

CHANGE IN ANALYST OPINIONS ON MAIN SPANISH LISTED BANKS IN VIEW OF THE IMPACT OF COVID-19

Studies of the opinions expressed in and the tone of financial reports, monetary policy speeches and other public messages are being increasingly used in the sphere of financial market analysis. Thus, various authors¹ have analysed the way in which central banks' messages or the tone used in speeches may affect stock market performance and other financial indicators.

These studies seek to transform qualitative unstructured information into quantitative structured data. Specifically, sentiment analysis is based on classifying documents according to two extremes (positivity or negativity),² to assess the level of polarity (or tonality) of a document and thus obtain a quantitative index.

This box aims to assess the impact of the COVID-19 crisis on the tone of analysts' reports on the Spanish banking sector and to relate it to the price moves observed in the stock market.

In consequence, the initial aim is to transform the qualitative content of these reports into a numerical indicator. For this purpose, the first step is to create a database of analysts' and credit rating agencies'³ reports on Spanish banks,⁴ covering the periods immediately before and after the state of alert was declared ("pre- and post-COVID-19"),⁵ respectively. Second, a dictionary is used that allows the words in each report to be classified

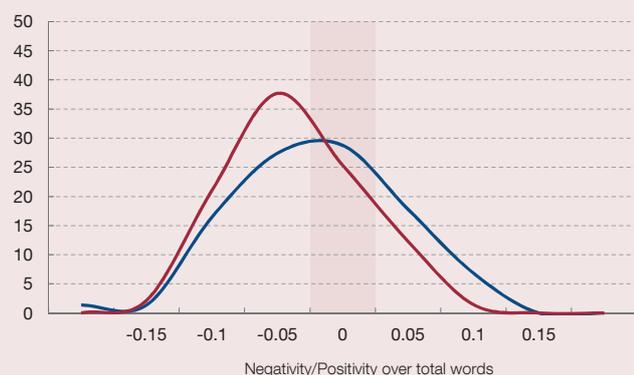
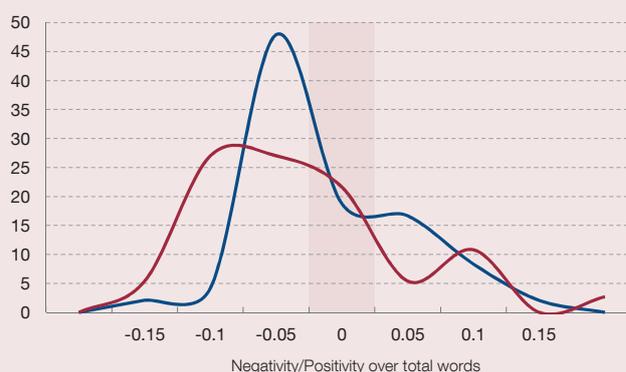
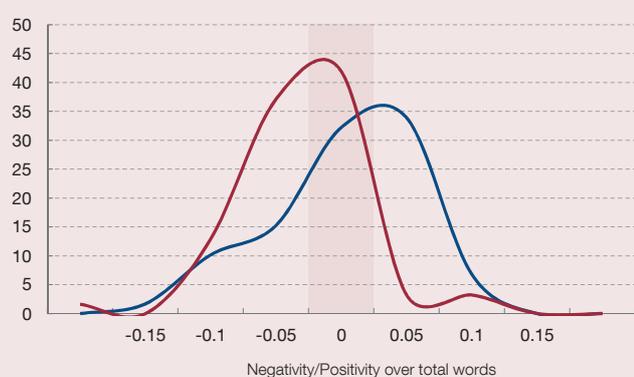
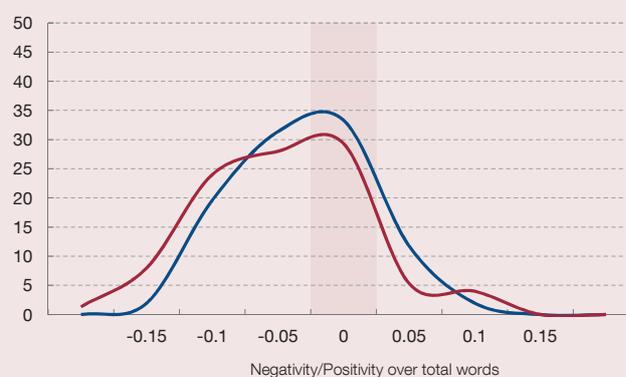
according to whether they have a positive, negative or neutral connotation. This provides a sentiment index (SI) of each report.⁶ Subsequently, once an index has been obtained for each document, the median values⁷ of the two periods may be compared, and also their dispersion and overall distribution.

