Online Appendix to

Entrepreneurship and Information on Past Failures: A Natural Experiment

Christophe Cahn* Mattia Girotti† Augustin Landier‡

A Restructuring and Insolvency Proceedings in France

French law defines three main restructuring and insolvency proceedings: the safeguard proceeding (procédure de sauvegarde), receivership (redressement judiciaire), and liquidation (liquidation judiciaire). A firm in difficulty may directly enter receivership or liquidation without necessarily passing through the safeguard proceeding. It may also enter liquidation without passing through the receivership. The admission to these proceedings depends on whether the firm has defaulted on payments and on which counterparty of the firm is requesting the intervention of the commercial court:

Safeguard This is a preventive proceeding opened at the request of the firm, and it is meant to deal with the company's difficulties before the company actually defaults on payments.

Receivership This process is opened at the request of the firm, its creditors, or the public prosecutor as soon as the company has defaulted on payments. The procedure assigns a "tutor" to the company, who helps the firm to adopt a recovery plan, during which, for example, the firm starts a debt-rescheduling process. This phase lasts from 6 to 18 months. If recovery is not possible, the firm enters the liquidation procedure.

Liquidation This proceeding presupposes that the company has defaulted on payments and that recovery is impossible. This procedure is opened at the request of the firm, its creditors, or the public prosecutor. It terminates the activity of the firm, the assets of which are sold to satisfy the demands of the firm's creditors.

Overall, when they are successful, the safeguard and receivership proceedings enable a firm to return to normal activity. Conversely, liquidation implies the complete shutdown of the firm's activities and thus its definitive liquidation (even if it is bought by another firm).

According to Despierre, Epaulard, and Zapha (2018),[1] only 2.8% of the 53,238 proceedings opened in 2013 were safeguards, while receiverships and liquidations represented 29.4% and

*Banque de France; christophe.cahn@banque-france.fr; 31 rue Croix des Petits Champs - 75049, Paris CEDEX 01, France.

†Banque de France; mattia.girotti@banque-france.fr; 31 rue Croix des Petits Champs - 75049, Paris CEDEX 01, France. (Corresponding author).

‡HEC Paris; landier@hec.fr; 1 rue de la Liberation - 78350, Jouy-en-Josas, France.

[1]Despierre, D., Epaulard, A., Zapha, C., Entreprises en difficulté financière: procédure de sauvegarde ou redressement judiciaire?, Note de synthèse, France Stratégie, 2018.

67.8%, respectively. This suggests that the liquidation is not at all a remote event in case a firm experiences difficulties.

The described proceedings compare to US bankruptcy law as follows. The safeguard proceeding is similar to US Chapter 11 in the sense that companies' financial difficulties are dealt with sufficiently early (i.e., before payment defaults). Receivership can be compared to phases 1 ("filing to submission") and 2 ("submission to confirmation," which is the period of negotiation with creditors) of US Chapter 11. Finally, liquidation is equivalent to the bankruptcy proceeding detailed in Chapter 7.

B Reform Agenda Surrounding the Manager Flag Reform

In addition to the manager flag reform, which directly targeted entrepreneurship, the consultation called les Assises de l'entrepreneuriat of January 2013 led the French government to launch a policy package intended to ease corporate funding conditions. This package included four main measures:

Fostering the access of small- and medium-sized entreprises to the stock exchange In the summer of 2013, Enternext, an affiliated company of the Euronext stock exchange, was created. Enternext has the mission of promoting and enabling access to the stock exchange of small- and medium-sized companies. The ultimate goal is that such companies raise equity on the stock market and become less prone to other types of funding. Clearly, this measure mainly applied to companies with a sufficient size to be listed on the stock exchange.

Reduced taxation of capital gains This measure had the objective of reducing the tax burden of individuals who invest in corporate equity. The objective was to foster companies' equity issuances, thus enabling them to have a stable source of funding. This measure applied to all sales made from early 2013 and concerned the sales of stocks of all companies, irrespective of whether they were listed.

Creation of equity savings plan on SMEs' equity (PEA-PME) The PEA-PME enabled households to finance listed and unlisted shares of European small- and medium-sized entreprises and to enjoy reduced taxation on the related gains. The PEA-PME was created in early 2014. Before then, the PEA savings plan made it possible to invest in large-sized listed companies. That standard PEA was maintained after 2014. Therefore, the PEA-PME measure corresponds to an extension of the ceiling of the tax-reduction benefit that households can enjoy.

Exemption from social security contributions for new innovative enterprises This measure extended the tax exemption enjoyed by young innovative companies (jeunes entreprises innovantes), which had been in place since 2004. Initially targeted to companies created between 2004 and the end of 2013, the extension postponed the ending date to 2016.

