# Credit Access After Bankruptcy

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### Abstract

We study the impact of bad credit rating on firms access to bank credit after a debt-restructuring bankruptcy procedure. Using French credit register, we implement a difference-in-difference strategy that exploits staggered removal of bankruptcy flags. We focus on small and medium businesses between 2012 and 2019, and show that the exogenous flag removal leads to credit growth. Part of the credit supply constraints may come from a negative reputation effect that deter banks from lending. The flag removal allows for the clearance of information about past bankruptcies and the formation of new banking relationships.

**JEL Classification :** G21, G24, G33, G34

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## 1   Introduction

The COVID-19 health crisis and the restrictions taken by governments have had a major impact on the economy. Many firms – otherwise viable – have suffered from fluctuating business conditions and have needed government support, notably publicly guaranteed loans, to keep their business afloat. As a consequence, they may now be threatened by debt overhang and be in need of debt restructuring (Demmou et al. (2021)). Policy makers are currently aiming for an economic rebound, balancing the need to support firms'

investment with the risk of inefficiently allocating capital to non-viable firms. In this context, debt restructuring appears as a necessary tool to screen viable from non-viable firms and favors new and sustainable funding.

In France, small and mediums enterprises (SMEs) represent 86.7% of all publicly guaranteed loans granted between March 2020 and May 2021. SMEs also account for more than half of French private employment (Cœuré (2021)). Because they have a limited access to financial markets, smaller firms rely heavily on bank credit (Lé and Vinas (2020)) and their recovery after filing for a debt-restructuring bankruptcy procedure is bound to their capacity to roll over their debt. Yet, to the best of our knowledge, there is no evidence on the impact of debt restructuring on SMEs' access to bank credit.

This paper provides empirical evidence that answers this important question. Our analysis uses sharp removals of low credit ratings from credit register of firms that went through bankruptcy, denoted as "flag removal" hereafter. Understanding the impact of bad credit rating on firm's access to credit is essential from a policy perspective. It allows policy makers to assess the extent to which information about past bankruptcies should be released to the public, mostly banks. Public policies should consider both the rating grade to accurately reveal the risk carried by these firms, and the time horizon at which the flag is removed[1].

Using firm-bank level data, we focus on firms that manage to reach a debt-restructuring agreement after filing for bankruptcy between 2008 and 2016 in France. There are two public debt-restructuring bankruptcy procedures in France: the safeguard procedure ("Sauvegarde" hereafter) and the receivership (Redressement Judiciaire in French, "RJ" hereafter). The Banque de France removes the Sauvegarde flag three years after the debt-restructuring agreement. In contrast, the RJ flag is removed only five years after the debt-restructuring agreement. We use this exogenous event in a difference-in-difference strategy that compares access to credit of Sauvegarde filers (the treatment group) to

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[1]For example, Kovbasyuk and Spagnolo (2021) shows that bounding negative records in time can maximize welfare.

RJ filers (the control group). The identifying assumption for this set-up is that, in the absence of flag removal, access to credit of treated firms would have evolved in the same way of that to control firms. We provide empirical evidence and discussions supporting this parallel trend assumption.

Because of their small size, most of the firms that file for debt-restructuring bankruptcy procedures are SMEs which are under the rating threshold of the Banque de France (€750K of yearly turnover). It means that outside bankruptcy, they are provided with a "neutral" rating. During the bankruptcy procedure and the following years, they are provided with a low rating. We find that after bankruptcy, the flag removal from "low" to "neutral" has a statistically significant effect on firms access to credit that appears the first quarter after the flag removal and grows linearly over time. Firms undergoing debt restructuring have a negative credit trend because they repay their bank debt at a 10-year horizon on average. We find that flag removal slows down the decreasing slope of credit. Also, firms are able to form new banking relationships once the flag is removed. First evidence points towards credit supply constraints from the firm's former banks. These constraints are released by new lending opportunities when the information about the firm's past bankruptcy is removed from the rating.

This paper makes two main contributions. The first one is linked to the impact of debt restructuring on the behavior of banks. There are two views with no clear consensus: either relationship banks support their distressed borrowers, or they do not. In this paper, we provide empirical evidence that banks do not support their distressed borrowers, as firms seek new banking relationships once the information about their past bankruptcy is removed from their credit rating. Theory states that the key advantage of banking relationships is the support that banks provide to their clients in financial distress, either through adjusted interest rates or collateral requirements during or after a financial distress (Berlin and Mester (1999), Peek and Rosengreen (2005), Rosenfeld (2014)). Sometimes, they extract rents in return (Schäfer (2019)). Micucci and Rossi

(2017) finds that debt restructuring of Italian SMEs is more likely with relationship banks. Other research finds opposite results: Huang et al. (2015) finds that banking relationship decreases the probability of debt restructuring. Li et al. (2019) shows that the share of bank loans granted by relationship banks decreases in case of distress.

Our second contribution is linked to the literature on the real impact of credit rating on firm financing. Many studies have found that high credit ratings increase firm access to credit (Goldstein and Huang (2020), Cahn et al. (2018)). Credit ratings can also trigger change in firms' leverage and capital structure (Kisgen (2006), Tang (2009), Sufi (2009), Faulkender and Petersen (2005)), real outcomes and investment decisions (Lemmon and Roberts (2010), Chernenko and Sunderam (2012), Harford and Uysal (2014)). Bad ratings can cause exogenous rise in cost of debt (Almeida et al. (2017), Kliger and Sarig (2002)). These results on external credit rating hold even if banks have complex screening system and informational advantage on their clients (Bolton et al. (2016)). Yet, most of these papers focus either on high credit ratings, or on large firms rated by external agencies like Moody's and Standard and Poor's. This literature neglects the fact that SMEs makes for a substantial part of the economy: in France, they account for half of private employment and 85% of the debt restructuring bankruptcy filings[2]. Among the few papers that study the impact of rating for small businesses, Berger et al. (2005) finds that small business credit score is associated to higher credit volumes, risk and prices. Our paper brings an important contribution to this literature by examining the impact of a change of credit rating from "low" to "neutral" on SMEs.

The remainder of the paper is as follows. Section 2 discusses the institutional background, Section 3 introduces the data, Section 4 describes the empirical strategy and Section 5 the results of our analysis. Section 6 presents robustness checks to ensure the validity of our results, and Section 7 concludes.

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[2]See Banque de France Bankruptcy "Stat Info", https://www.banque-france.fr/.

## 2  Institutional Background

### 2.1  Two Bankruptcy Procedures

There are two public debt-restructuring procedures in France: the Sauvegarde procedure and the RJ procedure (or Redressement Judiciaire). Sauvegarde and RJ procedures have many similarities. The main difference between the two procedures is the extent of the financial difficulties that the firm faces. An insolvent firm has access to RJ, while a firm that is not insolvent, but can prove that it is facing serious financial problems, has access to Sauvegarde. Apart from this fundamental difference, both procedures operate mainly in the same way (see Kastrinou (2009) for exhaustive comparisons). Epaulard and Zapha (2022) show that the line between the two procedures can be blurry, depending on how the insolvency state is interpreted.

Once the firm files for Sauvegarde or RJ, a six-month observation period (renewable twice)[3] starts to assess the financial situation of the firm. During this period, the judicial receiver consults the creditors and drafts a repayment plan proposal. Creditors can be provided with a variety of options from which to choose. They can, for example, select between a proposal for full repayment over a number of years or a shorter repayment plan with partial debt forgiveness (haircut). The Court is provided with the plan proposal and decide its adoption and how long it should last. The plan may not exceed 10 years (15 years in agricultural matters). At any time during the observation period, and in particular if no solution is possible or if new debts are created, the Court can pronounce the liquidation of the firm. In RJ, the Court may also open bidding to potential buyers.

The Sauvegarde plan and the RJ plan are mostly identical[4]: they are both plans organising the repayment of creditors over time according to (i) how much the firm owes

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[3]The Pacte Law implemented on January 1st, 2020, shortened the maximal length of the observation period in Sauvegarde to twelve months. Our sample, which focuses on the period 2012-2019, is unaffected by this policy change.

[4]In practice, the Sauvegarde plan is governed by the Articles L626-1 et seq. of the Commercial Code, to which the text essentially refers to the RJ plan.

and (ii) how much the firm can reasonably repay annually. Once the plan is approved, a commissioner for the execution of the plan is appointed to ensure that the deadlines and commitments set out in the plan are respected. In both procedure, the firm has a one-year non-payment period between the judgement adopting the plan and the first payments at the start of the plan's execution. Afterwards, the annual payments increase gradually with a minimum of 5% required by law from the third year forward.

