THE IMPACT OF THE AUTUMN 2024 FLASH FLOODS IN SPAIN FROM A FINANCIAL STABILITY STANDPOINT

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Abstract

This article analyses the impact that the flash floods that occurred in Spain in late October and early November 2024 have had on bank credit to households and firms in the areas affected, primarily in Valencia province. To this end, we first describe the size, composition and quality of the lending exposures in the areas affected at the date of the catastrophe, by matching geolocalisation data (Copernicus) with information from the Banco de España's Central Credit Register and the Cadastre (Ministry of Finance). In addition, we review the academic literature that analyses the economic and financial impact of natural disasters and compile the main public support measures aimed at mitigating the effects of the catastrophe. Against this background, we use panel analysis techniques and exploit granular Central Credit Register information to identify whether credit developments in the affected areas have followed distinct patterns since the flooding. For instance, a few months after the flash floods a statistically significant increase in the stock of loans to households and non-financial corporations was observed. Moreover, non-performing loans saw a moderate increase from December 2024 and there was a temporary uptick in stage 2 loans. As these effects are local and have a limited impact on lending at national level, no signs of systemic risk for the banking sector are identified.

Keywords: flash floods, natural disasters, economic measures, Official Credit Institute, Insurance Compensation Consortium.

1 Introduction

On 29 October 2024, several parts of eastern Spain were hit by a "cut-off low", a meteorological phenomenon that caused severe flash floods, particularly in Valencia province, resulting in a significant loss of life (235 victims)[1] and devastating material damage. This article seeks to provide a comprehensive and detailed view of one very specific dimension of the flash floods: their effect on bank credit in the areas affected, considering also the economic support measures deployed.

Natural disasters give rise to economic losses, as they directly disrupt local economic activity and damage infrastructure, productive assets and housing. Moreover, the uncertainty caused by extreme weather events has an indirect effect on households' and firms' consumption and investment decisions, with an added impact on economic activity (Baker, Bloom and Terry, 2023). As a result of climate change, the frequency and impact of

1 La Moncloa, Latest data from the Spanish Government, 4 April 2025 (in Spanish).

extreme weather events are intensifying (Intergovernmental Panel on Climate Change, 2023), which has prompted greater interest in the study of their economic impact in recent years.

Although events such as flooding usually have a significant economic impact in the short term, the historical evidence suggests that their negative effects on GDP tend to be temporary (Cavallo and Noy, 2011). This is largely attributable to the fiscal stimulus from reconstruction measures and to the increased spending by firms and households on replenishing capital and durable goods. However, if a recovery is to fully materialise, there can be no financial constraints and the aid received must be effective (Usman, González-Torres and Parker, 2024). In this respect, access to credit plays a fundamental role in mitigating the impact of such disasters on the local population (Billings, Gallagher and Ricketts, 2022).

The banking sector's response to such events is key to softening the economic impact and supporting the recovery. In this article, we analyse developments in bank credit to households and non-financial corporations (NFCs) in the affected areas since the flash floods. We also explore the implications of such disasters for financial stability. Their significant local impact underscores the risks they pose if they become more frequent and widespread due to insufficient action on climate change and environmental degradation. In the case at hand, the public support measures deployed have played a crucial role in mitigating the impact, but such interventions would be more costly, and even less feasible from a fiscal standpoint, should these events become more commonplace.

This article is organised as follows. First, we analyse the banking sector's pre-existing exposure to the worst hit areas. We then review the literature examining the impact of natural disasters on different factors of the economy (such as house prices, demand for labour and migration rates), before going on to discuss the public measures deployed to support the areas affected. Lastly, we assess the impact that the flash floods have had on lending to the areas affected and the risk classification of these exposures through a panel study using difference-in-differences (DiD) techniques.

2 The banking system's exposure to the flash floods

2.1 Exposures according to Royal Decree-Law 6/2024

The flash floods have had a significant impact on the economy of the municipalities affected, which account for around 2% of the national total based on various metrics (such as population, employment and business activity). An initial delineation of these areas was established in the annex to Royal Decree-Law (RDL) 6/2024 of 5 November 2024, which contained a list of the municipalities and districts that had suffered flooding, for the most part in Valencia province, except for three located in the provinces of Albacete, Cuenca and Malaga.

By matching the list of postcodes of these municipalities and districts with the information reported by banks to the Banco de España's Central Credit Register (CCR), a first estimate of the banking sector's credit exposure affected by the catastrophe can be calculated.[2] In order to include all potential affected borrowers, a loan is deemed to have been affected by the flash floods when any of them is domiciled in one of the postcodes identified or when a property located in one of the affected areas serves as mortgage collateral for the loan or credit in question.

Under this approach, at end-September 2024 (the last monthly close available before the disaster) the banking sector's exposure to the affected municipalities stood at around €27 billion, of which €17 billion corresponded to households and €10 billion to NFCs. These amounts accounted for 2.6% and 1.7% of total credit at the national level to households and firms, respectively, and for 2.1% of lending to these sectors overall.

As regards these loans to households, 73.7% comprised lending for house purchase (€12.9 billion) and 10.5% were consumer loans. Meanwhile, in terms of firm size, 56% of the credit affected (€5.7 billion) was to small and medium-sized enterprises (SMEs), accounting for 2.5% of total national lending to this sector.

In September 2024, 8.5% of the credit to firms in the affected areas was classified as stage 2,[3] while 5.5% was considered non-performing.[4] In the case of household lending, these figures were 6.4% and 4.3%, respectively. These initial levels of credit quality were somewhat worse than the national averages:[5] in Spain as a whole, 6.8% and 5.9% of credit to firms and households, respectively, was classified as stage 2 in September 2024, while 4.2% and 3.8%, respectively, was classified as non-performing.

2.2 Exposures according to geolocalisation data

Drawing on the Copernicus[6] geolocalisation study of the areas affected, it is possible to analyse the bank exposures affected by the flash floods with greater geographical granularity than when using the postcodes of the municipalities and districts in RDL 6/2024.

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2 For this analysis, the monetary volume of loans granted by any bank operating in Spain is considered.

3 In accordance with Annex 9 of Banco de España Circular 4/2017, a loan transaction is classified as stage 2 if there has been a significant increase in credit risk since initial recognition, but it is not in default. An increase in the credit risk of these loan transactions calls for closer monitoring by banks. Allowances and provisions for impairment shall be made for an amount equal to expected credit losses over the life of the loans. Interest income shall be calculated by applying the effective interest rate to the gross carrying amount.

4 In accordance with Annex 9 of Banco de España Circular 4/2017, a loan transaction is classified as non-performing if it is in default and its recovery is highly uncertain. This includes loans with amounts past-due by more than 90 days, as well as those for which it is considered unlikely that the borrowers will be able to meet their obligations without resort to the collateral. Allowances and provisions shall be made for an amount equal to expected credit losses. Interest income shall be calculated by applying the effective interest rate to the amortised cost (i.e. adjusted for any credit loss allowance) of the financial asset.

5 Using CCR data.

6 Copernicus is the European Union's Earth observation programme which is coordinated by the European Commission and provides information drawing from satellite Earth Observation and in-situ (non-space) data.

This study includes both the flooded areas and those classified as "flood traces" (i.e. the flow paths). The overview map was updated in real time and, for the purposes of our analysis, it was decided to overlap several dates to define the maximum impact area.[7]

Drawing on information from the CCR and the Directorate General for the Cadastre (Ministry of Finance), the real estate collateral associated with bank loans can be geolocalised and thus linked with the Copernicus data to identify the exposures affected. Moreover, the exposure to firms domiciled in the area affected was also analysed.[8]

The exposures thus identified are therefore a sub-set of those identified drawing on the information in RDL 6/2024. First, not all the exposures in each postcode are included, but only those that are within the areas affected according to the Copernicus maps. Second, only information on firms' registered offices was available, meaning that exposures to individuals (including sole proprietors) not secured by real estate collateral are excluded from this part of the study.

In addition, to identify the possible impact of the flash floods beyond the areas that were directly flooded, for the purposes of our study the areas identified in the Copernicus map were extended by a 500-metre radius. These expanded areas still nevertheless capture a sub-set of the total population within each postcode area. Thus, bank customers that may have been affected indirectly due to proximity are included.

Table 1 shows the exposure associated with the directly affected areas at end-September 2024, the month before the disaster. The flash floods directly impacted exposures accounting for 0.3% of total credit to households and firms in Spain, which increases to 1% if the areas affected due to proximity are considered. This percentage is half the proportion of total credit obtained when the postcodes identified in accordance with RDL 6/2024 are considered. Virtually all the exposures affected are in Valencia province, where the flash floods affected 22% of credit to households and firms based on the postcode approach and 7.7% of loans linked to directly flooded areas.

Drawing on the information in Table 1, credit in the directly flooded areas and nearby areas (within 500 metres) accounts for approximately 50% of credit in the municipalities and districts affected, evidencing the systemic importance of the disaster at local level. Therefore, the main method used for most of the rest of this article will be the postcode approach, to make the most comprehensive impact assessment possible of this natural disaster.

2.3 Characteristics of the exposures affected

The CCR and Cadastre information reveals some additional characteristics of the exposures affected by the flash floods and the associated collateral. This section focuses on Valencia province and applies the same geolocalisation criteria as in the previous section.

7 The Copernicus maps of the areas affected by the flash floods are available here.

8 Around 96% of registered offices could be geolocalised; the remaining addresses could not be geolocalised due to formatting issues in the data reported.

Table 1
Affected exposures by province, at September 2024

€m	Albacete	Cuenca	Malaga	Valencia	Total
Exposure: postcodes affected according to RDL 6/2024	9.3	10.0	1,295.2	26,239.7	27,554.3
Exposure: geolocalised areas (a)	4.9	5.7	417.0	12,846.5	13,274.2
Of which: households and NFCs with real estate collateral	2.6	3.8	241.3	8,245.4	8,493.0
Directly affected by the flash floods	0.1	1.6	14.0	2,163.2	2,178.8
Affected due to proximity (500 m)	2.5	2.2	227.3	6,082.2	6,314.2
Of which: NFCs without real estate collateral	2.3	1.9	175.7	4,601.1	4,781.2
Directly affected by the flash floods	0.0	0.4	0.0	2,313.1	2,313.6
Affected due to proximity (500 m)	2.3	1.5	175.7	2,288.0	2,467.6
%					
Share of provincial or national total (b)					
Exposure: postcodes affected according to RDL 6/2024	0.1	0.3	3.3	44.9	2.1
Exposure: geolocalised areas (a)	0.1	0.2	1.1	22.0	1.0

SOURCE: Banco de España.

a Geolocalised areas on the basis of Copernicus, including both the areas directly flooded and the areas within a 500-metre radius. In the case of firms, loans secured by real estate collateral held by firms with a registered office in the area affected are analysed, while in the case of households, only loans secured by real estate collateral are analysed.
b The columns corresponding to an individual province show credit to households and firms in the areas identified as affected as a percentage of the total lending volume in that province. The "Total" column, which corresponds to the sum of the four provinces affected, shows credit to households and firms in the areas identified as affected as a percentage of the total national volume.

Chart 1 shows the distributions at September 2024 of the affected exposures by portfolio and credit quality in the three geographical areas under analysis (geolocalised directly flooded area, impact area extended by 500 metres and postcode area affected according to RDL 6/2024).

Chart 1.a presents the percentage of sub-portfolios in Valencia province that were affected, by type of borrower and real estate collateral.[9] The largest relative impact in this province was in the sub-portfolio of loans to large firms secured by real estate collateral, although the volume actually affected was limited (€1,918 million). Of this sub-portfolio, 16.5% is linked to directly flooded areas, which increases to 54.7% if the areas affected due to proximity are included, and to 58.3% if the postcode approach (upper geographical bound) is used. The portfolio of mortgages to individuals had the largest total volume of exposures affected, amounting to €22,516 million (around 40% of this type of credit in Valencia province). In this portfolio, 5.5% of exposures were directly affected, rising to 22.8% if the area is expanded by 500 metres, and to around half the portfolio if the postcode approach is considered.