Overall, these four measures mainly targeted the ability of corporations to raise equity funding. However, and most important for our empirical analysis, these measures were not specifically targeted to failed entrepreneurs because they affected all firms. Additionally, they mainly affected existing sufficiently large firms and not new ventures. Therefore, this reform package does not seem problematic for our identification strategy.

C Data Cleaning Details

We present the details of the construction of the two datasets, which allow us to estimate the effects of the removal of the flag. The first step consists of identifying the sample of managers and firms that best serves our purpose of measuring the effects of the deflag. We then proceed by describing the construction of the manager dataset and the firm dataset.

C.1 Identifying the Sample of Managers and Firms that Best Suits our Analysis

As described in the Data section, we have information on the universe of managers in France. Specifically, we know the values of the manager flag taken throughout the lifetime of each manager. We use this information to determine, for each manager, the dates at which she is flagged and then deflagged.

We exclude from our baseline analysis those managers for whom the flag information is missing for some dates and those managers who fail more than once during their lifetime. Discarding the former is important to ensure that we can track each manager throughout her life. However, we choose to discard the latter because the trajectories of managers who fail more than once could be very different.[2]

By doing this cleaning, we obtain a coherent group of managers, for which, if the manager is flagged, we have that exactly three years afterwards, the flag expires.[3] Of course, some flags are removed earlier because of the 2013 reform. Note that by excluding managers who fail more than once, we may select those managers who fail because of bad luck and not due to significantly lower entrepreneurial ability. Nonetheless, our analysis does not completely exclude managers who fail more than once. Indeed, we also exploit managers holding "050" and "060" flags at the time of the 2013 reform. These managers have had two or at least three failures in the preceding three years. We consider them to produce an actual difference-in-differences analysis.

Next, we consider the record of firms' legal proceedings. This information is available for the universe of French firms. For each of them, we identify the date at which the firm is liquidated (i.e., falls into liquidation judiciaire), if any.

Finally, we consider the data on manager-firm links. This information records the date at which every given manager holds a managerial position at every given firm. Importantly, we know whether the manager is a legal representative of such firm. We merge these data with 1) the information on the dates at which the manager is flagged and 2) the information on when the firm is liquidated. The combination of these pieces of information allows us to identify which firm causes the flag of a manager. The flag is, in fact, attributed to managers who are legal representatives of firms that are liquidated. We drop those firms from the sample.

The resulting dataset records all manager-firm links, with the exception of those in which the firm fails and causes the flagging of a manager. Dropping those firms is not restrictive since we will later compare managers who are never flagged (and thus are not involved in failures by construction) with managers who only have one "040" flag (and thus fail only once).

[2] If a manager fails two or three times in less than three years, her flag is "050" or "060," respectively, at the occurrence of the last failure. The manager then remains flagged for three years following that last failure. This means that, overall, the manager remains flagged for more than three years. If, instead, the manager has more failures during her lifetime that are more than three years distant from each other, she experiences two (or more) "040" flags, each lasting exactly three years. This difference in the length of the flag leads us to remove from the analysis all managers having failed more than once in their lifetime.

[3] Clearly, if the manager never receives a flag, the start and end dates of the flag are blank.

C.2 Construction of the Manager Dataset

Our objective is to construct a panel where managers are tracked over time and that reports when a manager starts a company. To construct this panel, we start with the data on firms' date of creation. Such information is available for the universe of French firms with the exception of sole proprietorships. We drop property holding companies (sociétés civiles immobilières) from the sample. These firms are, in fact, most often used by individuals as vehicles for holding wealth and reducing their tax burden. They are thus not actual entrepreneurial ventures, and we choose not to attribute a firm creation when a manager founds one of these companies.

We merge these data with the cleaned record of manager-firm links (as issued from the previous step). Through this merge, we are able to identify who holds a managerial position when a firm is created. Moreover, under the hypothesis that at its creation, a manager of the firm is also a founder, we know when each manager starts a company. Note that to identify founders, we do not require that a manager must be the legal representative of the firm. Overall, we focus on the firm creations happening between 2005 and 2015. The output of this merge is a dataset recording for each manager the dates at which she starts a company (if any).

We then focus on the whole sample of managers. We retain only those who either never fail or fail only once and are flagged and deflagged between 2005 and 2015. We also restrict the focus to managers who are at least 18 years old in 2005 and at most 80 years old in 2015.