In practice, we were able to examine the repayment plans of a small sample of firms that filed in the Commercial Court of Paris between 2006 and 2015.[5] The detailed analysis is provided in the Appendix A. We find that Sauvegarde and RJ repayments appears to be strictly identical. This preliminary analysis gives ground for the parallel trend assumption that our identification strategy will require.

## 2.2   Banque de France's Credit Rating

The Banque de France credit rating is a tool for banks[6]. It is also used by the European Central Bank to qualify eligible collateral. The rating serves as a common reference to monitor the credit risk of potential borrowers; it is an assessment of the firm's ability to meet its financial obligations over a three-year horizon. Firms with a turnover of more than €750K are registered into FIBEN, the Banque de France's information system, and provided with a rating. The rating is based on several factors: the analysis of the firm's accounting and financial data, the soundness of its economic environment and partners, the occurrence of events such as payment incidents or bankruptcy, as well as other sources of information from analysts in the Banque de France network.

The rating scale contains twelve notches from P (bankruptcy) to 3++ (safest) and a thirteen notch: 0. Table 1 summarizes their description. The rating 0 may convey various meanings. Most of the time, it means that the firm's turnover is below the minimum

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[5]This small sample of firms is not the working sample of the paper. I would like to thank Arthur Lynch for his work.

[6]FIBEN, the Banque de France's information system that provides the credit rating, is accessible by subscription and is available to all investors.

threshold of €750K and thus does not have a credit rating, or a "non significant", or "neutral" rating. It can also means that the firm does not have sufficient recent accounting documentation to conduct the analysis, or has documentation that cannot be used because of the nature of its activity (e.g. holdings, real estate, legal support firms, etc.). Most importantly, the rating 0 requires that the firm does not present any unfavourable information. In the presence of a default or a bankruptcy procedure, a rating will be provided even to firms below the threshold of €750K. The rating is revised on a yearly basis on receipt of firms' financial statements, as well as whenever a significant development occurs.

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Insert Table 1 here

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### 2.2.1 Credit Rating in RJ

Whenever a firm files for RJ, the court registries automatically notify the FIBEN database. The firm is automatically assigned a credit rating of P (for bankruptcy "procédure"). The rating P lasts for the whole duration of the observation period, up to 18 months. At the end of the observation period, the firm has either reached a debt-restructuring agreement with its creditors, or is sold or liquidated. In the event of an agreement, the adoption of the RJ restructuring plan triggers the credit rating 6.[7]

The credit ratings resulting from court decisions can be described as "semi-automatic" and can be revised on the basis of relevant evidence. During the execution of the RJ plan, in principle, the rating 6 is maintained. However, once the plan is adopted and following the analysis of accounting documents, the rating 6 may be replaced by a more (or less) favourable credit rating before the completion of the plan. Specifically, a firm executing an RJ plan may receive:

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[7]Up to 2011, the credit rating of firms executing an RJ plan was 5. It has been changed to 6 on January 1st, 2012, to better convey the credit risk carried by RJ filers. Our sample, which focuses on the 2012-2019 period, is unaffected by this policy change. We exploit this policy change in the Appendix.

- a rating of 5 or 5+ if the financial and accounting documents meet the criteria for the attribution of one of these ratings;

- a rating of 7, 8 or 9 in the presence of payment incidents reported during the plan.

The other ratings are not compatible with the presence of an RJ plan. If the plan fails and the firm files for liquidation, the rating changes automatically to P. Regardless of the expiry date of the plan, FIBEN removes from its database the information about the existence of an RJ plan after 5 years if the plan has not failed in the meantime. From then, the rating evolves according to the regular analysis of the firm's financial accounts[8].

### 2.2.2 Credit Rating in Sauvegarde

If a firm files for Sauvegarde, the court registries automatically notify the FIBEN database. The firm is automatically assigned a credit rating of 5. At the end of the observation period and if the firm has reached a debt-restructuring agreement with its creditors, the rating 5 remains.

As for RJ, the credit rating of firms in Sauvegarde plans is "semi-automatic" and can be revised on the basis of relevant evidence. During the execution period of the Sauvegarde plan, in principle, the credit rating 5 is maintained. However, once the plan is adopted and following the analysis of accounting documents, the rating 5 may be replaced by a more (or less) favourable credit rating before the completion of the plan. Specifically, a firm executing a Sauvegarde plan may receive:

- a rating of 5+, 4 or 4+ if all the conditions for the attribution of one of these ratings are met;

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[8]In accordance with Decree 2011-1836 of 7 December 2011: "the opening of a Sauvegarde plan or a RJ plan [...] are subject to mentions in the Trade and Companies Register. In order to help a firm that has demonstrated its ability to restructure, this decree provides for the automatic removal of these mentions when the procedure has been in progress for three years in the case of a Sauvegarde plan or five years in the case of a RJ plan." (translated by the author)

- a rating of 4+ when the financial and accounting documents meet the criteria for the attribution of a rating of 3++, 3+, 3;

- a rating of 6 if the financial and accounting documents reveals a further deterioration of the situation likely to jeopardise the implementation of the plan;

- a rating of 7, 8 or 9 in the presence of payment incidents reported during the plan.

If the plan fails and the firm files for RJ or liquidation, the rating changes automatically to P. Regardless of the expiry date of the plan, FIBEN removes from its database the information about the existence of a Sauvegarde plan after 3 years[9] if the plan has not failed in the meantime. From then, the rating evolves according to the regular analysis of the firm's financial accounts. This exogenous rating removal provides our identification strategy.

# 3 Data and Summary Statistics

## 3.1 Data Sources

Our analysis exploits bankruptcy data from two sources: the first one is supplied by the Court registries directly into FIBEN, and is used as input to set the credit rating. It includes the date of filing, the renewal of the observation period, the date of approval of a debt-restructuring plan, and the possible date of liquidation of the firm. The second source is the BODACC ("Bulletin Officiel d'Annonces Civiles et Commerciales"), provided by the Court registries online, in electronic form since January 2008[10]. The information reported by BODACC is public and provides complementary information to the judgements. Notably, it informs us about the duration of the plan.

Our research relies on data from the SCR ("Services Central des Risques"), the French credit register. The SCR centralises the loans granted by credit institutions, mostly banks,

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[9]See foonote 9
[10]See https://www.data.gouv.fr/en/datasets/bodacc/en.

to each of their client firms on a monthly basis. Since 2006, the centralization occurs when the total cumulative loan between a firm an a bank, regardless of the type of declaration, reaches a threshold of €25K. Because of this threshold, our panel is unbalanced, and the missing data are not random. It means that for some firms, at some point in time, their total credit exposure with their bank falls below the threshold and the firm disappears from our data. The firm may or may not reappear when the credit exposure crosses the threshold again. Such attrition concerns 15% of the firms, and may lead to an inaccurate estimation of our effect. In our analysis, we restrict our sample to a balanced panel.

From this data source, we create our dependent variables: the quarterly variation of total credit described in Section 4, and the dummy "new" equals to 1 if a firm starts a new banking relationship. To construct this variable, we examine all the previous loans of the firm since 2004, and we code "new" equal to 1 if and only if the firm has never borrowed from this bank before.[11]

## 3.2 Descriptive Statistics

We gather credit data with bankruptcy data.[12] Given the nature of the firms we observe and the financial difficulties they face, it is plausible that part of them will file for liquidation during the course of the plan. To control for this attrition, we restrict our sample to firms which plan was carried on for at least 4 years. In order to observe the firm survival on a 4-year horizon (unaffected by the 2020 health crisis), our sample focus on firms that started a plan between 2008 and 2016. In addition, we consider data from after 2012 because of the policy change concerning the credit rating in RJ[13]: we observe our sample firms between 2012 and 2019. We remove holdings, agricultural firms and

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[11]Because of the collection threshold of €25K, the occurrence of a new banking relationship in our data may come from the fact that the firm-bank relationship was previously existing but the total credit exposure was below the threshold.

[12]Whenever a firm files for bankruptcy (RJ or liquidation), the bank must register the loans for which it is likely that it will not receive all or part of the amounts due as doubtful or compromised loans. In the event of a Sauvegarde procedure, the bank must assess whether there are grounds for declaring loans as doubtful or compromised or not. In practice, such loans are almost always declared as doubtful.

[13]See footnote 8.

subsidiary firms. In the end, we follow 983 Sauvegarde and 5,082 RJ filing firms that falls into our period of consideration.