The dictionary⁸ used to classify the sentiment of the words distinguishes between positive, negative and neutral words and was compiled specifically to analyse English-language financial texts. The SI of each report is calculated as the ratio of the difference between positive and negative words to the total words in each document.⁹ Accordingly, the index takes values ranging from -1 (maximum possible negativity) to 1 (indicating that all the words in a document have positive tonality). In addition, if the value obtained is equal to zero, the index is considered to be neutral, either because there is equivalence between the number of positive and negative words or because all the words have neutral tonality.¹⁰

The findings suggest that there has been an overall deterioration in analyst sentiment towards European banks, as reports with a negative SI are more frequent in the "post-COVID-19" period. The change in analyst sentiment in the reports between the two periods analysed is greater for Italian and French banks than for Spanish banks, and especially than for German banks.¹¹ The distribution

- 1 See N. Apergis and I. Pradigis (2019), "*Stock Price Reactions to Wire News from the European Central Bank: Evidence from Changes in the Sentiment Tone and International Market Indexes*", and R. Feldman, S. Govindaraj, J. Livnat and B. Segal (2010), "Management's tone change, post earnings announcement drift and accruals".
- 2 The positivity (negativity) of a document is the number of positive (negative) words over the total words. Words are classified as positive or negative according to a dictionary pre-established by the researcher.
- 3 Using the following data sources: Bloomberg Intelligence, S&P Global, Deutsche Bank Research, Morgan Stanley Research, Moody's and Fitch Connect (all in English).
- 4 For Spain, reports on the five main listed banks – Santander, BBVA, Caixabank, Bankia and Sabadell – which account for 93% of Spanish banks' market capitalisation. The sample comprises 73 reports for the pre-COVID-19 period and 138 reports for the post-COVID-19 period.
- 5 The pre-COVID-19 period comprises Jan-Feb 2020 and the post-COVID-19 period April-May 2020. March 2020 has not been included owing to the small number of reports published in that month and because the downgrades in analysts' estimates were made as from April.
- 6 The Banco de España has compiled the first Spanish-language dictionary of words with connotation in the financial stability context. This dictionary was used as a research tool to obtain a measure of the tonality of the Spanish-language Financial Stability Reports. See I. M. Moreno and C. González (2020), "*Sentiment analysis of the Spanish Financial Stability Report*".
- 7 The median is used to measure the comparison between the pre- and post-COVID-19 periods because it is more appropriate than the average when the distribution is not normal and the sample is relatively small.
- 8 See T. Loughran and B. McDonald (2011), "When is a Liability Not a Liability? Textual Analysis". In this case, an existing dictionary of English financial terms was used rather than the Banco de España's own dictionary as the reports of the sources consulted are only available in English.
- 9 To calculate the index the following formula was used: Sentiment Index (SI) = (#Positive words - #Negative words) / #Total words.
- 10 Neutral words are those with no connotation, i.e. those which cannot be classified as either positive or negative. In most countries, around 5% of words on average have connotation.
- 11 The difference between the medians in the two periods is significant for Spain (at 95%), Italy (at 99%) and France (at 95%). To test the null hypothesis that the two medians are equal, a limited version of the Mann-Whitney-Wilcoxon test is generally used. However, this test assumes that the only difference between the two populations is the location of the median, with all other characteristics (asymmetry, dispersion...) being equal. To make this assumption more flexible, a quartile regression is used, where the dependent variable is the SI and the explanatory variable is a dichotomous variable representing the pre- and post-COVID-19 periods (0=Jan-Feb, 1=Apr-May).

CHANGE IN ANALYST OPINIONS ON MAIN SPANISH LISTED BANKS IN VIEW OF THE IMPACT OF COVID-19 (cont'd)

Chart 1
SENTIMENT DISTRIBUTION OF REPORTS FOR SPANISH BANKS (a)Chart 2
SENTIMENT DISTRIBUTION OF REPORTS FOR ITALIAN BANKS (a)Chart 3
SENTIMENT DISTRIBUTION OF REPORTS FOR FRENCH BANKS (a)Chart 4
SENTIMENT DISTRIBUTION OF REPORTS FOR GERMAN BANKS (a)

— PRE-COVID-19 — POST-COVID-19

SOURCE: Banco de España.