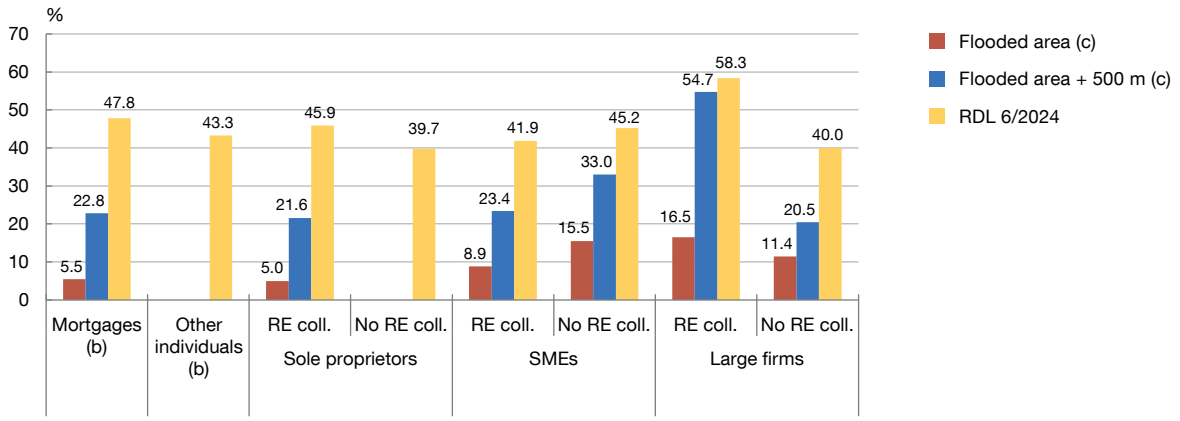
Chart 1.b analyses the credit quality of the affected exposures using the “stage” classification of credit risk reported by banks to the CCR: (i) stage 2 (loan transactions that show a significant

9 That is to say, the denominator includes all credit in the sub-portfolio (for example, large firms) in Valencia province, identified on the basis of whether the collateral is located, or the borrower is domiciled, in Valencia province.

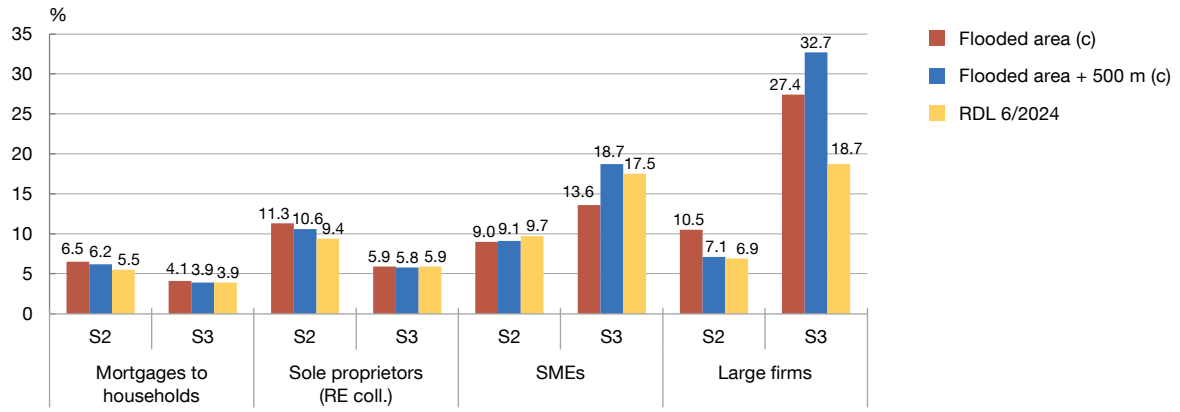
Chart 1

Analysis of the exposures affected in Valencia province, at September 2024

1.a Proportion of exposures affected, by portfolio (a)



1.b Classification of exposures affected, by sector (d)



SOURCE: Banco de España.

a Bars are not included for "Flooded area" and "Flooded area + 500 m" in the case of the "Other individuals" and "Sole proprietors without real estate collateral" portfolios, as geolocalised data at these levels of granularity are not available.
b The "Mortgages" and "Other individuals" categories represent households with no business activity.
c The areas affected by the flash floods are identified by linking the information from the CCR and the Directorate General for the Cadastre with the Copernicus data.
d S2 refers to stage 2 or with a significant increase in credit risk. S3 refers to stage 3 or non-performing.

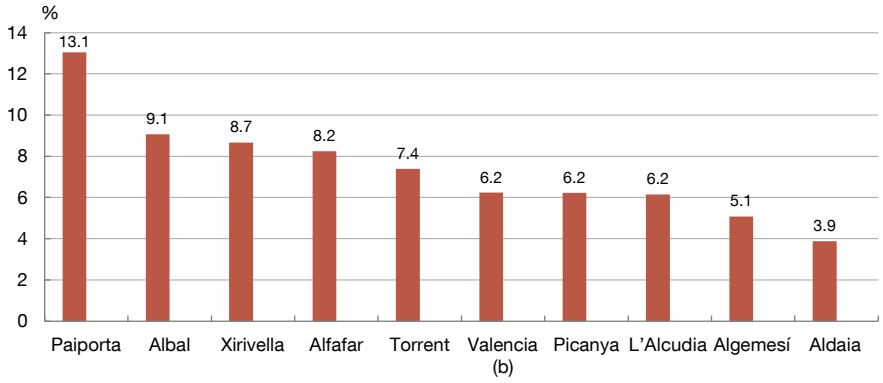
increase in credit risk, but insufficient signs of impairment to be considered non-performing); and (ii) stage 3 (non-performing, financial assets that have experienced a significant deterioration in credit quality).

At September 2024, the highest percentages of stage 2 exposures were observed in loans to SMEs (9.7% under the postcode approach), sole proprietors (9.4% under the postcode approach) and large firms (ranging from 6.9% under the postcode approach to 10.5% on the basis of the directly flooded areas). Large firms have the highest percentage of stage 3 exposures: 18.7% under the postcode approach and 32.7% if the flooded area plus a 500-metre radius is considered.

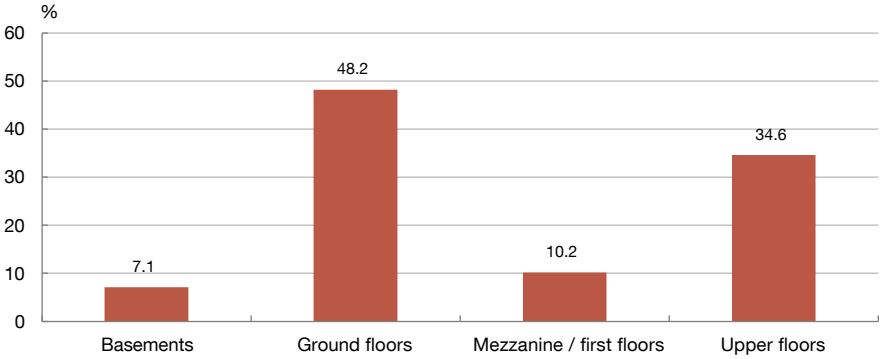
Chart 2

Analysis of real estate collateral in Valencia province associated with exposures directly affected according to geolocalisation, at September 2024

2.a Top ten municipalities, according to real estate exposures affected (a)



2.b Distribution by height of the exposures secured by real estate collateral affected



SOURCE: Banco de España.

a Includes loans to households and NFCs secured by real estate collateral. The data presented only consider the areas directly affected.
b Only certain districts of Valencia city were affected.

In the portfolio of mortgages to individuals, stage 2 and stage 3 exposures amount to roughly 6% and 4%, respectively, and do not vary significantly according to the geographical area analysed (directly flooded, directly flooded + 500 metres or postcode area according to RDL 6/2024).

Chart 2 analyses in further detail the affected exposures secured by real estate collateral. Chart 2.a shows the ten municipalities that concentrate a larger share of credit secured by real estate collateral in the directly flooded areas. As can be seen, around 22% of such exposures are located in the municipalities of Paiporta and Albal. Overall, these ten municipalities account for over 70% of such credit in the areas that were directly affected by the flash floods, highlighting the local scale of the disaster.

Chart 2.b shows the distribution of the credit exposures secured by real estate collateral located in the affected areas, based on the height of the property serving as collateral. The

Cadastre information available (which has over 200 categories for property height) has been classified into four categories:[10] (i) basement; (ii) ground floor; (iii) mezzanine and first floors; and (iv) upper floors. Over half this exposure in the area directly affected is secured by basements and ground floor properties, which are associated with a greater potential impact of flood damage.

3 Natural disasters and their economic impact. A review of the academic literature

The growing frequency and severity of climate-fuelled natural disasters have elevated environmental risks to a central concern within academic discourse. In general, the literature has found that natural disasters cause economic losses as they directly disrupt local economic activity and damage infrastructure, productive assets and housing, and tend to be followed by a contraction in economic growth (Bayoumi, Quayyum and Das, 2021; Ficarra and Mari, 2024). They also drive down house prices and demand for labour, and increase local emigration rates (Lamas Rodríguez, García Lorenzo, Medina Magro and Pérez Quirós, 2023; Boustan, Kahn, Rhode and Yanguas 2020). Further, aside from the impact of any direct damage, the uncertainty caused by extreme weather events harms the economic growth outlook (Baker, Bloom and Terry, 2023).

There is, however, prevailing evidence in the literature indicating that, although natural disasters such as floods have significant negative impacts on GDP in the short term, there are no negative effects in the long term (Cavallo and Noy, 2011). That is to say, the historical evidence available suggests that the negative impact of floods is essentially temporary, as it is subsequently offset by the fiscal stimulus from the various support measures and the increased spending by firms and households on replenishing capital and durable goods. Furthermore, some studies indicate that in certain cases floods could have a positive impact on economic activity in the long run, as the surviving firms replace obsolete assets with more productive capital and the reallocation of resources from less productive to more productive firms gathers pace (Erda, 2024).

The level of economic development, the scale of the public aid measures, insurance coverage and access to credit are all key determinants to mitigate the impact of a disaster on the affected population.

Toya and Skidmore (2007) find that higher living standards and a more highly developed financial system are associated with fewer deaths from natural disasters. Bayoumi, Quayyum and Das (2021) find that countries with more fiscal space (i.e. less public debt) and those with disaster preparedness mechanisms in place are less likely to experience a significant drop in

10 Information is not available for around 6% of these properties, and they have therefore been classified under “Upper floors”. There is also some imprecision with single-family houses, which have been included in the “Ground floor” category, but it is unknown whether these dwellings have basements or upper floors.

economic growth rates after an extreme weather event. Public aid has the potential to neutralise the impact of a disaster on households' long-term financial stability (Ratcliffe, Congdon, Teles, Stanczyk and Martín, 2020). However, several studies warn that the efficiency of public support varies and that the design of these measures is crucial to achieve the desired outcome (Billings, Gallagher and Ricketts, 2022; Barone and Mocetti, 2014).

In Billings, Gallagher and Ricketts (2022), households affected by floods in areas where insurance is obligatory do not experience a deterioration in their financial health, while those located outside compulsory insurance areas default on their loan payments at increasing rates over time.