We provides summary statistics for our sample in Table 2. Panel A shows summary statistics at the firm-quarter level. The average credit exposure of Sauvegarde filers is about €388, almost twice that of RJ filers. There is heterogeneity between Sauvegarde and RJ filers, as well as amongst firms, as shown by the large standard deviation both in Sauvegarde (€660) and in RJ (€742K). We control for this heterogeneity in Section 6 with a propensity-score matching procedure. Sauvegarde filers have on average slightly more banks than RJ filers. It is important to note that both for Sauvegarde and RJ filers, forming a new banking relationship is a rare event: it concerns around 2% of the firms. Regarding debt composition, on average, Sauvegarde filers have more long term debt than RJ filers (over 1 year maturity).

Panel B shows summary statistics at the firm level. It gives us information about the restructuring plans in Sauvegarde and in RJ. On median for the two procedures, plans last for 10 years, which is the maximal length for firms that are not in the agricultural sector. On average, plan in Sauvegarde and RJ are very similar, with a mean length of 9.6 years. The entry "Age of the plan last observed" informs us with the status of the firms' plans in our sample. To avoid attrition, we removed from our sample firms which plan was carried on for less than 4 years. It leaves us with firms that are, on average, last observed at the sixth year of execution of their plan. Our main identification strategy will focus on firms from four quarters before to four quarters after the flag removal, which means firms between the 2nd and 4th year of the execution of the plan.

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Insert Table 2 here
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## 3.3 Flag Removal

Before the econometric identification, let us analyze the characteristics of flag removal in Sauvegarde and RJ. Figure 1 represents the sharp drop in credit rating of Sauvegarde and RJ filers around their flag removal. Almost 80% of Sauvegarde filers were rated 5 before the 12th quarter of their plan, this number drops to below 30% at the 13th quarter. RJ filers were 75% to be rated 6 before the 20th quarter of the plan, they are only 10% at the 21th quarter. We uses the fact that RJ filers have their flag removed two years after the Sauvegarde flag removal and are therefore unaffected at the three-year time horizon.

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Insert Figure 1 here
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When we examine the detailed evolution of credit rating of Sauvegarde filers (Figure 2), we observe that following the flag removal, most of the firms are rated 0. As explained in Section 2.2, the rating 0 means that the firm does not have a credit rating, either because its annual turnover is below the minimum threshold of €750K, or because it did not provide enough accounting information for the Banque de France to grant a rating. More importantly, the rating 0 means that there is no salient negative information on the firm. 61% of Sauvegarde filers are rated 0 following the flag removal. Only few firms obtain a higher credit rating after the cut-off point: 8% are rated 5+ or higher.

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Insert Figure 2 here
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# 4 Empirical Strategy

## 4.1 Credit Growth

To measure the impact of the credit rating removal on the firm's access to credit, we implement a difference-in-difference strategy based on a comparison of restructuring firms

in Sauvegarde with restructuring firms in RJ. Firms in Sauvegarde and RJ are in a similar situation. They have started a public restructuring procedure, have reached an agreement with their creditors to renegotiate their debt over a maximum of 10 years. As previously discussed, they have very similar repayment schedules. Most importantly, Epaulard and Zapha (2022) prove that once the plan is adopted, the survival of firms is not affected by the procedure they filed for. This paper also show that banks do not differentiate firms based on the procedure they filed for.

Notwithstanding a similar survival rate and the fact that banks do not differentiate between the two procedures, a major difference between firms undergoing restructuring after filing for Sauvegarde or RJ corresponds to the timing of the flag removal. Firms in Sauvegarde see their semi-automatic credit rating being removed after 3 years (12th quarter of the plan) while firms in RJ see their rating being removed after 5 years (20th quarter of the plan). This distinction is at the core of our strategy.

We are interested in the credit evolution. Following Amiti and Weinstein (2018) and Cahn et al. (2019), we measure the change in credit relative to a base period. We study the change in credit at each quarter relative to the firm's average level of total credit the year before it filed for bankruptcy:

$$\Delta Credit_{i,t} = \frac{Credit_{i,t} - \overline{Credit}_{i,t=pre-bankruptcy}}{\overline{Credit}_{i,t=pre-bankruptcy}} \qquad (1)$$

where $Credit_{i,t}$ is the total amount of credit (short-term plus long-term) at quarter $t$, for firm $i$ with all of its bank. $\overline{Credit}_{i,t=pre-bankruptcy}$ is the average over all banks of the quarterly total credit of firm $i$ the year before the procedure. Note that the results are robust to other measures of the credit variation like a change in log credit from the base period.

We compare the credit variation of restructuring firms in Sauvegarde (the treatment group) with that of restructuring firms in RJ (the control group) four quarters before

and four quarters after the flag removal. We estimate a difference-indifference equation:

$$\Delta Credit_{i,t} = \alpha Post + \beta(Post \times Treated) + \gamma_i + \gamma_{s \times t} \qquad (2)$$

where $i$ indexes the firm, $t$ the quarter and $s$ the industry. $Post$ is a dummy that equals 1 when the firm's plan is older than 3 years. $Treated$ equals 1 for Sauvegarde filers, 0 for RJ filers. $\beta$ is our variable of interest which measures the divergence in the evolution of the dependent variable between the Sauvegarde filers and the RJ filers. We control for firm $\gamma_i$ and industry $\times$ quarter fixed effects $\gamma_{s \times t}$. To avoid serial correlation, we cluster standard errors at the firm level.

Alternatively, we conduct the same analysis at the quarter-level:

$$\Delta Credit_{i,t} = \sum_{q \neq 12} \alpha_q \mathbb{1}_q + \sum_{q \neq 12} \beta_q(\mathbb{1}_q \times Treated) + \gamma_i + \gamma_{s \times t} \qquad (3)$$

where $\mathbb{1}_q$ is a dummy for each quarter of the plan. We omit the period of the flag removal $\beta_q = 12$ so that the other $\beta_q$ can be interpreted relative to this baseline period. It is expected that $\beta_q$ is not significantly different from 0 for $q < 12$ to support the parallel trend hypothesis. If it is verified, then $\beta_q$ for $q > 12$ captures the causal effect of the exogenous flag removal in q.

In recent years, many papers[14] have addressed the drawbacks of this difference-in-difference approach of using two-way fixed effects (TWFE) linear regression with more than two periods. To answer the potential pitfalls of this method, we provide results at one year and two years horizon after the flag removal.

## 4.2 New Bank Lending Relationship

We then want to estimate the impact of flag removal on the probability that a firm starts a new banking relationship. Following Gopalan et al. (2011), we estimate panel logit

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[14]See Goodman-Bacon (2021), de Chaisemartin and d'Haultfoeuille (2020) and Callaway and Sant'Anna (2021).

regression that are variant of the form:

$$P(New_i = 1) = \alpha Post + \beta(Post \times Treated) + \gamma_i + \gamma_t + \epsilon_{i,t} \qquad (4)$$

where $New$ is a dummy variable that identifies whether firm $i$ starts borrowing from a new bank, either before or after the flag removal. As previously specified, we focus from four quarters before to four quarters after the flag removal.

In a first specification, we follow Cahn et al. (2018) and estimate a conditional logit regression that includes firm and quarter fixed effects $\gamma_i$ and $\gamma_t$. The panel logit regression is estimated only on observations for which the dependent variable varies within the period of consideration. It means that the model focuses only on firms that starts a new banking relationship from four quarters before to four quarters after the flag removal. As mentioned above, forming a new banking relationship is a rare event, and limiting our sample to those firms is very restrictive. For this reason, we also estimate a panel logit regression with no firm fixed effect, but with additional controls at the firm level: length of the plan, the firm's size measured with the log of its total assets, its number of banks, and the ratios of long term credit over total credit, and total credit over total asset. The financial information is not available for all firms in our sample, leading to a loss of observations.

In the same vein and to ensure the robustness of our results, we perform ordinary least square with and without firm fixed effects. We also provide a test of the OLS specifications at one year and two years horizon after the flag removal.

# 5 Main Results

## 5.1 Parallel Trend Hypothesis

Our main identification assumption requires that credit trends of the treatment and control groups would have been identical in the absence of the flag removal. Figure 3 shows the raw quarterly average credit variation for treated and controls firms. From the visual analysis, we can see that the pre-treatment trend is similar for both groups. Credit decreases as firms execute their restructuring plan and repay their debt. The repayment schedule follows a regular rhythm. On average, Sauvegarde and RJ filers have repaid 26.4% of their debt after 3 years, or a repayment schedule of about 9.5% per year, or 2.4% per quarter. After the flag removal, a slight divergence in credit variation seems to happened between treated and control firms from the 13th quarter onward. To assess and conclude on the impact of the flag removal, econometric analysis is required.