a The other European banks selected are Intesa, Unicredit and Mediobanca (Italy), Deutsche Bank and Commerzbank (Germany), and BNP Paribas, Crédit Agricole and Société Générale (France). The Spanish banks considered are Santander, BBVA, Caixabank, Bankia and Sabadell. The charts depict the percentage of reports in each range or interval. The vertical band depicts the percentage of reports with neutral connotation, i.e. those that contain no words with positive or negative tonality or that have an equal number of positive and negative words. To the left (right) of this band are the percentages of reports that have a higher significant proportion of negative (positive) words over total words. The "pre-COVID-19" period comprises Jan-Feb 2020 and the "post-COVID-19" period April-May 2020.

analysis of the SI for Spanish banks shows a post-COVID-19 median in negative territory (2 pp, a significant percentage given that the average proportion of non-neutral words in reports is 5 pp), while in the pre-COVID-19 period neutral or even positive values were more frequent (Chart 1). In addition, in the case of Spanish banks, there was also a smaller disparity in opinion in April and May, in contrast to the case of the Italian (Chart 2) and, to a lesser extent, the

German banking sector where analysts' reports present a broader range of opinion since the onset of COVID-19 (see Chart 4).

In keeping with the change in analyst sentiment, banking sector market valuations have declined. Thus, daily returns were more volatile in April and May, the post-COVID-19 period, while at the same time stock prices steadied at levels below those observed at the start of the year.¹²

¹² European banks' stock prices fell by around 40%-60%, according to which bank is analysed, between mid-February and mid-March, and then steadied at levels below those observed at the start of the year.

CHANGE IN ANALYST OPINIONS ON MAIN SPANISH LISTED BANKS IN VIEW OF THE IMPACT OF COVID-19 (cont'd)

Chart 5
DISTRIBUTION OF DAILY RETURNS ON SPANISH BANKS INDEX

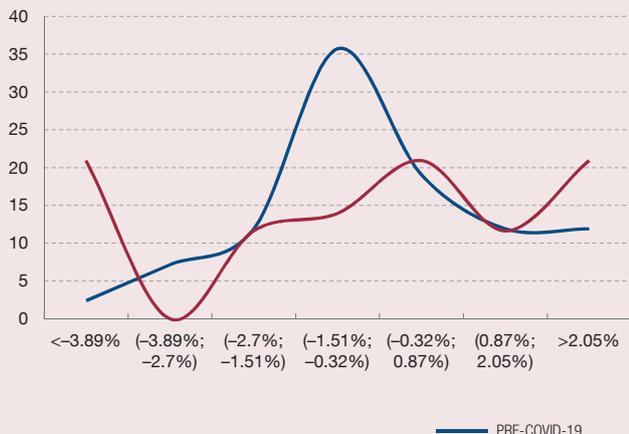
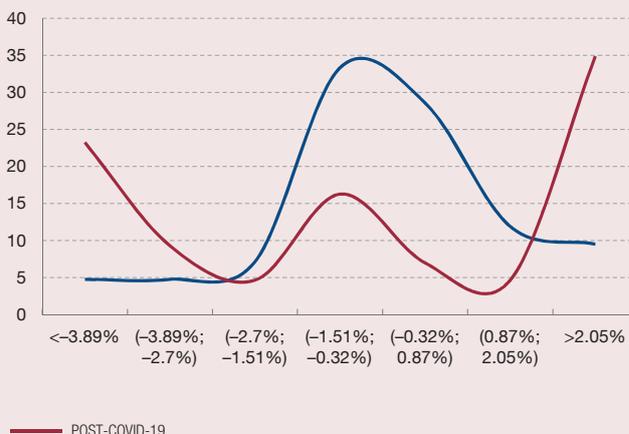


Chart 6
DISTRIBUTION OF DAILY RETURNS ON OTHER EUROPEAN BANKS INDEX



SOURCES: Thomson Reuters and Banco de España.

a The other European banks selected are Intesa, Unicredit and Mediobanca (Italy), Deutsche Bank and Commerzbank (Germany), and BNP Paribas, Crédit Agricole and Société Générale (France). The Spanish banks considered are Santander, BBVA, Caixabank, Bankia and Sabadell. The “pre-COVID-19” period comprises Jan-Feb 2020 and the “post-COVID-19” period April-May 2020.

In this respect, there is less dispersion in the distribution in the pre-COVID-19 period, while in April and May there are more values in the tails of the distribution, both for Spanish banks and the European banking sector overall (see Charts 5 and 6). Yet there are differences between the distributions of returns for the Spanish banking sector

and for all other European banks in the post-COVID-19 period.

That said, it may be concluded that the COVID-19 crisis has had a damaging impact on analyst sentiment both on the Spanish banking sector and the European banking sector overall. This coincides with the greater uncertainty observed in stock prices.