Another key factor in the speed of the local economy's recovery is the banking sector's response to natural disasters. Cortés (2014) and Álvarez-Román, Mayordomo, Vergara-Alert and Vives (2024) find that natural disasters have a smaller negative impact on employment in the areas affected where banks have a more local focus. Indeed, it has been observed that banks with a larger local market share reroute credit supply to the regions affected (Koetter, Noth and Rehbein, 2020; Chavaz, 2016; Gallagher and Hartley, 2017; Álvarez-Román, Mayordomo, Vergara-Alert and Vives, 2024), while larger and more geographically diversified banks, along with non-bank financial institutions, offset the impact of this rerouting in the regions not affected, thereby reducing spillover effects (Ivanov, Macchiavelli and Santos, 2022; Cortés and Strahan, 2017).

However, the evidence available on the effect of banks' geographical specialisation is not entirely unanimous. In Blickle, Hamerling and Morgan (2021), the increase in lending after a disaster in the United States is driven by banks that operate across multiple counties, rather than by those that only operate in one. This suggests that access to a broader financing base, along with other lending-related factors, also influences banks' capacity to lend in areas affected by disasters.

The bank studies available suggest that, shortly after a natural disaster, demand for corporate credit rises but may not necessarily be fully met by supply. Berg and Schrader (2012) observe an increase in loan applications to a microfinance institution following a volcanic eruption in Ecuador, and a simultaneous decline in the loan approval rate, especially for new borrowers. Álvarez-Román, Mayordomo, Vergara-Alert and Vives (2024) document a relative decline of 6% in the amount of outstanding credit among firms affected by wildfires in Spain, compared with those not affected. Koetter, Noth and Rehbein (2020) also report a general decline in debt volumes among firms located in areas affected in the two years following a flood. Several studies conclude that stronger bank-borrower relationships facilitate access to credit after a disaster.

The financial literature highlights the importance of considering the heterogeneity of firms and households when analysing the impact of natural disasters on default rates. Although the average effect may seem moderate (Gallagher and Hartley, 2017), especially where those affected have access to insurance and government support measures, the financial consequences for low-income households can be severe (Billings, Gallagher and Ricketts,

2022; Ratcliffe, Congdon, Teles, Stanczyk and Martín, 2020). The business borrowers most vulnerable to disasters are microenterprises and younger and low-tech firms (Clò, David and Segoni, 2024). The impact also varies across sectors in terms of scale and persistence of effects (Ficarra and Mari, 2024).

When granting loans, lenders generally consider the risk of natural disasters. Blickle, Perry and Santos (2024) find that banks originate fewer mortgages and charge higher interest rates on loans with a lower loan-to-value (LTV) ratio for properties subject to flood risk. Local banks, with a better understanding of local risks, may be more likely to consider them (Blickle, Hamerling and Morgan, 2021).

Recent literature also suggests that physical damage resulting from extreme weather events does not undermine banking sector stability in developed countries (Klomp, 2014). Blickle, Hamerling and Morgan (2021) find that extreme disasters have a moderate negative impact (in terms of a higher risk of default) on smaller banks and, at the same time, a positive impact on net income for both small and large banks. These authors argue that, in addition to the cushioning effect of insurance and government support programmes, income from disaster recovery loans offsets banks' losses in their pre-disaster loan portfolios. Moreover, smaller local banks manage their exposure to these risks by leveraging their greater knowledge of the local environment.

4 Public measures to mitigate the economic effects of the flash floods

4.1 An overview of the public measures adopted

The Spanish Government rolled out a broad set of economic measures to mitigate the effects of the flash floods.[11] One week after the disaster, which directly affected an area of over 600 km^2 and more than 300,000 people,[12] the Council of Ministers approved a battery of economic support measures (RDL 6/2024) of up to €10.6 billion, mainly aimed at providing liquidity to the agents in the areas affected to ease the consequences of the interruption of economic activity. These measures notably include:

- A specific guarantee facility of up to €5 billion, managed by the Official Credit Institute (ICO), to provide liquidity to households, self-employed persons and firms and to enable them to collect compensation linked to insurance policies in advance. This guarantee facility includes a specific tranche for the self-employed and SMEs, to ensure that they can fund investments and cover their working capital cycle.

- A possible moratorium on loans for all households and for firms with turnover of less than €6 million in the areas affected. The moratorium would apply both to mortgage

11 For a summary of all the measures adopted by the Spanish Council of Ministers, see Presidencia de Gobierno (2025).

12 In Valencia province alone, at 21 March 2025 the regional government estimates that 552 km^2 and 306,000 people were affected, with material damage to 11,242 homes and 141,000 private vehicles (Generalitat Valenciana, 2025).

and non-mortgage loans and would last 12 months for principal repayments and three months for interest payments.

- Direct support for firms (between €10,000 and €150,000, depending on their turnover in 2023) and the self-employed (€5,000).

- Support for natural and legal persons facing personal injury or damage to housing or industrial, commercial or services premises (varying amounts depending on the type and severity of the damage).

- A one-off increase of 15% in payments under the minimum income scheme.

- Special tax relief and tax reductions for agricultural activities.

- Expedited processing of claims by the Insurance Compensation Consortium (CCS) to ensure that funds are effectively made available in the extraordinary circumstances following the flash floods.

The severity of the emergency required ongoing efforts by the authorities to continue to roll out the necessary measures. Barely a week after the disaster, RDL 7/2024 was adopted, including, among other provisions, measures to ease and defer utility bill payments (electricity, natural gas), energy supply guarantees, and investments to rebuild electricity networks, as well as various tax and support measures for the main economic sectors, housing, employment and social security.

One month after the flash floods, the Government continued to adopt support measures, focused on helping people replace their cars (which suffered extensive damage) and on actions to reactivate industry and the tourism sector and support export activities (RDL 8/2024).

From early November 2024 the regional government of Valencia also began to approve a complementary package of economic measures, including direct support of €6,000 per dwelling affected for the purchase of essentials and €800 per month for access to rented housing. Once the critical first few weeks after the flash floods had elapsed, the regional government took steps to restore and rebuild the businesses that had been hardest hit, with measures focused on specific groups of workers and business sectors (for more details, see Annex 2).

The Ministry of the Economy, Trade and Business and the regional administration have stressed their commitment to keeping the support measures in place, so that the areas affected can overcome the impact of this natural disaster and return to their normal levels of activity.[13] Thanks to this stance and to the potentially high amounts of the measures implemented relative to the size of the areas affected, this disaster could have a lower economic

13 Ministerio de Economía, Comercio y Empresa (2024f).

impact than similar ones in the past. But it is too early to draw conclusions in this respect and ongoing monitoring of the economic and financial recovery in these areas is still needed. To contribute to this task, in section 5 we present an analysis of the credit dynamics in these areas in the period after the flash floods.

Steps taken by other Spanish institutions, such as the Banco de España itself or the General Council of Notaries, are described in Annex 2.

4.2 Support granted through the ICO and the CCS

As part of the battery of government measures described above, in November 2024[14] the ICO introduced the first tranche of the specific guarantee facility for households, self-employed persons and firms, to provide them with liquidity and enable economic activity to return to normal as soon as possible. The guarantees are free of charge for banks and for their customers and can be requested by banks to cover financing granted up to 30 November 2025.

Under the different modalities of this programme, the ICO can provide State guarantees for 80% of financing granted by banks in advance of compensation payments from the CCS or other aid that may be offered by the different tiers of government. The programme will also enable the self-employed and firms to finance the investments and working capital needed to restore their activity.

According to the latest data available for preparation of this article (at 31 March 2025), the ICO had provided guarantees amounting to €516.74 million, over a total of 2,074 loans (i.e. with an average amount close to €249,000), the bulk of which granted since February 2025. The amount provided up to that date accounts for around 42% of the first two tranches approved by the Government and for barely 10.3% of the maximum amount initially envisaged for this guarantee programme.[15] This flow of new financing represents 1.9% of the total stock of credit to households and firms at September 2024 in the directly flooded areas. Overall, the information available points to significant spare capacity in the programme, should a higher volume of requests be received in the remainder of 2025.

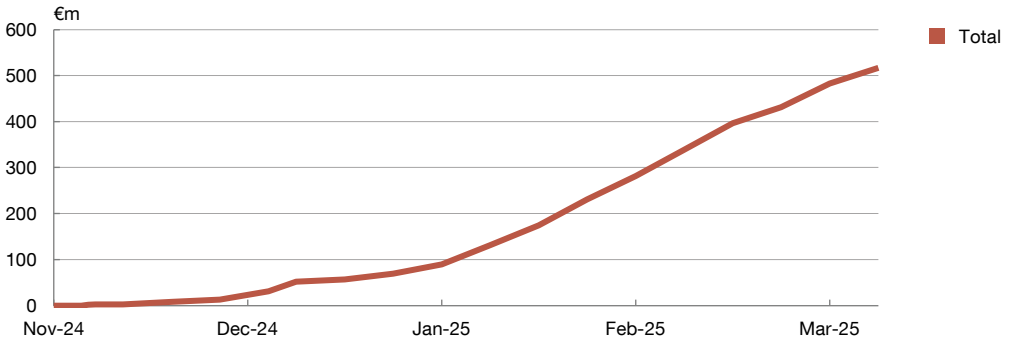
In the first week of November 2024 the CCS began to assess and handle claims for the extensive damage caused by the flash floods, coordinating the initial deployment on the ground of more than 400 loss assessors, who were soon joined by experts provided by the Spanish Association of Insurers (Unespa).[16] This unprecedented mobilisation of resources was prompted by the need for a quick and effective response to one of the biggest natural disasters in Spain's recent history.

14 Ministerio de Economía, Comercio y Empresa (2024d).

15 On 11 November 2024 the Council of Ministers approved the activation of the first tranche of the guarantee facility for an amount of €1 billion. A second tranche amounting to €240 million was approved on 3 December 2024.

16 Ministerio de Economía, Comercio y Empresa (2024b and 2024e).

Chart 3
Total ICO flash floods guarantee facility (at 31 March 2025)



SOURCE: Banco de España (data provided by banks).

Table 2
Insurance claims filed with the CCS and sums paid (at 31 March 2025)

Material damage	Claims filed	Claims paid	% of claims paid	Total paid (€m)
Small businesses, warehouses and other	14,617	9,710	66	456.67
Industrial premises	4,550	2,747	60	280.96
Civil engineering infrastructure	76	19	25	8.14
Offices	988	662	67	22.17
Vehicles	142,775	118,317	83	1,033.66
Homes and homeowner associations	78,544	53,241	68	810.54
TOTAL	241,550	184,696	76	2,612.14

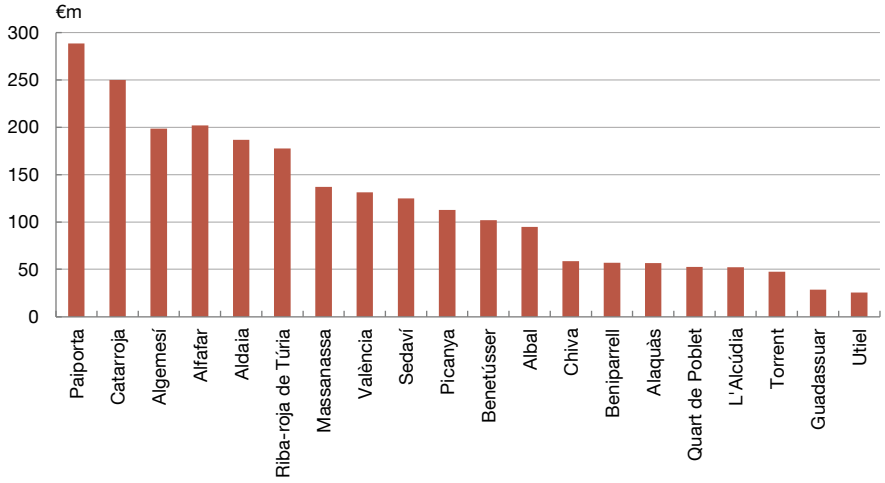
SOURCE: CCS.

