus on the one quarter ahead of the real GDP growth rate:

$$rgdp_{q+1} = \alpha + \beta_1 ebspi_q + \beta_2 spi_q + \lambda_1 rgdp_q^{adv} + \lambda_2 inf_q + \\ + \kappa_1 ebspi_q news_q + \kappa_2 spi_q news_q + \varepsilon_{q+1} \quad (6)$$

To measure news, we use the Citigroup Economic Surprise Index, an objective and quantitative measure of the degree to which the economic data are either beating or missing economists' forecasts. It is defined as historical weighted deviations of data surprises. From the quarterly variation of the index, we compute our variable by adding 100 and dividing the result by 100. We consider good news ($news^+$) when the value is greater than one and bad news ($news^-$) when it is less than one.

Table 8 shows the results from the estimation of the model in Equation (6). All variables are significant when we include the interaction of macro news with the variables of interest in the model, with the adjusted R-square reaching the highest value of the models performed (70,31%). The special items variable remains that which most

contributes (30.30%) to the adjusted R-squared, confirming the importance of the information it contains to explain the future real GDP growth rate.

The coefficients of the interaction between $news_q$ and spi_q ($ebspi_q$) indicate a negative and significant relationship, explaining 6.51% (6.38%) of the model's adjusted R-square. The negative relation contrasts with the evidence found for the US by Abdalla and Carabias (2022). We argue that the sign of this relation is sample dependent since good news and bad news interactions may have an opposite relationship with the future real GDP growth rate, and then, depending on the weight of each of them on the total sample, the sign of all news interactions may be positive or negative. To test it we replace the *news* variable with $news^+$ and with $news^-$.

The results in Table 8 show that when we replace *news* with $news^+$, all the variables remain significant, although the interaction variables, with a negative sign, lose marginal contribution to the overall predictive ability of the model. On the other hand, when we replace *news* with $news^-$, our variables of interest lose significance, especially $ebspi_q$, which becomes nonsignificant. The interaction terms, now with positive signs, also lose significance. In contrast, their marginal contribution to R-squared is much higher. This result confirms the expected association of bad news and aggregated earnings and, more specifically, with the aggregated special items that reflect bad news in a timelier manner. Again, our results show evidence in line with that found in the US.

VI. Conclusions

Previous empirical literature has shown that aggregate earnings are an informative variable of the future real GDP growth rate. More recently, this empirical literature attributes the informative capacity of aggregate earnings to a component of it: the

aggregate special items that capture the conditional conservatism of the accounting system applied. These findings have been made in the US economic area with a common-law-based accounting system in which discretionary conditional conservatism has an important role.

In this context, this paper is focused on testing whether and how this informative capacity of aggregate earnings in general, and particularly of the aggregate special items found in the US, remains when we move to a code-law environment such as the Eurozone. Our results support the evidence found in the US. Aggregate earnings explain the future Eurozone real GDP growth rate, and the aggregate special items component explains this future real GDP growth rate more than aggregate earnings before special items.

These results confirm that Eurozone aggregate special items reflect timely news about future economic conditions by capturing the effect of conditional conservatism, which makes it a more forward-looking component. However, the lower degree of conditional conservatism in a code-law-based system has a reducing effect on results with respect to those found in the US. This result empirically reinforces the economic ground of the news-based mechanism advocated by Abdalla and Carabias (2022) to relate aggregate earnings and future real GDP growth beyond the corporate profit link usually argued in the previous micro-to-macro literature. Our results also show that while analysts' forecasts incorporate the information content of aggregate earnings before special items, they do not fully incorporate the information content of aggregate special items, confirming the scant attention given to aggregate special items in professional forecasting.

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Table 1. Eurozone member states. Enlargements since January 1, 2005, when the member states were Austria, Belgium, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal and Spain. State joining the Eurozone, date on which the European Commission proposes the entry of each country into the Eurozone, date on which the EU Economic and Financial Affairs Council (ECOFIN) gives the green light for each country to join the Eurozone and date of state's effective joining.