Insert Figure 3 here

Figure 4 shows quarterly estimates from equation 3. The trend prior to the flag removal does not reveal any significant difference between control and treated firms, providing support for our parallel trends identifying assumption.

## 5.2 Results on Credit Growth

The result of estimation 2 is presented in Table 3 column (1). The coefficient $\beta$ is positive and significant at 1% level, meaning that once the credit rating is removed, treated firms experience a better access to bank credit. The flag removal causes a 1.7% quarterly credit increase of treated firms compared to control firms. Interestingly, the repayment rhythm of debt restructuring firms is about 2.6% per quarter; the flag removal allows for treated firm to slow down the decreasing slope of credit, but not to substantially increase their bank debt again.

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Insert Table 3 here
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This results is in line with the literature, Cahn et al. (2018) found that a rating surprise implies a greater annualized flow of bank loans equivalent to 1.2% of lagged total assets.

Results of estimation 3 are reported in Table 3 column (2). The coefficient estimated for quarter $q$ corresponds to the difference of evolution between the outcomes for Sauvegarde and RJ filers four quarters before the flag removal to four quarters after it. The point estimates $\beta_q$ indicate that the total credit of Sauvegarde filers increase substantially compared to RJ filers for $q \geq 13$. For $q < 12$, the point estimates are non-significantly different from 0, meaning that there is no systemic relationship between the age of the plan and the credit variation in the pre-removal quarters. These results provide support for our parallel trend assumption.

Figure 4 plots the coefficients estimates $\beta_q$. The vertical red line identifies the flag removal at $q = 12$ for Sauvegarde filers. The figure provides evidence for the parallel trend assumption, it also shows the dynamics of the flag removal's impact on treated firms access to credit. The effect grows stronger with time.

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Insert Figure 4 here
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## 5.3   Results on New Bank Lending Relationship

Table 4 presents the results of equation 4 for the logit model in columns (1) and (2), and ordinary least square in columns (3) and (4). We find that the flag removal leads to an increase in the probability of starting a new bank relationship. Column (3) indicates that the flag removal increases the probability of forming a new bank relationship by 1.86 percentage point. This effect is substantial given that the unconheditional propensity of

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starting a new banking relationship at a given quarter for Sauvegarde filers is 2.6%. Logit and OLS results are consistent. In the literature, Cahn et al. (2018) finds that a rating surprise for healthy and well rated firms leads to a greater probability of starting a new banking relationship of 4% (with a quarterly probability of starting a bank relationship of 6% on average).

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Insert Table 4 here
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A first analysis leads to think that firms were not able borrow from their initial lenders, and that the flag removal allow them to form new banking relationships with banks that are not necessarily aware of their past bankruptcy (even though the information about it is public and available even after the flag removal[15]).

## 5.4    Results at different time horizons

We now test our main specification at different time horizons. Table 5 reports results from the difference-in-difference specification that pools the effect across the first and second years after the flag removal. In these specifications, we omit the quarter before flag removal so that the effects can be interpreted relative to this period. In column (3), to be able to observe firms on a 2-year horizon after the flag removal[16], we restrict our sample to firm that survive at least 5 years in plan and which plan started between 2008 and 2015. The dependent variables are $\Delta Credit$, the quarterly variation of credit relative to the year before the firm filed for bankruptcy, and $Pr(NewBank)$, a dummy that takes the value of 1 if the firm has started borrowing from a new bank within the year. All estimates are OLS results[17] with firm and quarter $\times$ industry fixed effects. Standards

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[15]Cahn et al. (2018) shows that banks use external credit rating to assess the soundness of potential borrowers to reduce monitoring costs.

[16]We observe firms at quarter 19 of their plan instead of quarter 20 to avoid being contaminated by the flag removal of RJ filers.

[17]The nonlinear specifications and the OLS regression with no firm fixed effect gives the same results as the OLS specification with fixed effects. We prefer to use the linear model since the results are then easier to interpret.

errors are clustered at the firm level.

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Insert Table 5 here

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The first column presents the means of the dependent variables for Sauvegarde filers in the quarter prior to flag removal. We read that on average, after almost 3 years of plan (11 quarters), Sauvegarde filers have 24.3% less credit than the year before they filed for bankruptcy. That is, they repay an average of 2.2% of their debt each quarter. One year after the flag removal (quarter 16 of their plan), their credit increase by 1.7% compared to RJ filers. It means that on average, one year after the flag removal, Sauvegarde filers continue to reduce their overall credit amount, albeit at a far slower rate. Two years after the flag removal, Sauvegarde filers' credit increase by 2.3% compared to RJ filers, i.e. their credit stop declining and stabilizes. In the same vein, we read that the probability for Sauvegarde filers to start a new banking relationship is 6% the year before the flag removal. This probability increases by 0.034 point the first year, and by 0.037 point the second year after the flag removal. All estimates are statistically significant at least at the 10% level.

## 6    Propensity Score Matching

As previously mentioned, firms in Sauvegarde and in RJ present differences in observable characteristics. Firms in Sauvegarde are on average larger than firms in RJ. We proved that these differences did not affect the parallel trends hypothesis of our outcome variables. Nonetheless, we account for this heterogeneity with a propensity-score matching procedure as a robustness check.

We match treated and control firms based on their financial characteristics the year before they filed for bankruptcy. The categorical variables include the year of adoption of the plan, the firm's industry and the region of its headquarters. The non-categorical

variables include the length of the plan, the firm's size measured with the log of its total assets, its number of banks, and the ratios of long term credit over total credit, and total credit over total asset. All financial variables are winsorized at the 1% percentiles at both tails.

The first three columns of Table 6, top panel, presents means, standard errors (in parentheses), differences of means and t-statistics (in brackets) of the above listed variables across the treatment and control groups before the matching procedure. On average and before matching, Sauvegarde filers are larger, they have more long term credit at the onset of the bankruptcy procedure and more bank lending relationships. There is no significant difference between Sauvegarde and RJ filers in terms of the length of the plan nor in the proportion of credit in their total assets. We implement the matching procedure with a logit regression at the firm level of the binary variable $Treated$ on the firm characteristics. The regression is estimated on a cross section of 763 Sauvegarde (treated) filers and 3,066 RJ (control) filers for which we have enough financial information. The estimation results are presented in Table 6, bottom panel, column (1) and reveal differences that are in line with those found in the comparison of Table 6 Panel A. We then use predicted probabilities as propensity score to perform a one-to-one nearest-neighbor match with no replacement to minimize the variance.

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Insert Table 6 here

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The three last columns of Table 6, top panel, reveal the accuracy of the matching process with no statistically significant differences of means across any of the firm characteristics between the two groups. As a result of the matching process, we have 763 matched RJ filers to 763 Sauvegarde filers. Similarly, column (2) of Table 6, bottom panel, reveals that none of the determinants are statistically significant in a logit regression restricted to the matched sample. We also note that the magnitudes of the coefficients estimates as well as the Pseudo-$R^2$ decline significantly from the Pre-Match to the Post-

Match estimation, ensuring that our findings are not simply due to a decline in degrees of freedom. All in all, the matching process has removed any meaningful differences along observable characteristics from the two groups of firms and reinforce the assurance that the parallel trend assumption is satisfied.

Table 7 presents the results of the difference-in-difference estimations using the matched sample. Columns (1) and (2) presents the result of the flag removal on the variation of credit, and column (3) on the probability to form new banking relationship. Results are statistically significant and in line with previous sections.

Insert Table 7 here

# 7 Conclusion

We have shown that bankruptcy flag removal allows firms to have better access to bank credit. Improved access to credit is associated with both an increase in the volume of credit borrowed, as well as the possibility for firms to form new banking relationships.

The 2020 health crisis has spurred the need of alleviating financial constraints faced by firms after a financial distress. Public authorities have taken numbers of measures to improve their refunding conditions and support the economic rebound. In France, the flag removal that occurred after 3 years in Sauvegarde plan and 5 years in RJ plan has been reduced to 2 years in 2020 for both procedures.[18] Also, a "post money" privilege[19] has been introduced to guarantee a preferential ranking of lenders that refund firms in Sauvegarde and RJ plan. These measures specifically aim at encouraging and facilitating the credit access of restructuring firms to help their recovery.