Table 2 reflects the scale and complex causes (a combination of torrential rain and flooding) of the claims filed. Compensation for lost or damaged vehicles is the largest item, followed by compensation for homes and homeowner associations and, at a considerable distance, for small businesses, warehouses and industrial premises.[17]

Although the flash floods affected several provinces in the east and south of mainland Spain (Castile-La Mancha and Andalusia), as well as the Balearic Islands, more than 95% of the damage was concentrated in Valencia province. Drawing on CCS data, Chart 4 shows the municipalities awarded compensation over €25 million. In addition, Table A1.1 lists the municipalities where average compensation exceeded €12,000.

17 CCS (2025).

Chart 4
Distribution of municipalities in Valencia province awarded compensation over €25 million (at 31 March 2025)



SOURCE: CCS.

5 Impact of the flash floods on bank lending

Here we present an exercise that analyses the short-term impact of the flash floods (up to February 2025) on credit granted to the firms and households affected. This analysis is necessarily limited to a very short time frame. To obtain a higher estimate of the possible medium and long-term effects, we use as a proxy the 2011 Lorca earthquake, another natural disaster in a nearby area. The preliminary analysis shows that the effects on firms could emerge up to one year after the disaster (see section 5.2 below). However, the impact of the flooding in 2024 could be tempered, compared with the experience in Lorca, depending on how effective the public measures already adopted and other possible future ones prove to be. In addition, the material damage caused by flooding and by earthquakes is not fully comparable.

5.1 Short-term credit dynamics

For this analysis, we use granular CCR borrower-level loan data (both for firms and households), to ascertain how their total credit stock has changed or if credit quality has been affected. To do so we conduct a DiD study[18] where the flash floods are the shock. The treatment group

18 The DiD method is an econometric technique used to assess the impact of an intervention or treatment, comparing changes in outcomes over time between a treatment group (affected by the intervention) and a control group (with similar characteristics and that ideally would only differ from the treatment group in not having been affected by the intervention). It is assumed that, without the intervention, the differences between the two groups would remain constant. Thus, any additional changes observed in the treatment group are attributed to the effect of the intervention. The first documented use of the DiD method is attributed to the British physician John Snow (1855), who studied the relationship between contaminated water supply and the incidence of cholera in London. For a detailed explanation of the DiD method see, for example, Angrist and Pischke (2008).

comprises the loans in the postcodes located in the municipalities and districts affected that are included[19] in RDL 6/2024. The control group selects loans in comparable postcodes using propensity score matching.

In particular, this score matching technique seeks to select for each postcode affected by the flash floods another one with similar observable characteristics in terms of average household income, population, percentage of population over 65,[20] number of firms, percentage of non-performing loans (NPLs) to firms[21] and probability of a 500-year flood (the latter variable, taken from the National System of Mapping of Areas at Risk of Flooding).[22] Drawing on these variables, the algorithm pairs each affected area with another that has similar characteristics (the control group).

In the results presented throughout the main text of this section, the control group has been taken from postcodes located along the Mediterranean coast of mainland Spain. As Table 3 shows, when the postcodes affected are compared with others in the Mediterranean regions, the similarity is high except in terms of income, which is lower in the postcodes of the affected areas. After pairing, the postcodes considered are similar for the treatment and control groups, not only in terms of the paired variables but also as regards other factors, such as percentage of Spanish nationals, percentage of population under 18, average age of population, total bank credit or percentage of stage 2 loans to firms.

In Annex 4 we present additional results using a geographically broader control group (the whole of Spain) as a robustness exercise. In qualitative terms, the conclusions drawn are similar to those of the main analysis. Regarding pairing, there are significant differences between the characteristics of the postcodes affected and those of the rest of Spain in almost all variables (except, in this case, in average income). Overall, these exercises show that the Mediterranean area postcodes are more similar to those of the treatment group. In addition, the geographical location could be capturing important unobservable (for instance, sociocultural) factors not captured by the observable variables. In consequence, our base model uses this control group.

The regression to be estimated follows a DiD model based on the following equation:

$$y_{it} = \beta * I_t * \text{Affected borrower}_i + \mu_i + \Omega_{it} + \varepsilon_{it}$$

where i is the borrower (household or firm), t is time, I_t is a set of time dummies (indicator variable) and the Affected borrower variable is binary, taking the value 1 for firms or households

19 The areas affected are classified based on the postcodes of the municipalities listed in RDL 6/2024 (which mostly belong to Valencia province, except for three, in the provinces of Albacete, Cuenca and Malaga). The approach used aims to include any potential affected borrower, so it considers that a loan has been affected by the flash floods when any of the borrowers belong to one of the postcodes of the locations deemed to be affected, or when a property located in one of the areas affected serves as mortgage collateral for the loan or credit in question.

20 Information available in the Household Income Distribution Map of the National Institute of Statistics (INE) by census section, mapped using the INE's cartographic information to estimate postcode level values.

21 Data on the number of firms and the percentages of stage 2 and stage 3 loans to firms provide information on the productive system within the postcode. This is relevant for supply and demand for credit among households and firms and for their credit risk.

22 Available from the Ministry for Ecological Transition and the Demographic Challenge.

Table 3

Test of averages of postcodes classified according to whether or not they were affected by the flash floods (a) (b) (c)

	Mediterranean coast areas									
	Before propensity score matching					After propensity score matching				
	Not affected		Affected		Test of averages	Not affected		Affected		Test of averages
	Average	Std. Dev. / Prop.	Average	Std. Dev. / Prop.		Average	Std. Dev. / Prop.	Average	Std. Dev. / Prop.	
Number of postcodes	2,293	(95.7%)	103	(4.3%)		99	(50.0%)	99	(50.0%)	
Average net household income (€)	33,579.14	(96.85)	30,486.54	(75.82)	0.001	31,765.71	(86.74)	30,643.21	(75.83)	0.247
Population (thousands)	1,428.04	(27.06)	1,469.90	(22.59)	0.568	1,434.34	(22.46)	1,482.58	(22.62)	0.512
Percentage of persons over 65	21.40	(2.40)	21.61	(2.39)	0.715	21.53	(2.46)	21.49	(2.37)	0.964
Number of firms	175,118	(592.94)	212,107	(545.04)	0.293	236,222	(586.97)	220,646	(547.66)	0.739
Percentage of NPLs to firms	9.04	(3.80)	8.78	(3.81)	0.860	8.48	(3.30)	8.78	(3.81)	0.871
Probability of a 500-year flood (%)	3.47	(3.28)	14.20	(4.34)	0.001	15.30	(4.89)	14.74	(4.36)	0.857
Total credit (€m)	69.10	(0.01)	88.27	(0.01)	0.382	119.11	(0.02)	91.83	(0.01)	0.617
Percentage of stage 2 loans to firms	10.03	(3.59)	9.77	(3.23)	0.841	8.29	(2.71)	9.77	(3.23)	0.258
Percentage of Spanish nationals	85.16	(3.28)	89.49	(1.92)	0.001	89.82	(2.26)	89.40	(1.92)	0.512
Percentage of persons under 18	16.24	(1.92)	15.93	(1.81)	0.402	16.09	(1.89)	15.99	(1.81)	0.837
Average household size	2.49	(0.52)	2.42	(0.47)	0.009	2.47	(0.47)	2.42	(0.47)	0.138
Average age	44.50	(1.90)	44.87	(1.87)	0.312	44.64	(1.94)	44.80	(1.86)	0.760

SOURCES: Banco de España, INE and authors' calculations.

a The table presents postcode-level averages of a series of factors used to match postcodes affected by the flash floods (according to RDL 6/2024) and postcodes not affected along the Mediterranean coast.
b For each group and variable, the "Std. Dev./Prop." column shows the standard deviation in brackets, except for the "Number of postcodes" variable, where it denotes the postcodes in each group as a percentage of the total (thus, 95.7% of the postcodes along the Mediterranean coast are classified as areas not affected, and 4.3% as areas affected, by the flash floods).
c The "Test of averages" column shows the p-value for each variable analysed. High p-values suggest that the null hypothesis (that both averages are the same) could not be rejected. Propensity score matching is a statistical technique used to select observational units that are similar to those deemed affected according to a set of observable variables of a specific population (in this case, average income, population, number of firms, percentage of population over 65, NPL ratio and probability of a 500-year flood).

affected by the flash floods and the value 0 for those not affected. The controls include firm- and household-fixed effects (μ_i), as well as certain conditions affecting the borrower that vary over time (Ω_{it}) and that are linked to their sector of activity[23] or main bank.[24] In different regressions, the variable y_{it} denotes either (i) the borrower's total debt, (ii) their new debt in the period, or (iii) their credit risk, measured through binary variables that take, respectively, the value 1 if they have any stage 2 or stage 3 loans, and 0 otherwise.

The β coefficient captures the differential effect of the flash floods on a given credit metric (y_{it}) of the borrowers affected, compared with those not affected in the study period. The period considered runs from September 2024 to February 2025, that is, from two months before the flash floods[25] (29 October 2024) to four months after. The regression error terms are grouped (in clusters) at the firm/household, sector, main bank and postcode level.

A basic assumption in this methodology is that the treatment and control groups behave similarly before the shock. This will be checked by analysing the significance of the estimated coefficients for the month of October.

The main results for developments in credit (stock of credit and new lending) are presented in Chart 5.a, which shows the coefficient estimated for each date with 95% confidence bands.[26] In the case of the affected firms, the flash floods had no significant differential impact on either the change in the total stock of credit or the flow of new lending up to February 2025, as the confidence levels were contained at 0 in the previous months. In February (the last month for which there are data available) the firms affected by the catastrophe presented credit growth of 2%, higher than that recorded for firms in unaffected areas. There were already signs of this in January 2025, possibly owing to the greater use of credit facilities, driven by the arrangement of new loans.

Moderately adverse effects are also observed on credit risk in business lending, captured through the proportion of stage 2 or non-performing (stage 3) loans to firms. The results obtained are shown in Chart 6.a. In assessing these findings, it should be borne in mind that, during this period, credit quality developments may have been positively affected by the different types of aid – mainly moratoria – channelled through RDL 6/2024.

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23 For firms, sectors as per the Spanish National Classification of Economic Activities (CNAE) 2-digit code. For households, as per the most granular information available on household activity. For self-employed households, the 2-digit CNAE code is used; for other households, distinctions can be drawn between employee households, banking sector, public sector or similar employee households, retiree households, rentier households, unemployed households, student households, housewife or similar households and others.

24 The results are similar when no main-bank time-fixed effects are introduced or if only invariant time-fixed effects are included, although some coefficients lose significance as the standard errors increase.

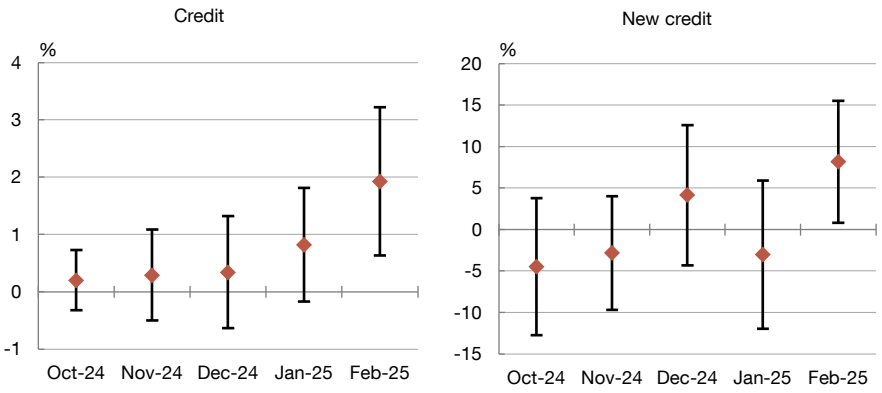
25 The month of October is included in the ex ante period under the reasonable assumption that end-October balances will be very similar to those at 28 October and that the few days in between are insufficient for credit impairments to materialise.