State	Proposal	Authorization	Admission
Slovenia	May 16, 2006	July 11, 2006	January 1, 2007
Cyprus	May 16, 2007	July 10, 2007	January 1, 2008
Malta	May 16, 2007	July 10, 2007	January 1, 2008
Slovakia	May 7, 2008	July 8, 2008	January 1, 2009
Estonia	May 12, 2010	July 13, 2010	January 1, 2011
Latvia	June 5, 2013	July 9, 2013	January 1, 2014
Lithuania	June 4, 2014	July 23, 2014	January 1, 2015

Table 2. Definition of the accounting data from Thomson Reuters Eikon database.

Eikon ref. Item	Definition
WC01401 Pre-tax income	Income/loss before any federal, state, or local taxes. Extraordinary items reported net of taxes are excluded.
WC01451 Income taxes	Income taxes levied on the income of a company by federal, state, and foreign governments.
WC01250 Operating income	Difference between sales and total operating expenses.
WC01251 Interest expense on debt	Service charge for the use of capital before the reduction for interest capitalized.
WC01266 Non-operating interest income	Income generated from interest bearing investments not related to the operating activities of the company.
WC01255 Interest capitalized	Allowance on borrowed funds used for long term projects or construction.

Table 3. Descriptive statistics. Panel A shows the statistics for the main variables and the Phillips – Perron test of Stationary. Panel B reports Pearson pairwise correlations. Values in bold indicate statistical significance at 10% level or higher. Sample: 60 quarterly data from 2005Q1 to 2019Q4.

Panel A:

	mean	sd	p25	median	p75	pptest
$ebspi_q$	0,0191	0,1514	-0,0617	0,0070	0,0535	<0,01
spi_q	-0,0168	0,0195	-0,0248	-0,0144	-0,0048	<0,01
$rgdp^{adv}_q$	0,0084	0,0215	0,0047	0,0114	0,0191	<0,01
inf_q	0,0154	0,0101	0,0072	0,0157	0,0229	0.0713
$rgdp_{q+1}$	0,0101	0,0253	0,0043	0,0167	0,0223	<0,01

Panel B:

	$ebspi_q$	spi_q	$rgdp^{adv}_q$	inf_q	$rgdp_{q+1}$
$ebspi_q$	**1**				
spi_q	0,0583	**1**			
$rgdp^{adv}_q$	**0,3798**	**0,5955**	**1**		
inf_q	-0,0752	**0,2746**	0,1385	**1**	
$rgdp_{q+1}$	**0,3289**	**0,5735**	**0,5791**	**-0,2366**	**1**

Table 4. Results. Estimated slope coefficients of the model:

$$rgdp_{q+n} = \alpha + \beta_1 ebspi_q + \beta_2 spi_q + \lambda_1 rgdp_q^{adv} + \lambda_2 inf_q + \varepsilon_{q+n}$$

Below in parentheses t-statistics based in the Newey-West HAC standard errors with 4 lags. ***, **, * denote significance at the level of 1, 5 and 10%, respectively, using two tail tests. And below in percentage the Shapley values, additive decomposition of the R^2 of the regression model that reports the contribution of each variable to the R^2 of the model.

	q + 1	q + 2	q + 3
constant	0.0352***	0,0378***	0,0329***
	(3.945)	(4.517)	(5.756)
$ebspi_q$	0.0320**	0,0092	0,0099
	(2.208)	(0.900)	(0.634)
	9.73%	2.68%	2.67%
spi_q	0.6336***	0,2996**	0,0543
	(3.064)	(2.434)	(0.238)
	35.61%	8.39%	0.36%
$rgdp^{adv}{}_q$	0.2293**	0,0644	0,0038
	(2.180)	(0.541)	(0.0299)
	26.03%	6.27%	0.88%
inf_q	-1.105***	-1,5525**	-1,4820***
	(-2.839)	(-2.670)	(-2.892)
	28.63%	82.67%	96.10%
R2 adj.	61.94%	41.97%	32.38%
# obs.	55	54	53