So far, we have formed the hypothesis that relationship banks are well aware of the bankruptcy status of their client borrowers, and are reluctant to lend after a bankruptcy

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[18]Decree N-2020-106 of February 10, 2020.
[19]Order no. 2020-596 of May 20, 2020, extended by Order no. 2021-1193 of September 15, 2021.

filing. The flag removal from the rating "low" to "neutral" allow for new banks, that were not necessarily aware of the firm's past bankruptcies, to offer lending opportunities. Further work will be required to test this hypothesis. We notably want to estimate if the banks' solvency ratio can explain part of the credit supply constraints faced by restructuring firms. Bad rating is associated with high credit risk. We will seek to analyze whether the change in rating from "bad" to "neutral" allows banks to increase the credit supply thanks to a relaxation of their solvency constraints.

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T. T. Tang. Information Asymmetry and Firms Credit Market Access: Evidence from Moody's Credit Rating Format Refinement. Journal of Financial Economics, page 27, 2009.

Figure 1: Credit rating of firms in continuation plan
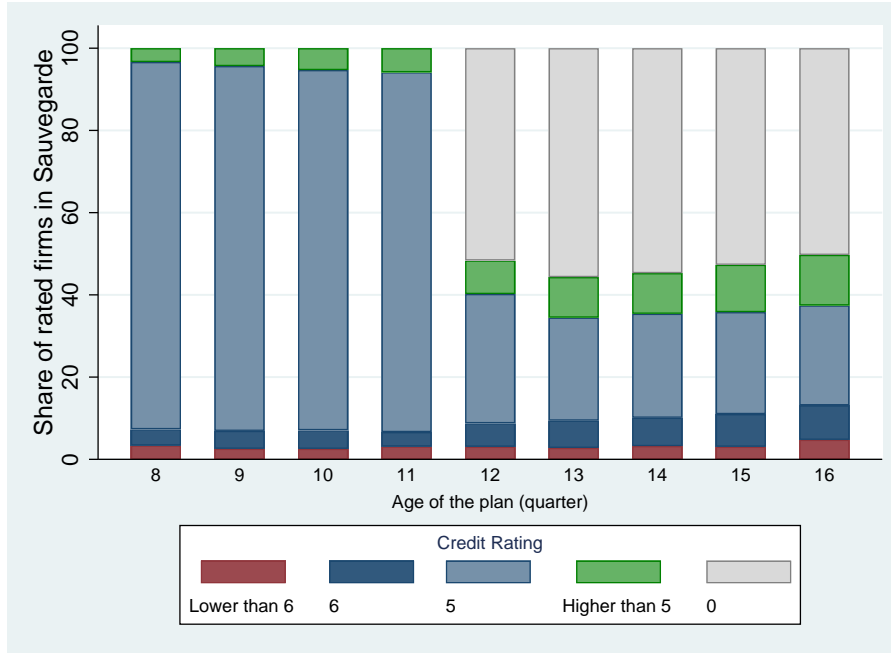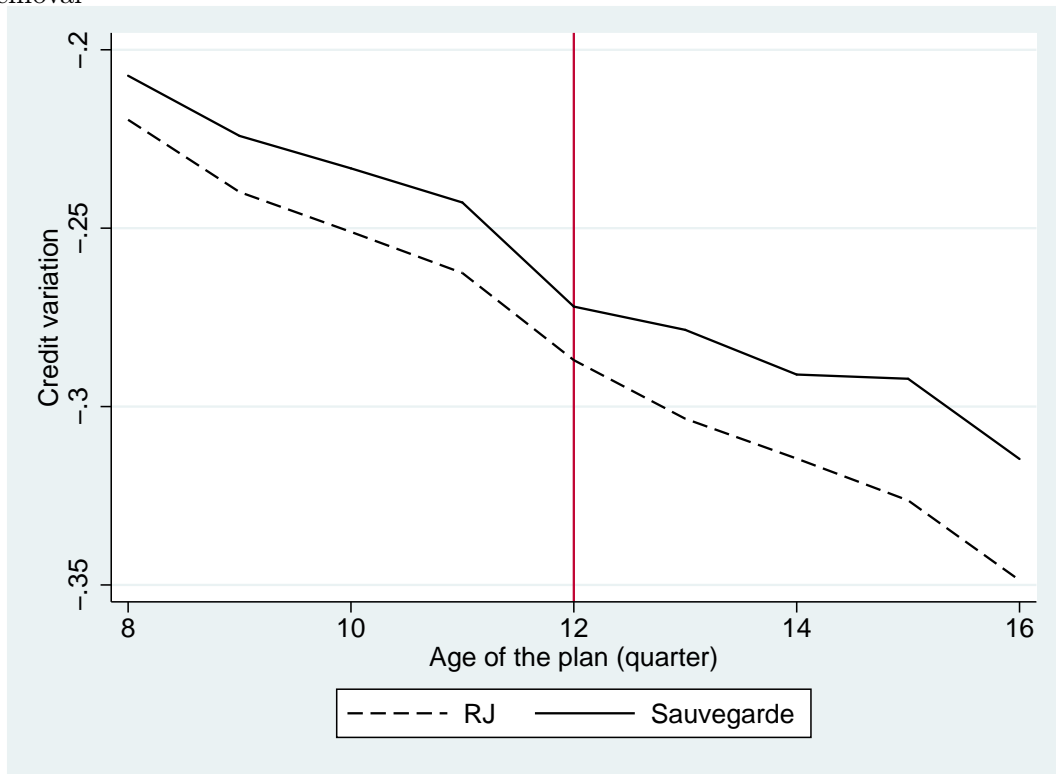Sauvegarde filers
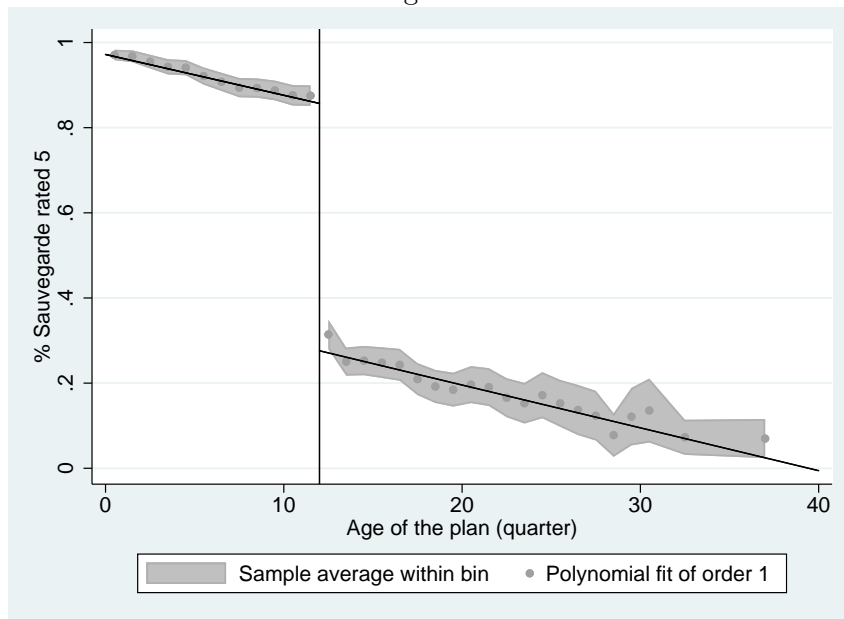
RJ filers
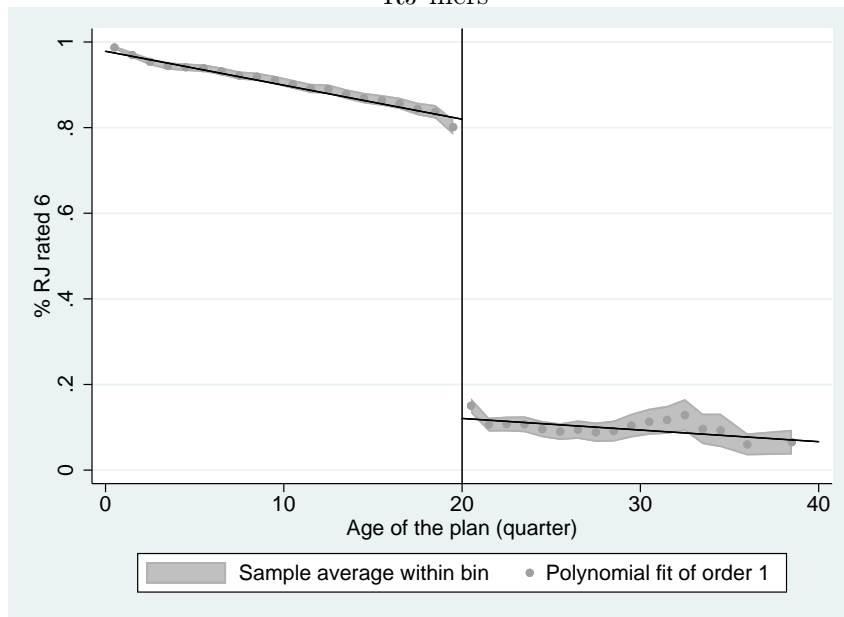
**Note** : Figure 1, top image represents the sharp drop in the proportion of Sauvegarde filers rated 5 around the flag removal at the 12th quarter of the plan. Figure 1, bottom image represents the sharp drop in the proportion of RJ filers rated 6 around the flag removal at the 20th quarter of the plan. We read that 75% of RJ filers were rated 6 before the 20th quarter of the plan, they are only 10% at the 21th quarter.