26 In the case of households, the database size requires that estimates be made using population samples, facilitating, from a computational viewpoint, the estimation of the various coefficients. Different sized samples were considered to reproduce the sectoral composition of loans to households, in accordance with their categorisation in the CCR (natural person households, sole proprietor households, homeowner association households and other households). The results are robust to a sample size over 20% of the population. This article shows the results for households with a sample size of 30% of the population.

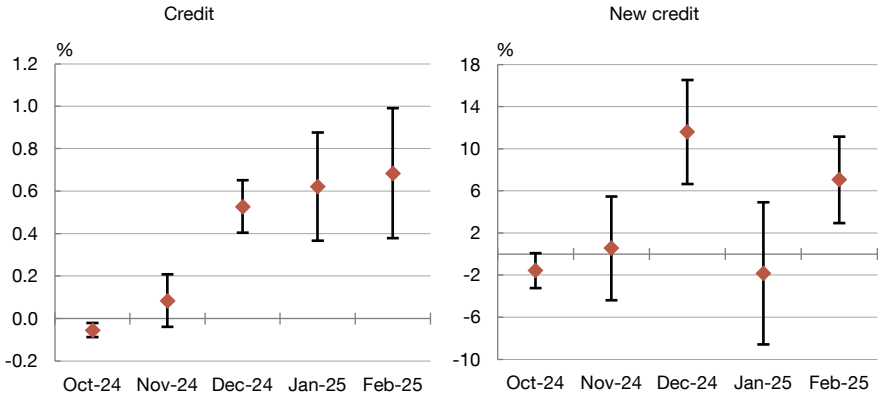
Chart 5

Impact of the flash floods on loans to firms and households. Mediterranean coast areas (a) (b)

5.a Firms



5.b Households



SOURCE: Authors' calculations, drawing on the CIRBE.

a The charts show changes over time in the estimated coefficient (and its 95% confidence bands) of a DiD regression that controls for firm and sector fixed effects x time and main bank x time. Standard errors are clustered at firm, sector, main bank and postcode level.
b "Households" includes natural person households, sole proprietors, homeowner associations and other households. "Firms" includes NFCs.

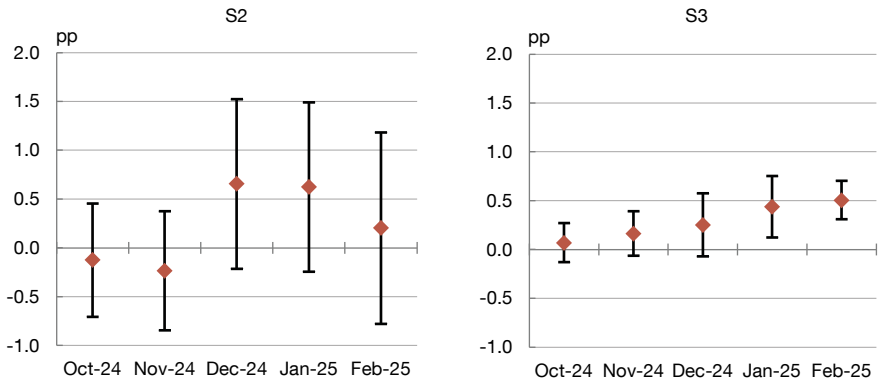
In the case of stage 2 loans, the October coefficient estimate is statistically similar to that of September (the reference month), which is compatible with the assumption that the treatment group and the control group behaved in parallel before the shock. In addition, they continued to behave similarly in November, the first month after the impact of the flooding. An increase of nearly 0.5 pp in the differential effect was observed from December which, while insignificant on a month-by-month basis, is significant for December 2024 and January 2025 combined. This figure means that there was a 4.5% increase in the proportion[27] of stage 2 loans in the areas affected compared with the average. The differential effect decreased in February 2025 (the latest available figure).

27 In this section the relative effects are estimated with respect to average sample values calculated for all the months and borrowers analysed.

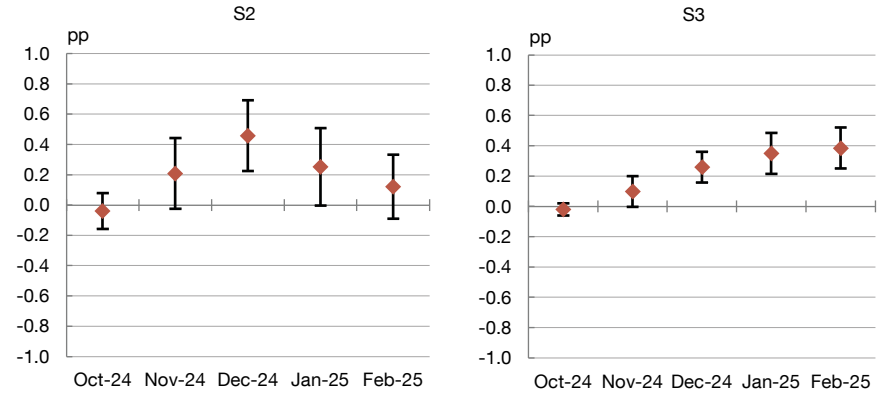
Chart 6

Impact of the flash floods on the proportion of firms and households with credit quality problems. Mediterranean coast areas (a) (b)

6.a Firms



6.b Households



SOURCE: Authors' calculations, drawing on the CIRBE.

a The charts show changes over time in the estimated coefficient (and its 95% confidence bands) of a DiD regression that controls for firm and sector fixed effects x time and main bank x time. Standard errors are clustered at firm, sector, main bank and postcode level.
b "Households" includes natural person households, sole proprietors, homeowner associations and other households. "Firms" includes NFCs.

As regards NPLs, the impact is significantly different from 0 since the start of 2025 (Chart 6.a), with an increase of 3.4% in the proportion of NPLs for firms in the affected areas compared with the average.[28] The difference is statistically significant, but in terms of economic materiality, the impact is limited.

28 As a robustness test, if a firm's affected debt as a proportion of its total bank debt is used as a proxy to determine whether or not a firm is affected, rather than a dichotomous variable, the results are stronger (qualitatively and quantitatively) both for the control group selected from the Mediterranean regions and for that which uses all of Spain. A less precise manner of capturing how intensely affected a firm was by the flash floods could be to use the percentage of land flooded in the firm's postcode. The problem with this measure is that, despite indicating how intensely an area was affected by the heavy rain, it may not accurately reflect the fact that even if only a small part of a specific area were flooded, the firms established there could still have been severely affected. Considering the problems of such an approximation, the results thus obtained reinforce the fact that stage 2 loans increased in late 2024.

As with firms, no immediate differential effect of the flash floods was observed on the total stock of credit to households, as the confidence bands were contained at 0 in both October and November. A positive differential effect was, however, observed from December, with the growth in the stock of credit to households in February 2025 being up to 0.7% higher in the affected areas than in the unaffected areas.

There are also adverse effects on credit risk in lending to households. Specifically, our analysis of changes in stage 2 and stage 3 loans revealed no significant effects in October or November 2024. However, a significant effect of 0.45 pp in the proportion of stage 2 loans was observed in December (a 4.1% increase over the average stage 2 loan ratio). From January 2025 no significant differences were observed in the proportion of stage 2 loans in the affected areas, meaning that the effect seems to be temporary.

As regards non-performing (stage 3) loans to households, no significant differences were observed in the months immediately following the flash floods. However, from December 2024 a relative increase of 0.44 pp was observed in the ratio of stage 3 loans to households in the affected areas, compared with those in unaffected areas (a relative increase of close to 9.1% with respect to the average NPL ratio).

Lastly, to analyse whether the effects were greater for a specific type of bank, we defined a bank-level measure of credit concentration in the affected areas (credit in the area relative to total credit before the flash floods). Also, a priori the impact was expected to be greater for SMEs; accordingly, we defined an indicator variable to identify these firms. These variables (concentration metric and SME indicator) are included in a regression as a triple interaction with the borrower identifier variables in the affected area.

It was verified that the proportion of stage 2 loans to firms increased especially at the banks whose business was most concentrated in the affected areas. For these banks, that proportion increased by 24% after the flooding (from early October 2024 to end-February 2025). By contrast, in that same period, stage 3 loans to affected firms decreased by 9% at the banks whose business was most concentrated in the affected areas, while they increased by slightly over 3% at other banks.[29] No particular effect was observed regarding changes in SME credit quality.

In the case of households, the banks most exposed to the affected areas recorded higher growth in new lending to this segment in those areas, although the differential effect is very limited (0.02 pp up to February 2025). Also, analysis of the heterogeneous effects of the flash floods on credit risk by household type reveals that the proportion of stage 2 loans grew more in the affected areas among the self-employed. This was to be expected a priori, owing to possible flood damage to family businesses, where these were a main source of income. As regards the heterogeneous effects by bank, the banks most exposed to the affected areas are the ones that have reclassified the most risk to stage 3 (0.18 pp less) and to stage 2 (0.49 pp more).

29 A bank is considered to be highly exposed to the affected areas if its credit in these areas accounted for more than 40% of its total credit before the flash floods. Further analyses seem to suggest that the hardest hit banks rolled over fewer pre-existing loans to the firms most affected.

5.2 Case study: the 2011 Lorca earthquake

Since we are unable to study the effects of the flash floods in the financial sector from a medium/long-term perspective (as they occurred so recently), it is useful to analyse the experience gained after other natural disasters that caused substantial material and personal damage. Analysis of the earthquake of 11 May 2011 in Lorca (Murcia) is particularly relevant, despite the differences between these disasters in terms of the size of the area affected and the subsequent mobilisation of resources. Indeed, the broad public response to the flash floods could mean that the consequences observed in the past cannot be extrapolated in equal measure to the latest disaster. In any event, it is useful to estimate a potential upper bound to the medium-term effects of the catastrophe, to guide our monitoring of the changes in credit in the areas affected by the flash floods.

The Lorca earthquake was a moderate tremor, measuring 5.2 on the Richter scale, with (i) a very shallow hypocentre (only 1km deep) and (ii) the epicentre[30] in the town itself, which had a population of 92,000. These two amplifying factors were the reason for the significant damage it caused, which led to it being considered the greatest urban disaster in Spain since the Civil War. In terms of material damage, around 24,000 properties were affected (80% of the total in the municipality) and 800 business premises, as well as roads and all kinds of public infrastructure. More than 1,700 dwellings were demolished in the aftermath. Personal damage was also significant, with nine fatalities, hundreds injured and thousands affected. The recovery entailed a cost for the State of over €800 million. The CCS received 32,700 compensation claims for a total of nearly €450 million.

The earthquake had medium-term effects on the local economy. Thus, one year later, between 15% and 20% of businesses in the town remained closed, either because premises were unable to reopen due to the severe damage suffered or because they had to be demolished. According to the Lorca Confederation of Employers' Organisations, the earthquake resulted in a 40% drop in firms' sales over the following 12 months.

The analysis of the impact of the Lorca earthquake on bank loans focuses on SMEs and on changes in lending, as well as on SME default rates up to four and a half years later.

In particular, to identify an NFC's bank debt, the CCR was used as a monthly data source for the period between January 2010 and December 2015.

Once again, the method used was a DiD analysis in which a set of firms affected by the earthquake (exogenous shock) was identified and classified as a treatment group (in accordance with the terminology used in this analysis). A control group was also identified, comprised of firms that were not (or were less severely) affected. Each firm's postcode was used to carry out this classification.[31] Thus, if the firm was located in any of the neighbourhoods

30 The epicentre is the point on the Earth's surface directly above the hypocentre, which is the point below the Earth's surface where the earthquake originates.