Table 5. Robustness. Estimated slope coefficients of the model:

$$rgdp_{q+1}^{act} = \alpha + \beta_1 ebspi_q + \beta_2 spi_q + \lambda_1 rgdp_q^{(\cdot)} + \lambda_2 inf_q^{(\cdot)} + \varepsilon_{q+n}$$

In the first specification of the model, quarterly inflation growth rate computed from the Producer Price Index is used. In the next three specifications, different releases for the real GDP growth rate are used: the first and second regular releases and the most recent data available. Below, in parentheses, t-statistics based in the Newey-West HAC standard errors with 4 lags. ***, **, * denote significance at the level of 1, 5 and 10%, respectively, using two tail tests. And below, in percentage, the Shapley values, additive decomposition of the R^2 of the regression model that reports the contribution of each variable to the R^2 of the model. Number of observations: 55.

	(ppi)	*(1st)*	*(2nd)*	*(act)*
constant	0,0230***	0,0352***	0,0350***	0,0320***
	(4,338)	(3.826)	(3.804)	(3.143)
$ebspi_q$	0,0331**	0,0292**	0,0293**	0,0229*
	(2.297)	(2.120)	(2.110)	(1.690)
	10.95%	8.80%	8.78%	7.72%
spi_q	0,6866***	0,6325***	0,6248***	0,5708**
	(2.989)	(2.905)	(2.875)	(2.527)
	40.57%	36.05%	35.14%	32.89%
$rgdp^{adv}{}_q$	0,2876**			
	(2.518)			
	30.07%			
$rgdp^{1st}{}_q$		0,2263**		
		(2.278)		
		26.52%		
$rgdp^{2nd}{}_q$			0,2213**	
			(2.269)	
			27.61%	
$rgdp^{act}{}_q$				0,2741**
				(2.240)
				34.67%
Inf_q		-1.0969***	-1.0924***	-1.0117**
		(-2.753)	(-2.745)	(-2.475)
		28.63%	28.47%	24.72%
$Inf^{ppi}{}_q$	-0,3421**			
	(-2.251)			
	18.42%			
R2 adj.	57.79%	60.69%	60.58%	62.50%

Table 6. Robustness: Alternative Time-Series Specifications.

Panel A: Shock – to – Shock Analysis.

	AR(1) Residuals $rgdp_{q+1}$	AR(2) Residuals $rgdp_{q+1}$	AR(3) Residuals $rgdp_{q+1}$
Constant	0,0000	0,0000	0,0000
	(0,000)	(0,000)	(0,000)
$ebspi_q$	0,1416	0,0383	0,0024
	(0,684)	(0,1898)	(0,012)
spi_q	0,6240***	0,7599***	0,7627***
	(4,028)	(0,5417)	(4,686)
$rgdp_q^{adv}$	-0,0390	-0,2172	-0,1838
	(-0,2776)	(-1,5362)	(-1,318)
HCPI adj	-0,9112*	-0,2248	-0,1497
	(-1,7288)	(-0,3766)	(-0,255)
Adj. R^2	21,00%	25,28%	26,76%
N. Obs	55	54	53

Panel B: Including Lagged Values of All Variables.