Figure 2: Transition matrices of the firm rating around Sauvegarde flag removal



**Note** : Figure 2 shows the proportion of rated firms in Sauvegarde at each quarter of the plan around the flag removal. We read that 81% of Sauvegarde filers are rated 5 at the 11th quarter of their plan. This proportion drops to 35% after the flag removal at the 12th quarter. Sample includes Sauvegarde filers which plan was carried on for at least 4 years.

Figure 3: Average credit growth for Sauvegarde and RJ filers around Sauvegarde flag removal



Note : Figure 3 shows the raw quarterly average credit variation for firm around the flag removal for treated firms (Sauvegarde filers, solid line) and controls firms (RJ filers, dashed line). The variation of credit is $\Delta Credit_{i,t}$, the quarterly variation of total credit compared to the firm's average level of credit the year before it filed for bankruptcy.

Figure 4: Quarterly effect of Sauvegarde flag removal on firm's credit
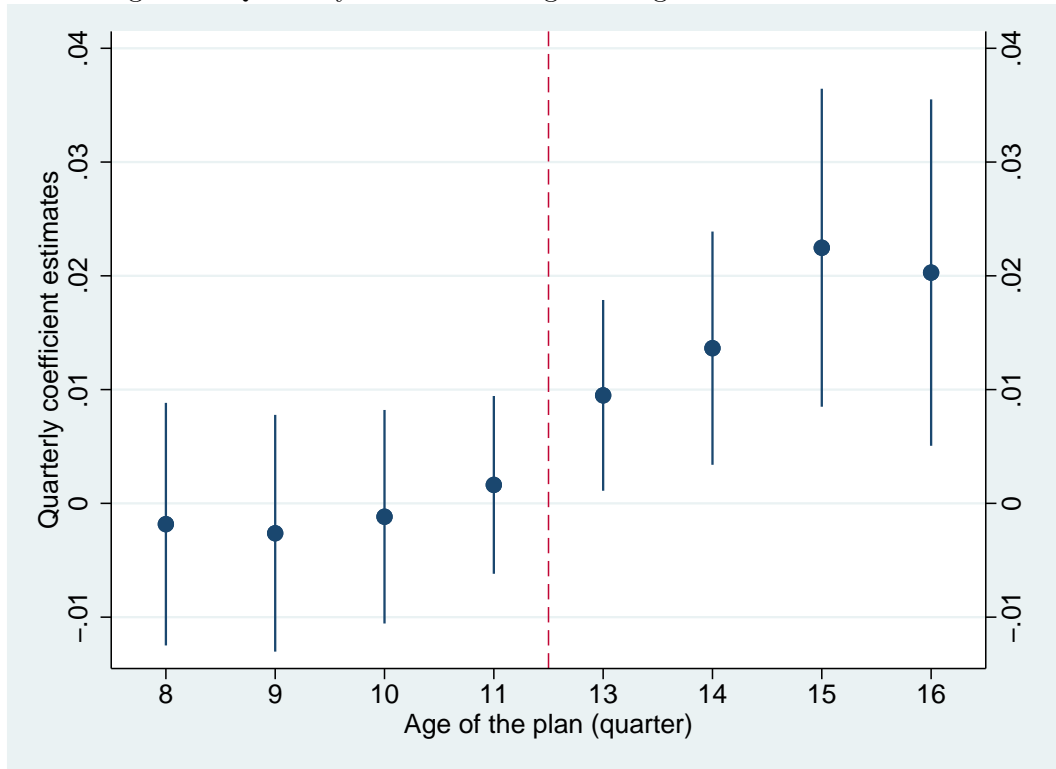
**Note** : Figure 4 reports difference-in-difference estimates $\beta_q$ of the effect of the flag removal in Sauvegarde on the variation of firm's credit (see equation 3). The dependent variable is $\Delta Credit_{i,t}$, the quarterly variation of total credit compared to the firm's average level of credit the year before it filed for bankruptcy. Firms are tracked from four quarter before the flag removal to four quarter after it. Standard errors are clustered at the firm level.

Table 1: Banque de France's credit rating

| Banque de France's credit rating | The firm's repayment capacity is: |
|---|---|
| 3++ | Excellent |
| 3+ | Very Strong |
| 3 | Strong |
| 4+ | Quite Strong |
| 4 | Good |
| 5+ | Quite Weak |
| 5 | Weak |
| 6 | Very Weak |
| 7 | Need specific attention |
| 8 | Threatened |
| 9 | Compromised |
| P | Bankruptcy procedure |
| 0 | No notation (no negative information) |

**Note** : Table 1 reports a brief overview the Banque de France credit rating scale for firms.

Table 2: Summary Statistics

| | N | Mean | Median | St.Dev. | 5th Pct. | 95th Pct. |
|---|---|---|---|---|---|---|
| | | Panel A: Firm quarterly characteristics | | | | |

**Treated group: Sauvegarde filers**

| | N | Mean | Median | St.Dev. | 5th Pct. | 95th Pct. |
|---|---|---|---|---|---|---|
| Total assets (K€)* | 7,710 | 1,156.0 | 516 | 2,644.3 | 76 | 4,176 |
| Total credit (K€) | 8,322 | 387.9 | 164 | 660.0 | 33 | 1,560 |
| Short term/Total credit* | 8,281 | 0.499 | 0.475 | 0.416 | 0.000 | 1.000 |
| Long term/Total credit* | 8,281 | 0.460 | 0.435 | 0.420 | 0.000 | 1.000 |
| Number of banks | 8,322 | 1.782 | 1 | 1.273 | 1 | 4 |

**Control group: RJ filers**

| | N | Mean | Median | St.Dev. | 5th Pct. | 95th Pct. |
|---|---|---|---|---|---|---|
| Total assets (K€)* | 36,348 | 583.3 | 279 | 1,484.0 | 23 | 1,901 |
| Total credit (K€) | 40,196 | 206.2 | 90 | 742.1 | 28 | 670 |
| Short term/Total credit* | 39,891 | 0.535 | 0.550 | 0.426 | 0.000 | 1.000 |
| Long term/Total credit* | 39,891 | 0.428 | 0.310 | 0.426 | 0.000 | 1.000 |
| Number of banks | 40,196 | 1.405 | 1 | 0.892 | 1 | 3 |

| | N | Mean | Median | St.Dev. | 5th Pct. | 95th Pct. |
|---|---|---|---|---|---|---|
| | | Panel B: Firm characteristics | | | | |

**Treated group: Sauvegarde filers**

| | N | Mean | Median | St.Dev. | 5th Pct. | 95th Pct. |
|---|---|---|---|---|---|---|
| Lenght of the plan (years)* | 825 | 9.566 | 10 | 1.212 | 7 | 10 |
| Age of the plan last observed | 983 | 5.886 | 5 | 1.727 | 4 | 10 |

**Control group: RJ filers**

| | N | Mean | Median | St.Dev. | 5th Pct. | 95th Pct. |
|---|---|---|---|---|---|---|
| Length of the plan (years)* | 3,475 | 9.590 | 10 | 0.995 | 8 | 10 |
| Age of the plan last observed | 5,082 | 5.663 | 5 | 1.829 | 4 | 9 |

* When information available.

**Note** : Table 2 reports sample summary statistics for key variables. The sample period is from 2012 to 2019. To control for sample attrition, we restrict our sample to firms which plan was adopted between 2008 and 2016 and which was carried on for at least 4 years. We remove holdings, agricultural firms and subsidiary firms. Panel A reports summary statistics of firms financial characteristics at the firm-quarter level. We follow firms from four quarters before the flag removal to four quarters after it. Panel B reports summary statistics of firms plan at the firm level. Each panel compares the treatment group, Sauvegarde filers, to the control group, RJ filers.