The resulting sample of managers includes three types of managers: managers who never fail, managers who fail once and are flagged for exactly three years (i.e., the standard duration of the "040" flag up to the reform of 2013), and managers who fail once, are flagged but are affected by the reform of 2013, and their flag duration is thus shorter than three years. Given that never-failed managers represent the majority but serve us only to absorb every element that affects all entrepreneurs, we randomly sample 5% of them. Three-year-flagged managers and policy-affected managers are not affected by this sampling.

The final step consists of composing the panel: each manager in the sample is tracked from 2005 to 2015 at a quarterly frequency. Based on the information on firm creation obtained above, we create a dummy identifying whether a given manager creates a firm in a given quarter.

C.3 Construction of the Firm Dataset

Here, the objective is to construct a panel of firms managed by either never-failed or once-failed managers.

We start with firms' financial statements, which are available when the firm's turnover exceeds €0.75 million or its outstanding bank debt is greater than €0.38 million. These data take the form of a firm-year panel, reporting the related financial information. We merge this panel with the cleaned record of manager-firm links (as issued from the first step above). In this way, we know whether a firm is managed by a flagged manager.

We choose to discard all firms that have more than one flagged manager during their lifetime. This is to ensure that for each firm, we can precisely identify when (one of) its manager(s) is flagged and subsequently deflagged. Note that to the extent that we remove from the record of manager-firm links those related to the firms that cause a flag, we discard all financial statements of firms that fail (and cause the flagging of their legal representative). This means that the firms remaining in the sample that are linked to a flagged manager are managed by this manager at the time she fails with another company. However, such firms do not fail themselves and instead remain in operation.

As with the manager dataset, we retain only firms linked to managers who either never fail or fail only once and are flagged and deflagged between 2005 and 2015. We merge the firm-

year panel with industry information. We discard from the sample property holding companies (sociétés civiles immobilières) for the reason highlighted above.

For our empirical analysis, we construct the following variables. The yearly flow of bank debt is obtained as the yearly change in bank debt normalized by lagged total assets. The loan rate is obtained as interest payments divided by financial debt. The yearly investment in plants is computed as the yearly difference in plant value, normalized by lagged total assets.

In parallel, we take the French credit register. We count the number of banking relationships every given firm has at every given point in time. We merge this information with the firm-year panel just described and compute the yearly change in the number of banking relationships a firm has. Note that, as described in the Data section, until February 2006, each bank branch reported individual credit exposures of all its client firms when total exposure per firm was larger than €76,000. After that date, the threshold was reduced to €25,000. This means that all banking relationships falling below €76,000 (but above €25,000) became visible to us after this reform. However, these are not new banking relationships. The change in the number of banking relationships we compute could then be misleading for the year 2006. However, to the extent that this reform impacted all firms, the average impact is captured in the econometric analysis by the time fixed effects. Furthermore, there is no firm in the sample with a manager who was deflagged in 2006. There is thus no way that the effect of the deflag is biased because some bank relationships emerge following the 2006 reform of the credit register.

D Additional Tables

Table D.1: Mapping of corporate legal form, managerial roles, and legal representative status

This table displays the mapping of corporate legal form, managerial roles, and managerial roles with legal representative status.

Corporate legal form	**Managerial roles**	**Legal representative status**
Sociétés en nom collectif	– Gérants – Associés en nom	– Gérants
Sociétés en commandite simple	– Gérants, commandités or not – Associés commandités	– Gérants, commandités or not
Sociétés à responsabilité limitée (SARL and EURL)	– Gérants	– Gérants
Sociétés anonymes à conseil d'administration (incl. sociétés coopératives and sociétés européennes)	– Président directeur général – Directeur général – Directeurs généraux délégués – Président du conseil d'administration – Membres du conseil d'administration (other than président)	– Président directeur général – Directeur général – Directeurs généraux délégués
Sociétés anonymes à directoire et conseil de surveillance (incl. sociétés coopératives and européennes)	– Président du directoire – Directeur général unique – Directeurs généraux – Membres du directoire – Président du conseil de surveillance – Membres du conseil de surveillance	– Président du directoire – Directeur général unique – Directeurs généraux
Sociétés en commandite par actions	– Gérants, commandités ou non – Associés commandités – Membres du conseil de surveillance	– Gérants, commandités or not
Sociétés par actions simplifiées (SAS) and Sociétés par actions simplifiées à associé unique (SASU)	– Président – Directeur général – Directeurs généraux délégués	– Président – Directeur général – Directeurs généraux délégués
Groupements d'intérêt économique (GIE)	– Administrateurs	– Administrateurs