31 As the CCR data are prior to 2016, there is no direct information on firms' postcodes, so these were assigned drawing on CCR data from 2016 onwards. Firms that had ceased to operate before then and were no longer in the CCR were not included in the analysis. This could lead to a certain survival bias, meaning that the effects may be overestimated.

hardest hit by the earthquake (as per information obtained from the Lorca Town Council website, based on the neighbourhoods that were rebuilt after the earthquake) it was treated as an affected firm. To establish the control group, we identified the firms in the other Lorca neighbourhoods plus those in other Spanish postcodes selected through a propensity score matching procedure.[32]

To assess the robustness of this specification, the two control groups – (i) firms in less affected Lorca neighbourhoods and (ii) firms in postcodes with features comparable to Lorca's affected neighbourhoods – were considered separately. In addition, the analysis was conducted using SMEs in Murcia but outside the municipality of Lorca as a control group. The results of all the robustness analyses confirm the main findings reported in this article.

At firm-month level, two analyses were carried out using the CCR: one on changes in lending and the other on changes in firms' default rates (using a dichotomous variable that takes the value 1 if a firm has significant defaulted loans more than 90 days past-due and 0 otherwise). The regression equation used is as follows:

$$y_{it} = \beta \times I_t \times \text{Affected firm}_i + \mu_i + \mu_t + \varepsilon_{it}$$

where i is the firm, t is time and the controls include both firm-fixed effects (μ_i) and time-fixed effects (μ_t), It is a time indicator variable and the Affected firm variable is binary, taking the value 1 if the firm was affected by the earthquake and 0 otherwise. The β coefficient captures the differential effect of the earthquake on a given metric (y_{it}) – lending volume or existence of default – of the firms affected compared with those not affected in the period studied. This analysis allows us to see how β changes over time (by using multiple time indicators in the interaction for different months rather than just one for the entire period studied). This shows that the hypothesis that the two groups of firms behaved similarly before the earthquake holds true (parallel trends).[33] The errors are clustered at firm and time level.

Charts 7.a and 7.b present the results of the estimated changes in lending volume and in defaults when the main coefficient (β) is allowed to change over time. These results include 95% confidence bands.

Thus, Chart 7.a shows the month-by-month variation in credit for the affected firms relative to those not affected compared with January 2010. Prior to the earthquake, the two groups behaved similarly and no differential effect was observed afterwards.

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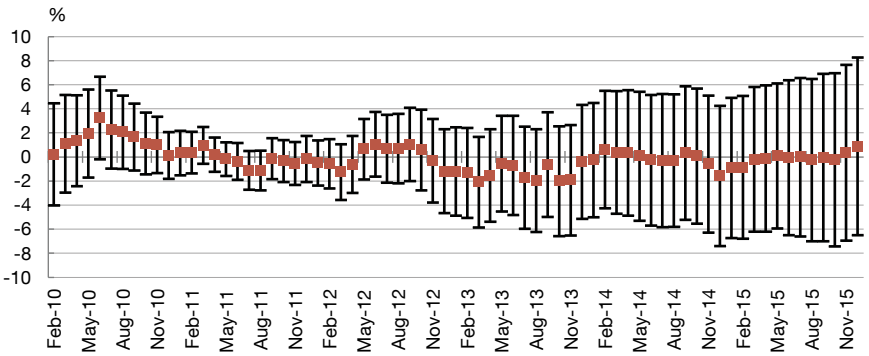
32 The neighbourhoods considered to be hardest hit by the earthquake were: San Diego, Alfonso X, San José, la Viña, San Fernando, San Pedro and Barrios Altos. The variables used for the score matching were average household income in a given postcode, population, number of firms, proportion of persons over 65 and the NPL ratio.

33 We also studied the impact on firms' financial health, by analysing their probability of closure in the following years. To establish whether a firm closed in a given year, this information is matched with the INE's Central Business Register and analysed at firm-year level. The results show a 52% increase in business closures two years after the earthquake, an increase that subsequently disappears.

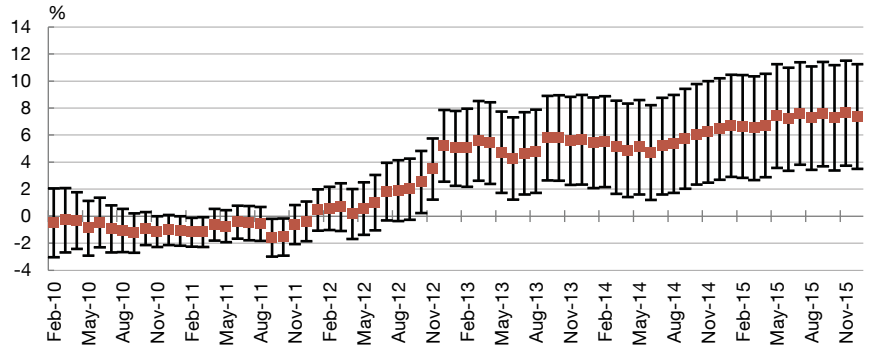
Chart 7

Impact of the Lorca earthquake on NFCs (SMEs) (a)

7.a Impact on credit to SMEs (b)



7.b Impact on the proportion of SMEs with defaulted loans (c)



SOURCES: Banco de España and authors' calculations.

a The charts show changes over time in the estimated coefficient (and its 95% confidence bands) of a DiD regression that controls for firm and time fixed effects. Standard errors are clustered at firm and time level.
b Month-by-month change in credit with respect to 2010 for affected SMEs compared with those not affected.
c Month-by-month increase in affected SMEs' probability of default. A default event is deemed to be when a firm has significant defaulted loans more than 90 days past-due.

Chart 7.b shows the month-by-month increase in the probability of default by the affected SMEs. As in the case of credit, prior to the earthquake the two groups behaved similarly. However, in this case, one year after the catastrophe the probability of default had gradually increased for the firms that had been hardest hit. Thus, the proportion of firms with defaulted loans peaked four years after the earthquake (the figure being nearly 5 pp higher than for the firms in the control group).

These results evidence that Lorca's business sector was affected by the earthquake in the medium and long term, with persistent consequences in terms of defaults. It should be borne in mind that these results cannot be directly extrapolated to the 2024 flash floods, given the volume of the aid mobilised in the most recent disaster and the differences between the two catastrophes, as earthquakes are much more damaging for certain infrastructures. Nevertheless, despite these limitations, it is advisable to take this previous experience into

account and to continue monitoring credit quality in the areas hardest hit by the recent catastrophe.

6 Conclusion

This article has analysed the impact that the flash floods that hit several areas in Spain in late October 2024 had on the banking sector's lending activity and the damage covered by the CCS. Despite the destructive effect of the flash floods at local level, the impact on financial stability was limited. This owes to fact that the credit exposures affected accounted for a small percentage of the national total and to the mitigating measures adopted by general government.

At the local level, in December 2024 differentiated patterns started to emerge in the affected areas relative to other comparable areas from a socio-economic standpoint that were not affected by the catastrophe. In general, lending to households and firms grew more in the affected areas, helping to mitigate the adverse economic effects of the flash floods, but the credit quality performance was worse. The magnitude of these local effects on lending was relatively contained in economic terms.

In any event, the economic and financial consequences of the flash floods are still very present and the actions taken will continue to be closely monitored over the coming months, to assess their effectiveness and determine when it is time to withdraw (or, if appropriate, prolong) the public measures deployed (all of which are inherently temporary).

Within the remit of its competences in relation to oversight and supervision of the banking sector, the Banco de España (in coordination with other authorities) will be particularly observant of how business credit risk evolves (and how it is reflected in firms' stage 2 and stage 3 loans), to ensure that the appropriate steps are taken to facilitate a safe return to financial normality in the areas affected by the flash floods in Spain.

REFERENCES

Álvarez-Román, Laura, Sergio Mayordomo, Carles Vergara-Alert and Xavier Vives. (2024). "Climate risk, soft information and credit supply". Documentos de Trabajo, 2406, Banco de España. https://doi.org/10.53479/36112

Angrist, Joshua D., and Jörn-Steffen Pischke. (2009). *Mostly Harmless Econometrics: An Empiricist's Companion.* Princeton University Press. https://doi.org/10.1515/9781400829828

Baker, Scott R., Nicholas Bloom and Stephen J. Terry. (2023). "Using Disasters to Estimate the Impact of Uncertainty". *The Review of Economic Studies,* 91(2), pp. 720-747. https://doi.org/10.1093/restud/rdad036

Banco de España. (2024). "Statement by the Banco de España regarding the effects of the DANA", press release of 5 November. https://www.bde.es/f/webbe/GAP/Secciones/SalaPrensa/NotasInformativas/24/presbe2024-90en.pdf

Banco de España. (2025a). "El Banco de España abre el plazo de solicitud de ayudas económicas para estudiantes de las zonas afectadas por la DANA", press release of 3 January. https://www.bde.es/f/webbe/GAP/Secciones/SalaPrensa/NotasInformativas/25/presbe2025-02.pdf

Banco de España. (2025b). "El Banco de España dona 1.500 ordenadores para colectivos afectados por la DANA", press release of 10 February. https://www.bde.es/f/webbe/GAP/Secciones/SalaPrensa/NotasInformativas/25/presbe2025-10.pdf

Barone, Guglielmo, and Sauro Mocetti. (2014). "Natural disasters, growth and institutions: A tale of two earthquakes". *Journal of Urban Economics,* 84, pp. 52-66. https://doi.org/10.1016/j.jue.2014.09.002

Bayoumi, Tamim, Saad N. Quayyum and Sibabrata Das. (2021). "Growth at Risk from Natural Disasters". IMF Working Paper, 2021/234, International Monetary Fund. https://www.imf.org/en/Publications/WP/Issues/2021/09/17/Growth-at-Risk-from-Natural-Disasters-465825

Berg, Gunhild, and Jan Schrader. (2012). "Access to credit, natural disasters, and relationship lending". *Journal of Financial Intermediation,* 21(4), pp. 549-568. https://doi.org/10.1016/j.jfi.2012.05.003

Billings, Stephen B., Emily A. Gallagher and Lowell Ricketts. (2022). "Let the rich be flooded: The distribution of financial aid and distress after Hurricane Harvey". *Journal of Financial Economics,* 146(2), pp. 797-819. https://doi.org/10.1016/j.jfineco.2021.11.006

Blickle, Kristian. S., Sarah N. Hamerling and Donald P. Morgan. (2021). "How Bad are Weather Disasters for Banks?". Staff Reports, 990, Federal Reserve Bank of New York. https://www.newyorkfed.org/medialibrary/media/research/staff_reports/sr990.pdf

Blickle, Kristian S., Evan Perry and João A. C. Santos. (2024). "Do Mortgage Lenders Respond to Flood Risk?". Staff Reports, 1101, Federal Reserve Bank of New York. https://doi.org/10.59576/sr.1101

Boustan, Leah Platt, Matthew E. Kahn, Paul W. Rhode and Maria Lucia Yanguas. (2020). "The effect of natural disasters on economic activity in US counties: A century of data". *Journal of Urban Economics,* 118(103257). https://doi.org/10.1016/j.jue.2020.103257

Cavallo, Eduardo A., and Ilan Noy. (2011). "The Economics of Natural Disasters: A Survey". https://doi.org/10.18235/0010924

Chavaz, Matthieu. (2016). "Dis-integrating credit markets: diversification, securitization, and lending in a recovery". Staff Working Paper, 617, Bank of England. https://www.bankofengland.co.uk/-/media/boe/files/working-paper/2016/dis-integrating-credit-markets-diversification-securitization-and-lending-in-a-recovery.pdf

Clò, Stefano, Francesco David and Samuele Segoni. (2024). "The impact of hydrogeological events on firms: Evidence from Italy". *Journal of Environmental Economics and Management,* 124(102942). https://doi.org/10.1016/j.jeem.2024.102942