Table 3: Effect of flag removal on firm's credit

| | Δ Credit | |
|---|---|---|
| | (1) | (2) |
| Post | -0.00591*** | |
| | (0.001) | |
| Treated × Post | 0.0169*** | |
| | (0.005) | |
| q=8 × Treated | | -0.00183 |
| | | (0.737) |
| q=9 × Treated | | -0.00263 |
| | | (0.621) |
| q=10 × Treated | | -0.00117 |
| | | (0.806) |
| q=11 × Treated | | 0.00162 |
| | | (0.684) |
| q=13 × Treated | | 0.00949** |
| | | (0.026) |
| q=14 × Treated | | 0.0136*** |
| | | (0.009) |
| q=15 × Treated | | 0.0225*** |
| | | (0.002) |
| q=16 × Treated | | 0.0203*** |
| | | (0.009) |
| Firm FE | ✓ | ✓ |
| Quarter × Industry FE | ✓ | ✓ |
| Observations | 48,518 | 48,518 |
| Adj. $R^2$ | 0.926 | 0.926 |
| Adj. Within $R^2$ | 0.001 | 0.005 |

$p$-values in parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

**Note** : Table 3 reports difference-in-difference estimates of the effect of the flag removal in Sauvegarde on the variation of firm's credit. The dependent variable is the quarterly variation of total credit compared to the firm's average level of credit the year before it filed for bankruptcy. Column (1) reports the results of equation 2) and column (2) of equation 3. *Treated* takes the value of 1 for Sauvegarde filers, and *Post* takes the value of 1 when the debt-restructuring plan is older than 12 quarters. Firms are tracked from four quarter before the flag removal to four quarter after it. Standard errors are clustered at the firm level.

Table 4: Effect of flag removal on firm's new banking relationship

|  | Pr(New Bank) | | | |
|---|---|---|---|---|
|  | (1)<br>Logit | (2)<br>Logit | (3)<br>OLS | (4)<br>OLS |
| Post | -0.199*** | 0.0628 | -0.00273 | 0.00509 |
|  | (0.001) | (0.298) | (0.200) | (0.218) |
| Treated $\times$ Post | 0.623*** | 0.308*** | 0.0186** | 0.0218** |
|  | (0.000) | (0.008) | (0.038) | (0.042) |
| Lag Log(Total assets) |  | 0.434*** |  | 0.0221*** |
|  |  | (0.000) |  | (0.000) |
| Lenght of the plan (years) |  | -0.0352 |  | -0.00266 |
|  |  | (0.158) |  | (0.303) |
| Long term/Total credit |  | -0.657*** |  | -0.0279*** |
|  |  | (0.000) |  | (0.000) |
| Credit/Total asset |  | 0.131** |  | 0.00896** |
|  |  | (0.022) |  | (0.032) |
| Firm FE | ✓ |  | ✓ |  |
| Quarter FE | ✓ |  |  |  |
| Quarter $\times$ Industry FE |  | ✓ | ✓ | ✓ |
| Observations | 6,285 | 31,766 | 48,518 | 31,680 |
| Adj. $R^2$ |  |  | 0.425 | 0.053 |
| Adj. Within $R^2$ |  |  | 0.000 | 0.015 |
| Pseudo $R^2$ | 0.004 | 0.101 |  |  |

$p$-values in parentheses

$^{*}$ $p < 0.1$, $^{**}$ $p < 0.05$, $^{***}$ $p < 0.01$

**Note** : Table 4 reports difference-in-difference estimates of the effect of the flag removal on the quarterly probability of forming new bank lending relationship (see equation 4). The dependent variable $NewBank_{i,t}$, takes the values of 1 if the firm starts a new bank relationship in quarter $t$. Column (1) reports the results of a fixed-effects logit model, and column (2) of a linear probability model. $Treated$ takes the value of 1 for Sauvegarde filers, and $Post$ takes the value of 1 when the debt-restructuring plan is older than 12 quarters. Firms are tracked from four quarter before the flag removal to four quarter after it.

Table 5: Effect of flag removal at different time horizon

| | Mean at | Difference-in-Difference Estimates | |
|---|---|---|---|
| | (1) | (2) | (3) |
| | Pre-removal (q=11) | After 1 Year (q=16) | After 2 years (q=19) |
| $\Delta$ Credit | -0.243 | 0.0171* | 0.0229* |
| | | (0.073) | (0.078) |
| Pr(New Bank) | 0.0615 | 0.0339** | 0.0370** |
| | | (0.019) | (0.043) |
| Firm FE | | ✓ | ✓ |
| Quarter × Industry FE | | ✓ | ✓ |
| Observations | 960 | 8,693 | 5,606 |

$p$-values in parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

**Note** : Table 5 reports difference-in-differences estimates of the effect of Sauvegarde flag removal on credit access at different time horizon. Results report OLS estimations with fixed effects. The dependent variables $\Delta Credit$ is the quarterly variation of credit compare to the firm's average level of credit the year before it filed for bankruptcy, and $Pr(NewBank)$ is a dummy equal to one if the firm has formed a new banking relationship by the end of the year. Column (1) reports the dependent variables mean for Sauvegarde filers in the quarter prior to flag removal. Columns (2) and (3) report coefficients on the effect of flag removal at quarter fifteen and nineteen, respectively. Column (3), the sample includes Sauvegarde and RJ filers which plan lasted for at least 5 years. Standards errors are clustered at the firm level, $p$-values are in parentheses.

## Table 6: Propensity Score Matching

| | Pre-Match | | | Post-Match | | |
|---|---|---|---|---|---|---|
| | | | Summary Statistics | | | |
| | Control | Treatment | Diff | Control | Treatment | Diff |
| Lenght of the plan (years) | 9.570 | 9.503 | 0.067* | 9.490 | 9.506 | -0.016 |
| | (0.916) | (1.043) | [1.757] | (0.995) | (1.038) | [-0.302] |
| Log(assets) | 5.867 | 6.434 | -0.567*** | 6.369 | 6.424 | -0.056 |
| | (1.039) | (1.123) | [-13.292] | (1.155) | (1.119) | [-0.956] |
| Credit/Total asset | 0.616 | 0.580 | 0.037 | 0.602 | 0.579 | 0.022 |
| | (0.654) | (0.603) | [1.406] | (0.696) | (0.605) | [0.664] |
| Long term/Total credit | 0.571 | 0.615 | -0.044*** | 0.619 | 0.613 | 0.005 |
| | (0.370) | (0.372) | [-2.944] | (0.361) | (0.372) | [0.286] |
| Number of banks | 2.141 | 2.443 | -0.303*** | 2.461 | 2.448 | 0.013 |
| | (1.798) | (2.018) | [-4.066] | (2.150) | (2.022) | [0.123] |
| Observations | 3,066 | 763 | - | 763 | 763 | - |

Standards errors in parentheses

$t$-statistics in brackets

$^{*}$ $p < 0.1$, $^{**}$ $p < 0.05$, $^{***}$ $p < 0.01$

| | Logit regression results | |
|---|---|---|
| | Pre-Match | Post-Match |
| | (1) | (2) |
| Lenght of the plan (years) | -0.0775* | 0.00909 |
| | (0.084) | (0.862) |
| Log(assets) | 0.639*** | 0.0675 |
| | (0.000) | (0.277) |
| Credit/Total asset | 0.328*** | -0.0211 |
| | (0.000) | (0.816) |
| Long term/Total credit | 0.428*** | -0.112 |
| | (0.002) | (0.508) |
| Number of banks | -0.0467 | -0.0257 |
| | (0.104) | (0.441) |
| Year of the plan | ✓ | ✓ |
| Industry | ✓ | ✓ |
| Region | ✓ | ✓ |
| Observations | 3,833 | 1,526 |
| Pseudo $R^2$ | 0.103 | 0.005 |

$p$-values in parentheses

$^{*}$ $p < 0.1$, $^{**}$ $p < 0.05$, $^{***}$ $p < 0.01$

**Note** : Table 6 top panel presents means, standard errors (in parentheses), differences of means and t-statistics (in brackets) of observable characteristics across treated and control firms before and after the matching procedure. Treated firms are Sauvegarde filers, control firms are RJ filers. We implement a one-to-one nearest-neighbor matching procedure with no replacement, with a logit regression at the firm level of the variable *Treated* on the firm characteristics. Covariates include financial characteristics the year before firm filed for bankruptcy: the length of the plan, the firm's size measured with the log of its total assets, its number of banks, and the ratios of short term credit over total credit, and total credit over total asset. Categorical variables include the year of adoption of the plan, the firm's industry and the region of its headquarters. Regression results are reported on Table 6 bottom panel, column (1). Column (2) presents the results of the same logit regression estimated on the subsample of matched treatment and control observations, after matching.