Table D.2: Monofirm and multifirm managers: summary statistics

This table reports summary statistics of the population of managers distinguished by whether they simultaneously manage one or more firms ("monofirm" and "multifirm" managers, respectively). We consider manager-firm relationships existing at the end of 2005 and 2015. Note that "top 1%" refers to the managers belonging to the 99^{th} percentile in the distribution of the number of firms managed by multi-firm managers. Concentration indices correspond to normalized Herfindahl indices, which thus range from 0 to 1. The "sectoral concentration index" describes concentration in terms of 3-digit industries of the companies managed by the same multifirm entrepreneur. The "group concentration index" describes whether the firms managed by the multi-firm entrepreneur belong to the same group. A group is defined as a set of firms in which each firm owns at least 50% of another firm in the group or has 50% of its equity owned by another firm in the group.

	2005	2015
Number of managers	3,622,469	4,244,983
Share of multifirm managers	0.15	0.17
Number of firms per manager (mean)	1.23	1.27
Number of firms per multifirm man. (median)	2	2
Number of firms per multifirm man. (top 1%)	9	9
Sectoral concentration, multifirm managers	0.02	0.02
Sectoral concentration, multifirm managers (top 1%)	0.16	0.25
Group concentration, multifirm managers	0.00	0.00
Group concentration, multifirm managers (top 1%)	0.04	0.02

Table D.3: Variable definitions

This table recapitulates the definitions of the variables used in the regressions.

Variable	**Definition**
firm creation	= 1 if the manager creates a firm in the quarter
manager has been deflagged	= 1 if the manager has no flag in the quarter
policy-affected	= 1 if the manager experiences deflag due to the policy change
manager is young	= 1 if the manager is less than 40 years old at the beginning of the quarter
manager's age	manage's age (in years)
Bank loans (norm. yearly flow)	change in bank debt over the year divided by lagged total assets
Loan rate (in pp)	interest payments over the year divided by total financial debt
Inv. in plant (norm. yearly)	change in the stock of plants realized over the year divided by lagged total assets
Change in N bank rel.	change in the number of bank relationships realized over the year
failure	manager is involved in a liquidation judiciaire
any bad event	manager is involved in any legal proceeding
manager has already failed	manager has already been involved in a liquidation judiciaire as a legal representative

Table D.4: Entrepreneurs' probability of starting a business: managers failed after 2008 as control group and before-after approach

This table gives the results from linear regressions estimating entrepreneurs' quarterly probability of starting a business as a function of the flag status. In columns (1) and (2), we consider the quasi-difference-in-differences approach but use as control group only managers who failed after 2008—that is, who failed at a closer point in time relative to policy-affected managers. The distance from flag start dummies capture the average dynamic after flag start. The coefficient on the manager has been deflagged dummy measures the difference in restart probability observed postdeflag (for policy-affected managers) relative to that benchmark dynamic. The sample is composed of a randomly drawn 5% sample of the universe of unflagged managers, flagged managers whose flag duration is three years and failed after 2008, and policy-affected flagged managers whose flag duration is thus less than three years. We track both groups of flagged managers from the first to the eleventh quarter after flag start. Policy-affected managers are deflagged over this period, while three-year-flagged managers are not. The sample period is from 2008Q1 through 2015Q4. In columns (3) and (4), we use the before-after approach (Equation (4) of the main text). The coefficient on the manager has been deflagged dummy measures the difference in restart probability observed postdeflag relative to before deflagging, and is estimated exploiting three-year-flagged managers only. The sample is composed of a randomly drawn 5% sample of the universe of unflagged managers, and flagged managers whose flag duration is three years. These flagged managers are tracked from the 9th to the 14th quarter after flag start (i.e., from three quarters before to three quarters after the deflag). The sample period is from 2005Q1 through 2015Q4. Standard errors are clustered at the manager level, and t-statistics are in parentheses. Statistical significance: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

	Quasi-DiD: managers failed after 2008 as control group		Before-After approach	
	(1)	(2)	(3)	(4)
	firm creation	firm creation	firm creation	firm creation
manager has been deflagged	0.0023***	0.0017***	0.0017***	0.0016***
	(5.75)	(3.09)	(4.26)	(3.95)
policy-affected	-0.0002			
	(-0.48)			
flagged manager			0.0029***	
			(10.80)	
manager is young	0.0076***		0.0059***	
	(92.97)		(92.39)	
Distance from flag start FE	Yes	Yes	No	No
Entrepreneur FE	No	Yes	No	Yes
Time FE	Yes	Yes	Yes	Yes
Observations	8,121,326	8,121,326	10,943,602	10,943,602

Table D.5: The effect of the deflag on existing firms: control group consists of firms managed by entrepreneurs who failed after 2008