Consorcio de Compensación de Seguros. (2025). "13th briefing note on the extraordinary floods caused by the DANA (cut-off low) from 26 October to 4 November 2024", of 27 February. https://www.consorseguros.es/documents/10184/0/13th_briefing_note_DANA_Oct_2024.pdf/bfce9b0a-434d-140d-df13-7565d861a978?t=1740665175904

Cortés, Kristel Romero. (2014). "Rebuilding after Disaster Strikes: How Local Lenders Aid in the Recovery". FRB of Cleveland Working Paper, 14-28, Federal Reserve Bank of Cleveland. https://doi.org/10.2139/ssrn.2523411

Cortés, Kristel Romero, and Philip E. Strahan. (2017). "Tracing out capital flows: How financially integrated banks respond to natural disasters". *Journal of Financial Economics,* 125(1), pp. 182-199. https://doi.org/10.1016/j.jfineco.2017.04.011

Erda, Tarikua. (2024). "Spillovers that Pay Dividends: The Indirect Impact of Federal Disaster Loans on Firm Entry". SSRN Scholarly Paper, 4875803. https://doi.org/10.2139/ssrn.4875803

Ficarra, Matteo, and Rebecca Mari. (2025). "Weathering the storm: sectoral economic and inflationary effects of floods and the role of adaptation". Staff Working Paper, 1120, Bank of England. https://www.bankofengland.co.uk/-/media/boe/files/working-paper/2025/weathering-the-storm-sectoral-economic-and-inflationary-effects-of-floods-and-the-role-of-adaptation.pdf

Gallagher, Justin, and Daniel Hartley. (2017). "Household Finance after a Natural Disaster: The Case of Hurricane Katrina". *American Economic Journal: Economic Policy,* 9(3), pp. 199-228. https://doi.org/10.1257/pol.20140273

Garmaise, Mark J., and Tobias J. Moskowitz. (2009). "Catastrophic Risk and Credit Markets". *The Journal of Finance,* 64(2), pp. 657-707. https://doi.org/10.1111/j.1540-6261.2009.01446.x

Generalitat Valenciana. (2025). "Diagnóstico-Resumen ejecutivo del Plan de recuperación y reconstrucción para la zona afectada por la DANA. Vicepresidencia Segunda y Conselleria para la Recuperación Económica y Social, de 21 de marzo". https://recuperacio.gva.es/documents/390664086/391046986/Presentacion_Resumen_Ejecutivo_Informe_Diagnostico_VP2.pdf/a2611eb7-103f-5680-58cf-1aa3cbb6f30b?t=1742559695224

Intergovernmental Panel on Climate Change. (2023). "Climate Change 2023: Synthesis Report. Contribution of Working Groups I, II and III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change". https://www.ipcc.ch/report/ar6/syr/downloads/report/IPCC_AR6_SYR_SPM.pdf

Ivanov, Ivan, Marco Macchiavelli and João A. C. Santos. (2022). "Bank Lending Networks and the Propagation of Natural Disasters". *Financial Management,* 51(3), pp. 903-927. https://dx.doi.org/10.2139/ssrn.3541335

Klomp, Jeroen. (2014). "Financial fragility and natural disasters: An empirical analysis". *Journal of Financial Stability,* 13, pp. 180-192. https://doi.org/10.1016/j.jfs.2014.06.001

Koetter, Michael, Feliz Noth and Oliver Rehbein. (2020). "Borrowers under water! Rare disasters, regional banks, and recovery lending". *Journal of Financial Intermediation,* 43(100811). https://doi.org/10.1016/j.jfi.2019.01.003

Lamas Rodríguez, Matías, Mari Luz Garcia Lorenzo, Manuel Medina Magro and Gabriel Perez Quiros. (2023). "Impact of climate risk materialization and ecological deterioration on house prices in Mar Menor, Spain". Scientific Reports, 13(11772). https://doi.org/10.1038/s41598-023-39022-8

Ministerio de Economía, Comercio y Empresa. (2024a). "Primera nota informativa sobre las inundaciones extraordinarias producidas desde ayer 29 de octubre de 2024 en València, Albacete, Cuenca y Andalucía oriental y la gestión de las indemnizaciones que corresponde asumir al Consorcio de Compensación de Seguros (CCS) del ministerio de Economía, Comercio y Empresa". Press release of 30 October. https://portal.mineco.gob.es/es-es/comunicacion/Paginas/consorcio-seguros-dana-2024.aspx

Ministerio de Economía, Comercio y Empresa. (2024b). "El Consorcio de Compensación de Seguros comienza el peritaje de los daños producidos por la DANA". Press release of 3 November. https://portal.mineco.gob.es/es-es/comunicacion/Paginas/Consorcio-de-Compensaci%C3%B3n-de-Seguros-peritaje-DANA.aspx

Ministerio de Economía, Comercio y Empresa. (2024c). "El Gobierno aprueba medidas de apoyo y alivio financiero para hogares y empresas". Press release of 5 November. https://portal.mineco.gob.es/RecursosNoticia/mineco/prensa/noticias/2024/20241105%20NP%20Medidas%20Economia%20DANA-vf.pdf

Ministerio de Economía, Comercio y Empresa. (2024d). "El Gobierno aprueba el primer tramo de la línea de Avales DANA por importe de 1.000 millones dirigida a facilitar financiación a hogares, autónomos y empresas para hacer frente a los daños". Press release of 11 November. https://portal.mineco.gob.es/es-es/comunicacion/Paginas/linea-de-Avales-DANA-primer-tramo.aspx

Ministerio de Economía, Comercio y Empresa. (2024e). "El Ministerio de Economía, Comercio y Empresa y Unespa colaborarán para agilizar la gestión de las indemnizaciones a los afectados por la DANA". Press release of 13 November. https://portal.mineco.gob.es/es-es/comunicacion/Paginas/acuerdo-unespa.aspx

Ministerio de Economía, Comercio y Empresa. (2024f). "Las entidades financieras podrán adherirse a la Línea de Avales ICO DANA a partir de mañana". Press release of 14 November. https://portal.mineco.gob.es/es-es/comunicacion/Paginas/entidades-financieras-Linea-de-Avales-ICO-DANA.aspx

Presidencia de Gobierno. (2025). "Ayudas del Gobierno para paliar los efectos de la DANA: ¿cuáles son y quién las puede solicitar?". La Moncloa. https://www.lamoncloa.gob.es/info-dana/paginas/2024/ayudas-dana-medidas-gobierno.aspx

Ratcliffe, Caroline, William Congdon, Daniel Teles, Alexandra Stanczyk and Carlos Martín. (2020). "From Bad to Worse: Natural Disasters and Financial Health". *Journal of Housing Research,* 29(sup1), S25–S53. http://dx.doi.org/10.1080/10527001.2020.1838172

Real Decreto-ley 6/2024, de 5 de noviembre, por el que se adoptan medidas urgentes de respuesta ante los daños causados por la Depresión Aislada en Niveles Altos (DANA) en diferentes municipios entre el 28 de octubre y el 4 de noviembre de 2024. https://www.boe.es/buscar/act.php?id=BOE-A-2024-22928

Real Decreto-ley 7/2024, de 11 de noviembre, por el que se adoptan medidas urgentes para el impulso del Plan de respuesta inmediata, reconstrucción y relanzamiento frente a los daños causados por la Depresión Aislada en Niveles Altos (DANA) en diferentes municipios entre el 28 de octubre y el 4 de noviembre de 2024. https://www.boe.es/buscar/act.php?id=BOE-A-2024-23422

Real Decreto-ley 8/2024, de 28 de noviembre, por el que se adoptan medidas urgentes complementarias en el marco del Plan de respuesta inmediata, reconstrucción y relanzamiento frente a los daños causados por la Depresión Aislada en Niveles Altos (DANA) en diferentes municipios entre el 28 de octubre y el 4 de noviembre de 2024. https://www.boe.es/buscar/act.php?id=BOE-A-2024-24840

Snow, John. (1855). "On the Mode of Communication of Cholera". John Churchill, New Burlington Street. https://archive.org/details/b28985266/page/n3/mode/2up

Toya, Hideki, and Mark Skidmore. (2007). "Economic development and the impacts of natural disasters". *Economics Letters,* 94(1), pp. 20-25. https://doi.org/10.1016/j.econlet.2006.06.020

Usman, Sehrish, Guzman Gonzalez-Torres Fernandez and Miles Parker. (2024). "Going NUTS: The Regional Impact of Extreme Climate Events Over the Medium Term". ECB Working Paper, 2024/3002, European Central Bank. http://doi.org/10.2139/ssrn.5050906

Annex 1 Municipalities most affected by the flash floods according to CCS data

Table A1.1
Municipalities where average compensation per claim exceeded €12,000 (at 31 March 2025)

	Province	Claims	Total paid (€m)	Amount per claim (€)
Quart de Poblet	Valencia	2,367	52.60	22,223
Riba-roja de Túria	Valencia	8,572	177.43	20,699
Silla	Valencia	467	8.08	17,293
Beniparrell	Valencia	3,412	57.06	16,722
Llocnou de la Corona	Valencia	123	2.05	16,639
Letur	Valencia	116	1.69	14,563
Benicull de Xúquer	Valencia	172	2.44	14,157
Massanassa	Valencia	9,904	137.14	13,847
Albal	Valencia	7,111	94.79	13,330
Alfafar	Valencia	15,172	202.04	13,317
Sedaví	Valencia	9,860	124.79	12,656
Paiporta	Valencia	23,550	288.27	12,241
Torrent	Valencia	3,885	47.49	12,223
Picanya	Valencia	9,327	112.61	12,074

SOURCE: CCS.

Annex 2 Other public measures to mitigate the flash floods

Measures taken by the regional government of Valencia[1]

In parallel to the Spanish Government, the regional government of Valencia began to approve a series of economic support measures from November 2024, including:

- Direct support of €6,000 per dwelling affected for the purchase of essentials (Regional Council Decree 163/2024 of 4 November 2024).
- Direct support for the municipalities affected (Regional Council Decree 164/2024 of 4 November 2024).
- Direct support of up to €800 per month for access to rented housing for individuals whose main and permanent residence was affected by the damage caused by the flash floods (Regional Council Decree 167/2024 of 12 November 2024).
- Direct aid to sustain the employment and economic recovery of firms affected by the flash floods (Regional Council Decree 172/2024 of 26 November 2024).
- Urgent support for the self-employed in the areas of Valencia region affected by the flash floods (Regional Council Decree 176/2024 of 3 December 2024).
- Urgent support for irrigation communities and other irrigation entities affected by the damage caused by the flash floods (Regional Council Decree 182/2024 of 10 December 2024).
- Direct aid for firms with activity in Valencia region to cover the financial costs of working capital and investment financing operations, arranged with financial institutions and secured by a guarantee from a mutual guarantee company, to ease the damage caused in Valencia region by the flash floods (Regional Council Decree 190/2024 of 17 December 2024).
- Direct support for the municipalities affected in Castellón province (Regional Council Decree 196/2024 of 23 December 2024).
- Direct aid for cultural industry professionals and firms affected by the flash floods (Regional Council Decree 197/2024 of 23 December 2024).

1 Summary of measures taken to mid-February 2025. For further details, see "Information for those affected by the flash floods" (in Spanish) on the Valencia regional government's website.

— Direct aid for publishing firms affected by the flash floods (Regional Council Decree 198/2024 of 23 December 2024).

— Direct aid for third sector social action organisations affected by the flash floods (Regional Council Decree 201/2024 of 30 December 2024).

— Support to compensate the efforts of host households resident in the affected areas (Regional Council Decree 12/2025 of 28 January 2025).

— Support for workers whose employment contracts have been suspended under a job retention scheme due to force majeure as a result of the flash floods (Regional Council Decree 17/2025 of 4 February 2025).