Table 7: Effect of flag removal on firm's credit on matched sample

| | Δ Credit | | Pr(New Bank) |
|---|---|---|---|
| | (1) | (2) | (3) |
| Post | -0.00686 | | -0.0116* |
| | (0.122) | | (0.099) |
| Treated × Post | 0.0127* | | 0.0271** |
| | (0.090) | | (0.030) |
| q=8 × Treated | | 0.00165 | |
| | | (0.838) | |
| q=9 × Treated | | -0.00535 | |
| | | (0.509) | |
| q=10 × Treated | | 0.00228 | |
| | | (0.749) | |
| q=11 × Treated | | 0.00299 | |
| | | (0.556) | |
| q=13 × Treated | | 0.00665 | |
| | | (0.228) | |
| q=14 × Treated | | 0.0125* | |
| | | (0.063) | |
| q=15 × Treated | | 0.0238*** | |
| | | (0.010) | |
| q=16 × Treated | | 0.00933 | |
| | | (0.359) | |
| Firm FE | ✓ | ✓ | ✓ |
| Quarter × Industry FE | ✓ | ✓ | ✓ |
| Observations | 12,170 | 12,170 | 13,522 |
| Adj. $R^2$ | 0.916 | 0.916 | 0.429 |
| Adj. Within $R^2$ | 0.001 | 0.003 | 0.001 |

$p$-values in parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

**Note** : Table 7 reports difference-in-difference results of the flag removal on the matched sample. Treated firms are Sauvegarde filers, control firms are matched RJ filers. Dependent variables column (1) and (2) is the quarterly variation of total credit, column (3) is the probability of forming a new banking relationship. Standard errors are clustered at the firm level.

# A  Appendix

Figure A.1: Plan repayment schedules at different horizons

# B The 2012 policy change

We exploits the fact that, up to 2011, the credit rating of firms executing an RJ plan was 5. It has been changed to 6 on January 1st, 2012, to better convey the credit risk carried by RJ filers. Figure B.1 presents the effect of this policy change on the rating of RJ filers between 2011 and 2013. At the end of 2011, 96% of RJ filing firms were rated 5. At the beginning of 2012, 83% were rated 6. RJ filing firms knew an exogenous change of their rating uncorrelated to their individual financial characteristics, but due to a change in law.

Figure B.1: Transition matrices of the rating of RJ filers around the 2012 policy change
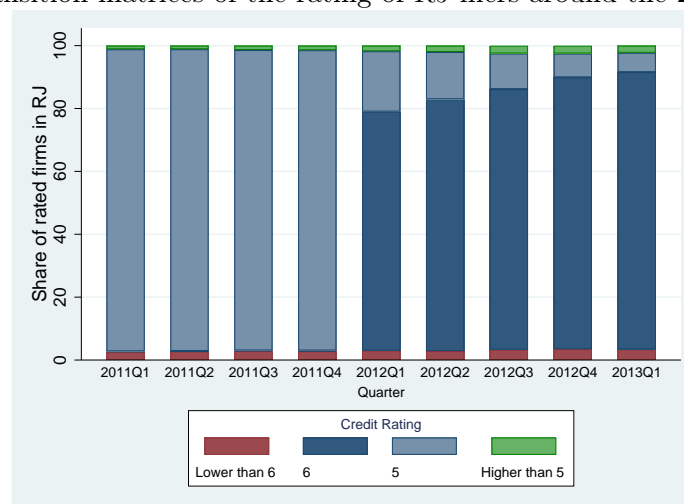


**Note** : Figure B.1 describes the proportion of rated RJ filers in each quarter of the plan around the 2012 policy change. For example, we read that 95% of RJ filers are rated 5 in Q4 2011, and 76% are rated 6 in Q1 2012, after the policy change. Sample includes RJ filers which plan was carried on for at least 3 years between 2011 and 2013.

Using the same difference-in-difference design, we want to estimate the impact of the credit rating change on the firm credit variation. We compare RJ filers (treated group) with Sauvegarde filers (control group). Sauvegarde filing firms form an ideal control group as they present the same plan characteristics as RJ filers, and their rating stayed constant, set to 5 between 2011 and 2013. We focus on firms the first 3 years of execution of their

Figure B.2: Average credit growth for Sauvegarde and RJ filers around the 2012 policy change

plan, and which plans lasted for at least 3 years. Figure B.2 show the average credit growth of the two groups between 2011 and 2013. The parallel trend assumption requires that the credit growth follows the same trend before 2012, which we can argue is the case. Figure B.3 supports this assumption.

If banks were to rely on the Banque de France's credit rating to assess the soundness of their client firms undergoing a debt-restructuring plan, we would expect this policy change to impact significantly credit variation of RJ filers. As firms know a downgrade of their rating, we could expect a negative impact on their access to bank credit. On the contrary, if banks base their credit risk evaluation of their clients on internal screening system, then we would expect our estimate to be non significantly different from 0.

We run an alternative version of equation 2:

$$\Delta Credit_{i,t} = \beta \left( Post2012 \times Treated' \right) + \gamma_q + \gamma_i + \gamma_{s \times t} \qquad (5)$$

where $Post2012$ is a dummy that equals 1 after 2012 and $Treated'$ equals 1 for RJ filers, 0 for Sauvegarde filers. We follow firms from four quarters before to four quarters after the policy change. Unlike the main specification, the exogenous shock occurs at a specific date, regardless of the age of the plan. We therefore introduce $\gamma_q$ for quarter of the plan fixed effects. All the other variables are the same as described before, and the standard errors are clustered at the firm level.

Results are presented Table 8. The coefficient $\beta$ is not significantly different from 0, suggesting that the downgrade of credit rating did not cause a change in credit variation.

Table 8: Effect of 2012 change of rule on firm's credit

|  | (1) |
| --- | --- |
|  | $\Delta$ Credit |
| Treated' $\times$ Post2012 | 0.00406 |
|  | (0.34) |
| Firm FE | Yes |
| Quarter $\times$ Industry FE | Yes |
| Quarter of the plan dummies | Yes |
| Observations | 22,836 |
| Adj. $R^2$ | 0.918 |
| Adj. Within $R^2$ | -0.000 |

$t$ statistics in parentheses

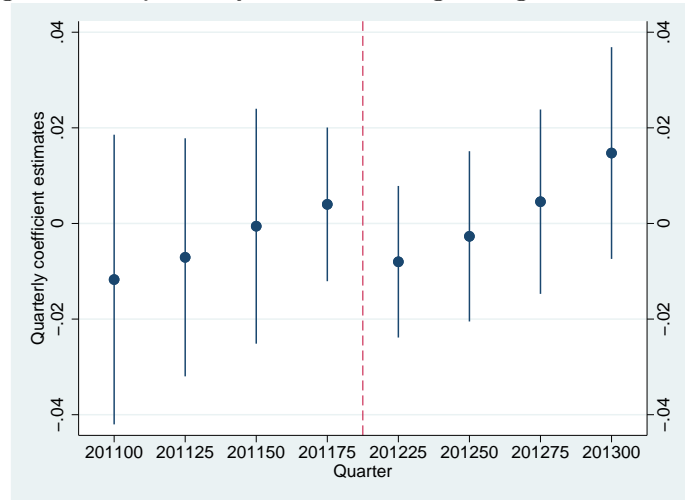$^*$ $p < 0.1$, $^{**}$ $p < 0.05$, $^{***}$ $p < 0.01$

**Note** : Table 8 reports difference-in-difference estimates of the effect of the rating change in RJ on the variation of firm's credit (see equation 5). The dependent variable is $\Delta Credit_{i,t}$, the quarterly variation of total credit compared to the firm's average level of credit the year before it filed for bankruptcy. $Treated'$ takes the value of 1 for RJ filers, and $Post2012$ takes the value of 1 after 2012. Firms are tracked from four quarter before the policy change to four quarter after it. Standard errors are clustered at the firm level.

Figure B.3 shows that the quarterly estimates do not vary after the exogenous rating change. The vertical red line identifies the policy change in 2012. These results imply

that banks do not differentiate between restructuring firms in RJ according to whether their external credit rating is 5 or 6.

Figure B.3: Quarterly effect of rating change on firm's credit



**Note** : Figure B.3 reports difference-in-difference estimates $\beta_q$ of the effect of the policy change on the variation of firm's credit (see equation 3). RJ filers are compared to Sauvegarde filers. The dependent variable is $\Delta Credit_{f,t}$, the quarterly variation of total credit compared to the firm's average level of credit the year before it filed for bankruptcy. Firms are tracked from four quarter before the policy change to four quarter after it. Standard errors are clustered at the firm level.