This table shows the effects of the manager being deflagged on existing firms, estimated using the quasi-difference-in-differences approach (Equation (2) of the main text). The key difference relative to the estimations presented in Table 6 of the main text is that firms in the control group are managed by three-year-flagged entrepreneurs who failed after 2008—that is, who failed at a closer point in time relative to policy-affected managers. The distance from flag start dummies capture the average dynamic after flag start. The coefficient on the manager has been deflagged dummy measures the difference in the outcome variable observed postdeflag (for firms related to policy-affected managers) relative to that benchmark dynamic. The outcome variables are defined in Table 4 of the main text. The sample is composed of firms with no flagged manager and firms with a flagged manager who is managing the firm at the time she receives the flag. Flagged managers are either three-year (and failed after 2008) or policy-affected. The first are flagged for three years, while the latter have a flag duration of less than three years. Firms with flagged managers are tracked from the first to the third year after flag start. Policy-affected managers are deflagged over this period, while three-year managers are not. The sample period is from 2008 through 2014. Standard errors are clustered at the firm level, and t-statistics are in parentheses. Statistical significance: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

	(1) Bank loans (norm. yearly flow)	(2) Loan rate (in pp)	(3) Inv. in plant (norm. yearly)	(4) Change in N bank rel.
manager has been deflagged	0.007*	-0.374	0.001*	0.099*
	(1.74)	(-1.32)	(1.93)	(1.90)
Distance from flag start FE	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes
3-digit industry × Time FE	Yes	Yes	Yes	Yes
Observations	987,567	701,608	987,567	810,186
R^2	0.277	0.594	0.357	0.176

Table D.6: The effect of the deflag on existing firms: addition of rating FEs

This table shows the effects of the manager being deflagged on existing firms, estimated using the quasi-difference-in-differences approach (Equation (2) of the main text). The main difference relative to the estimations presented in Table 6 of the main text is that we include credit rating fixed effects to control for firms' risk. The distance from flag start dummies capture the average dynamic after flag start. The coefficient on the manager has been deflagged dummy measures the difference in the outcome variable observed postdeflag (for firms related to policy-affected managers) relative to that benchmark dynamic. The outcome variables are defined in Table 4 of the main text. The sample is composed of firms with no flagged manager and firms with a flagged manager who is managing the firm at the time she receives the flag. Flagged managers are either three-year or policy-affected. The first are flagged for three years, while the latter have a flag duration of less than three years. Firms with flagged managers are tracked from the first to the third year after flag start. Policy-affected managers are deflagged over this period, while three-year managers are not. The sample period is from 2005 through 2014. Standard errors are clustered at the firm level, and t-statistics are in parentheses. Statistical significance: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

	(1) Bank loans (norm. yearly flow)	(2) Loan rate (in pp)	(3) Inv. in plant (norm. yearly)	(4) Change in N bank rel.
manager has been deflagged	0.008**	-0.463*	0.001**	0.117**
	(2.26)	(-1.68)	(1.96)	(2.35)
Distance from flag start FE	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes
3-digit industry × Time FE	Yes	Yes	Yes	Yes
Rating FE	Yes	Yes	Yes	Yes
Observations	1,329,573	955,485	1,329,573	1,056,119
R^2	0.241	0.553	0.305	0.192

Table D.7: The effect of the deflag on existing firms: Before-After approach

This table shows the effect of the manager being deflagged on existing firms, estimated using the before-after approach (Equation (5) of the main text). We exploit the three-year discontinuity in the flag before the reform: the coefficient on the manager has been deflagged dummy measures the difference in the outcome variable observed postdeflag relative to before deflagging. The outcome variables are defined in Table 4 of the main text. The sample is composed of firms with no flagged manager and firms with a three-year-flagged manager who manages the firm at the time she receives the flag. The latter managers are flagged for exactly three years. Firms with flagged managers are tracked from two years before to two years after the manager is deflagged. The sample period is from 2005 through 2014. Standard errors are clustered at the firm level, and t-statistics are in parentheses. Statistical significance: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

	(1) Bank loans (norm. yearly flow)	(2) Loan rate (in pp)	(3) Inv. in plant (norm. yearly)	(4) Change in N bank rel.
manager has been deflagged	0.006***	-0.350**	0.001**	-0.003
	(3.43)	(-2.27)	(2.52)	(-0.15)
Firm FE	Yes	Yes	Yes	Yes
3-digit industry × Time FE	Yes	Yes	Yes	Yes
Observations	1,329,015	955,166	1,329,015	1,055,929
R^2	0.232	0.551	0.304	0.190