— Support to revive business and community associations in the municipalities affected by the flash floods (Regional Council Decree 20/2025 of 11 February 2025).

The regional government of Valencia also adopted a comprehensive package of tax relief measures (extensions, rebates, reductions and exemptions) for those affected by the flash floods (Regional Council Decree-Law 12/2024 of 12 November 2024 and Regional Council Decree-Law 17/2024 of 23 December 2024).

The role of the Banco de España

Within the area of its functions, the Banco de España took various steps in response to the flash floods.[2] First, on 5 November 2024 it released an initial calculation of the financial sector's overall exposure in the areas affected, broken down by loans to households and firms/SMEs, along with the number of individual and business borrowers (mortgage and other loans) in the areas affected by the disaster.

The Banco de España closely monitored the availability of cash in the ATMs that remained operational after the flash floods, to ensure that the general public had access to cash at all times. It also took one-off measures to facilitate the exchange of banknotes and coins damaged in the floods, opening counters to the public at the Valencia branch office specifically for this purpose and with no need for an appointment. A specific exchange procedure was also arranged in collaboration with local credit institutions.

Within the context of institutional social responsibility, the Banco de España launched two microeconomic initiatives:

— A programme of 150 direct grants[3] (€1,000 per person) for students residing in areas affected by the flash floods who are enrolled in an official intermediate or higher

2 Banco de España (2024).

3 Banco de España (2025a).

vocational course or an official university course in the areas of finance, business administration or economics.

— Donation of 1,500 disused computers to various schools, families and organisations affected by the flash floods in the provinces of Valencia and Albacete, through the Fundación Adelias[4] (which works to reduce the digital divide among vulnerable groups). This was the largest donation of IT equipment made to date by the Banco de España.

Other entities and administrations

The Association of Notaries made available to those affected by the flash floods: (i) a free notary assistance service comprising searches for and issuance and delivery (free of charge) of copies of the public deeds of properties; and (ii) a form for requesting a notarial certificate of the damage caused by the flash floods.

The Association of Property Registrars provided registry extracts free of charge, to enable accreditation of current ownership of property for the purposes of applying for support and grants.

4 Banco de España (2025b).

Annex 3 Results obtained using postcodes from across Spain as a control group

This annex presents the results of a robustness check of the DiD analysis, in which the control group is identified by matching with postcodes throughout Spain, rather than solely with postcodes along the Mediterranean coast (as in the main text).

Table A3.1 shows the test of averages performed to determine the differences between the treatment group and the control group constructed before and after matching. There are significant differences between the postcodes affected and the rest of Spain in the observable characteristics related to demographics, the productive system, average income and even flood probability. After matching, the postcodes in the rest of Spain used as a control are similar not only in the variables used for the matching, but also in other factors such as percentage of Spanish nationals, percentage of population under 18, average age of population, total bank credit and percentage of stage 2 loans.

In addition, the coefficients estimated are included for each date with 95% confidence bands. The estimated equation is similar to that set out in the main text but, in this case, the control group was constructed considering postcodes throughout Spain. In qualitative terms, the results are similar to those obtained above, except in the case of new credit to firms, where no significant differences are observed when postcodes from across Spain are included in the control group.

Table A3.1

Test of averages of postcodes classified according to whether or not they were affected by the flash floods (a) (b) (c)

	Total Spain									
	Before propensity score matching					After propensity score matching				
	Not affected		Affected		Test of averages	Not affected		Affected		Test of averages
	Average	Std. Dev. / Prop.	Average	Std. Dev. / Prop.		Average	Std. Dev. / Prop.	Average	Std. Dev. / Prop.	
Number of postcodes	11,105	(99.1%)	103	(0.9%)		99	(50.0%)	99	(50.0%)	
Average net household income (€)	31,311.33	(89.09)	30,486.54	(75.82)	0.295	30,891.57	(81.35)	30,643.20	(75.83)	0.78
Population (thousands)	1,055.08	(25.73)	1,469.90	(22.59)	0.001	1,581.91	(24.94)	1,482.57	(22.62)	0.225
Percentage of people over 65	27.77	(3.06)	21.61	(2.39)	0.001	21.27	(2.57)	21.48	(2.37)	0.801
Number of firms	87,915	(17.26)	212,107	(17.23)	0.001	198,970	(18.19)	220,646	(17.31)	0.632
Percentage of NPLs to firms	7.32	(3.91)	8.78	(3.81)	0.346	8.37	(3.32)	8.78	(3.81)	0.823
Probability of 500-year flood (%)	2.50	(2.79)	14.19	(4.34)	0.001	13,86	(4.59)	14.74	(4.36)	0.762
Total credit (€m)	43.69	(0.01)	88.27	(0.01)	0.150	72.76	(0.00)	91.83	(0.00)	0.426
Percentage of stage 2 loans to firms	10.06	(3.93)	9.77	(3.23)	0.853	11.83	(3.66)	9.76	(3.23)	0.233
Percentage of Spanish nationals	91.79	(2.83)	89.49	(1.92)	0.004	88.45	(3.03)	89.39	(1.92)	0.347
Percentage of persons under 18	12.68	(2.24)	15.93	(1.81)	0.001	16.13	(1.97)	15.98	(1.81)	0.787
Average household size	2.33	(0.55)	2.42	(0.47)	0.003	2.46	(0.49)	2.42	(0.47)	0.206
Average age	48.82	(2.41)	44.87	(1.87)	0.001	44.57	(2.02)	44.80	(1.86)	0.679

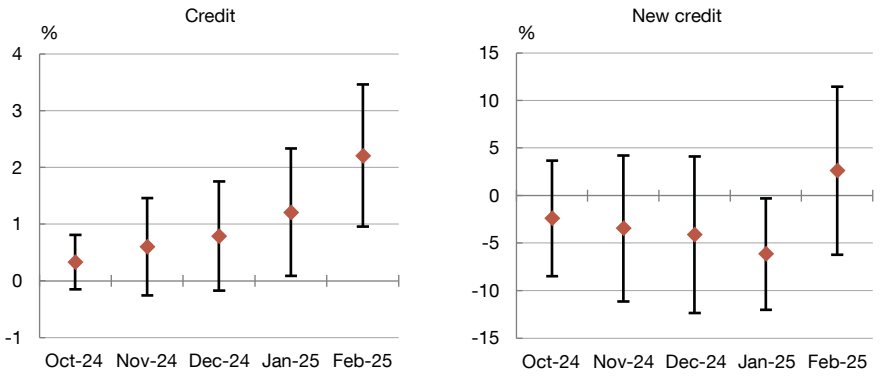
SOURCES: Banco de España, INE and authors' calculations.

a The table presents postcode-level averages of a series of factors used to match postcodes affected by the flash floods (according to RDL 6/2024) and postcodes not affected across Spain.
b For each group and variable, the “Std. Dev./Prop.” column shows the standard deviation in brackets, except for the “Number of postcodes” variable, where it denotes the postcodes in each group as a percentage of the total (thus, 99.1% of the postcodes in Spain are classified as areas not affected, and 0.9% as areas affected, by the flash floods).
c The "Test of averages" column shows the p-value for each variable analysed. High p-values suggest that the null hypothesis (that both averages are the same) could not be rejected. Propensity score matching is a statistical technique used to select observational units that are similar to those deemed affected according to a set of observable variables of a specific population (in this case, average income, population, number of firms, percentage of population over 65, NPL ratio and probability of a 500-year flood).

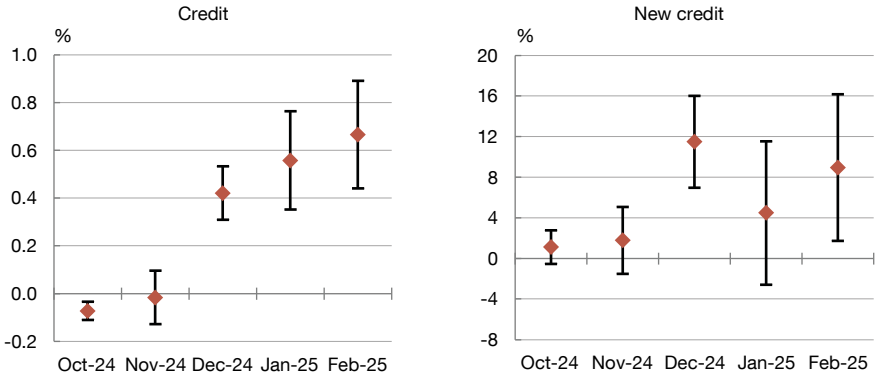
Chart A3.1

Impact of the flash floods on loans to firms and households. Spain (a) (b)

A3.1.a Firms



A3.1.b Households



SOURCE: Authors' calculations, drawing on the CIRBE.

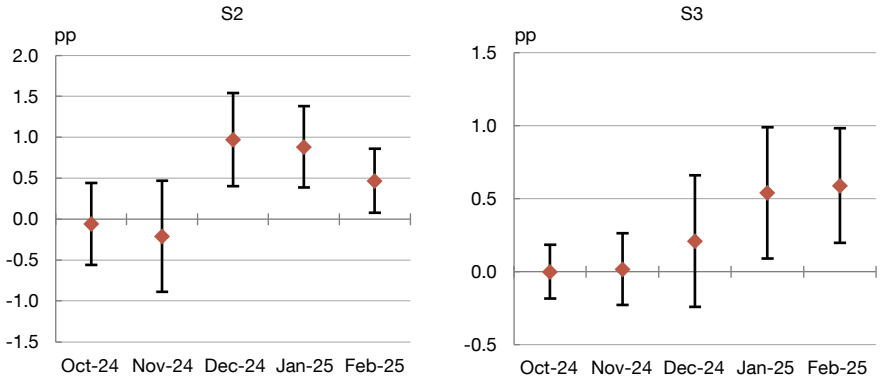
a The charts show changes over time in the estimated coefficient (and its 95% confidence bands) of a DiD regression that controls for firm and sector fixed effects x time and main bank x time. Standard errors are clustered at firm, sector, main bank and postcode level.

b "Households" includes natural person households, sole proprietors, homeowner associations and other households. "Firms" includes NFCs.

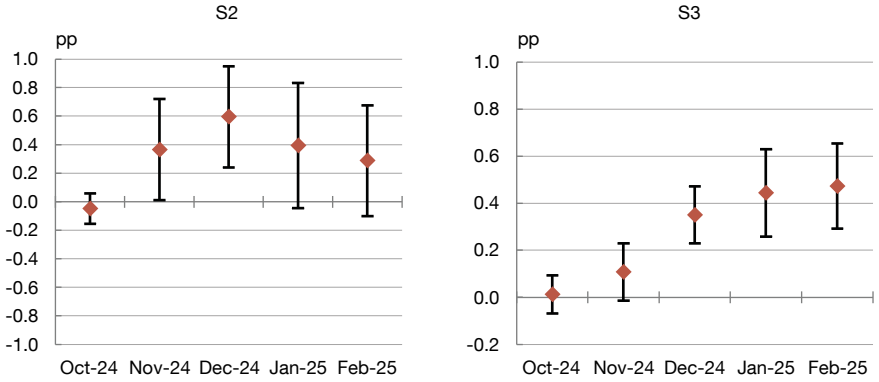
Chart A3.2

Impact of the flash floods on the proportion of firms and households with credit quality problems. Spain (a) (b)

A3.2.a Firms



A3.2.b Households



SOURCE: Authors' calculations, drawing on the CIRBE.

a The charts show changes over time in the estimated coefficient (and its 95% confidence bands) of a DiD regression that controls for firm and sector fixed effects x time and main bank x time. Standard errors are clustered at firm, sector, main bank and postcode level.
b "Households" includes natural person households, sole proprietors, homeowner associations and other households. "Firms" includes NFCs.

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