	One Lag $rgdp_{q+1}$	Two Lags $rgdp_{q+1}$	Three Lags $rgdp_{q+1}$
Constant	0,0011	-0,0368	-0,0479
	(0,040)	(-0,975)	(-1,036)
$ebspi_q$	0,2920	0,2519	0,2418
	(1,480)	(1,113)	(1,062)
spi_q	0,6703***	0,6941***	0,7926***
	(4,555)	(4,065)	(4,751)
$rgdp_q^{adv}$	0,2527	0,2745	0,2519
	(1,481)	(1,423)	(1,415)
HCPI adj	-0,0315	0,0640	0,1277
	(-0,056)	(0,105)	(0,225)
Adj. R^2	64,36%	65,00%	70,80%
N. Obs	55	54	53

Table 7. Information of the aggregate earnings components in professional forecasting. Estimated slope coefficients of the model:

$$rgdp_{q+n} = \alpha + \beta_1 ebspi_q + \beta_2 spi_q + \lambda_1 E_t(rgdp_{q+n}) + \lambda_2 inf_q + \varepsilon_{q+n}$$

Below in parentheses t-statistics based in the Newey-West HAC standard errors with 4 lags. ***, **, * denote significance at the level of 1, 5 and 10%, respectively, using two tail tests. And below in percentage the Shapley values, additive decomposition of the R^2 of the regression model that reports the contribution of each variable to the R^2 of the model.

	q + 1	q + 2	q + 3
constant	0.0331*** (4.201)	0,0381*** (5.447)	0,0326*** (4.700)
$ebspi_q$	0.0194 (1.320) 7.44%	0,0090 (0.3422) 2.31%	0,0085 (0.761) 1.95%
spi_q	0.7369*** (4.397) 48.49%	0,3361** (2.435) 12.62%	0,0579 (0.266) 0.63%
$E_q(rgdp_{q+n})$	0.2058** (2.266) 23.14%	0,0217 (0.3469) 16.10%	0,0072 (0.091) 18.09%
inf_q	-0.9048** (-2.268) 20.93%	-1,5172** (-4.689) 68.96%	-1,4666** (-2.371) 79.33%
R2 adj.	61.91%	41.41%	32.28%
# obs.	55	54	53

Table 8. Interaction between information of aggregate earnings components and macro news. Estimated slope coefficients of the model:

$$rgdp_{q+1} = \alpha + \beta_1 ebspi_q + \beta_2 spi_q + \lambda_1 rgdp_q^{adv} + \lambda_2 inf_q + \kappa_1 ebspi_q news_q + \kappa_2 spi_q news_q + \varepsilon_{q+1}$$

Macro news variable is computed from Citigroup Economic Surprise Index data. Below in parentheses t-statistics based in the Newey-West HAC standard errors with 4 lags. ***, **, * denote significance at the level of 1, 5 and 10%, respectively, using two tail tests. And below in percentage the Shapley values, additive decomposition of the R^2 of the regression model that reports the contribution of each variable to the R^2 of the model. Number of observations: 55.

	news	*news*$^+$	*news*$^-$
constant	0,0299***	0,0296***	0,0328***
	(4.852)	(5.009)	(4.753)
$ebspi_q$	0,1210***	0,0786***	0,0171
	(5.362)	(5.476)	(1.007)
	12.55%	12.96%	5.84%
spi_q	0,8235***	0,696***	0,3571**
	(3.773)	(4.098)	(2.365)
	30.30%	33.06%	20.99%
$rgdp^{adv}{}_q$	0,3455***	0,3170***	0,2423***
	(3.412)	(3.278)	(2.959)
	21.58%	24.44%	18.74%
inf_q	-0,9055***	-0,8862***	-1.0267***
	(-2.921)	(-3.011)	(-3.158)
	22.67%	21.51%	23.19%
$ebspi_q \cdot news_q$	-0,0805***		
	(-4.311)		
	6.38%		
$spi_q \cdot news_q$	-0,2130**		
	(-2.547)		
	6.51%		
$ebspi_q \cdot news^+{}_q$		-0,0515***	
		(-4.059)	
		5.15%	
$spi_q \cdot news^+{}_q$		-0,1883**	
		(-2.637)	
		2.88%	
$ebspi_q \cdot news^-{}_q$			0,0569
			(1.549)
			10.82%
$spi_q \cdot news^-{}_q$			0,5714*
			(1.720)
			20.41%
R2 adj.	70.31%	70.31%	66.78%