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Targeting State Aid: Firm-level Evidence from France

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Prepared by Xun Li and Maryam Vaziri*

Authorized for distribution by Manuela Goretti
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ABSTRACT: This paper examines the firm-level impact of state aid in France from 2016–23 and how targeting affects economic outcomes. Using firm-level data and a difference-in-differences approach, we find that aid is most effective for young firms, improving real outcomes while also crowding in private debt financing. Size-based targeting, by contrast, has limited impact. R&D support is particularly effective for young firms in high-tech sectors, and energy aid has the strongest effects in manufacturing, pointing to its potential role in helping firms reduce emissions and facilitating the green transition.

JEL Classification Numbers:	D22, L52
Keywords:	Industrial policy; firm performance; state aid
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Targeting State Aid:

Firm-level Evidence from France

Xun Li Maryam Vaziri*

Abstract

This paper examines the firm-level impact of state aid in France from 2016−2023 and how targeting affects economic outcomes. Using firm-level data and a difference-in-differences approach, we find that aid is most effective for young firms, improving real outcomes while also crowding in private debt financing. Size-based targeting, by contrast, has limited impact. R&D support is particularly effective for young firms in high-tech sectors, and energy aid has the strongest effects in manufacturing, pointing to its potential role in helping firms reduce emissions and facilitating the green transition.

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1 Introduction

In recent years, the use of industrial policies to support firms and strategic sectors has increased. In the European Union, this trend is reflected in a steady rise in state aid, including in France, where state aid[1] has increased from 0.74 percent of GDP in 2016 to 1.11 percent in 2024, remaining high after the pandemic and the energy crisis. While EU state aid rules are designed to preserve competition within the single market, they explicitly allow public support when it addresses clearly identified market failures.

Despite the growing scale of fiscal spending on these measures, relatively few empirical studies examine their impact at the firm level. This paper studies the effect of state aid on firm performance in France, focusing on how aid distribution can be more effectively targeted based on observable firm characteristics that proxy for the underlying market failures. For example, firm age can capture financing constraints, while sector of activity may reflect firms' innovation potential or coordination support that private markets may not resolve. By directing support toward firms exhibiting these characteristics, state aid can mitigate the impact of market failures that limit efficient resource allocation (IMF, 2024).

Theory and micro-level evidence show that public support is most effective when it addresses market failures, such as financing constraints, coordination problems, or knowledge spillovers (Lane, 2025; Juhász et al., 2024; Rodrik, 2004). When well targeted, public support can promote investment, innovation, and productivity growth. At the same time, poorly designed industrial policies can distort competition and create cross-border spillovers (Hodge et al., 2024). In practice, however, aid may have limited impact because market failures are often difficult to observe, and resources may fail to reach the firms that need them most or may simply be reallocated without generating additional activity (IMF, 2025) . The firm-level effects of state aid, therefore, depend on the extent to which it is able to address the

[1]State aid includes any selective advantage from public authorities, such as grants, loans, or tax relief, granted to specific companies. Under EU rules, it is prohibited if it distorts or threatens to distort competition and affects trade between member states, unless justified by public interests like environmental goals. Industrial policies are broader in definition and encompass a wide range of government interventions. They rely on state aid as a primary tool for governments to support strategic sectors.

specific market failures constraining firms.

To study this, we use a comprehensive dataset that combines firm-level balance sheet information from Bureau van Dijk's Orbis database with public data on state aid at the firm level from the State Aid Transparency Database maintained by the European Commission. To identify the causal impact of state aid, we compare firms before and after they receive support, exploiting the staggered timing of aid across firms and implementing a difference-in-differences event study framework following Callaway and SantAnna (2021). This approach allows us to examine pre-treatment trends and estimate the dynamic effects of aid over time. To mitigate potential endogeneity from the selection of firms into treatment, we complement our analysis with a propensity score matching exercise.

Our results point to significant heterogeneity in the effectiveness of state aid. Aid targeted toward young firms, who are often financially constrained but have high growth potential, generates substantially larger gains than for the average recipient, with sales effects around 70 percent higher, while support directed at other groups yields negligible effects. We also find that debt levels for young firms increase following aid receipt, suggesting that public support is associated with crowding in of private financing. As with most firm-level studies, our estimates capture relative differences between treated and non-treated firms within sectors and do not account for broader equilibrium effects, such as cross-sector spillovers or resource reallocation across firms.

These findings contribute to the growing empirical literature on industrial policy. They are consistent with prior evidence that state aid can help firms overcome financing constraints and support growth (Criscuolo et al., 2019; Malessan, 2025), while adding to the evidence that targeting matters for aid effectiveness. The literature also highlights that firm-level gains need to be weighed against wider market effects, as support to large listed firms can generate negative cross-border spillovers on competitors (Brandão-Marques and Toprak, 2024). At the same time, reforms improving the overall business environment can amplify the returns to firm-level interventions (Baquie et al., 2025).

We also show that aid effectiveness varies across sectors and objectives. R&D support generates the strongest gains in high-tech industries, particularly for young firms, where financing constraints and knowledge spillovers are most likely to bind. In manufacturing, energy and environment-related aid performs best, pointing to a potential role in supporting the green transition. A growing literature suggests that carbon pricing alone can reduce firms emissions intensity, but complementary policies, such as targeted subsidies, loans, or tax incentives, may enhance these effects by supporting the adoption of low-carbon technologies and mitigating adjustment costs (Colmer et al., 2025; Juhász and Lane, 2024; Acemoglu et al., 2016). Our findings suggest that energy aid may help firms reduce their emissions intensity pointing to a potential role in supporting the green transition.

The remainder of the paper is organized as follows. Section 2 describes the empirical methodology. Section 3 discusses the data sources. Section 4 provides the results and section 5 concludes.

2 Methodology

To estimate the causal effect of state aid on firm outcomes, we exploit variation in the timing of aid receipt across firms using a staggered difference-in-differences design. Firms enter treatment in the year they first receive state aid and remain treated thereafter, while firms that never receive aid serve as the control group. We use an unbalanced panel of firm-level data covering the period 2016 to 2023.

Baseline Specification. Our baseline analysis follows Callaway and SantAnna (2021), which estimates treatment effects separately for each cohort and post-treatment period, using only firms that have not yet received aid or never receive aid as controls. Cohort-specific effects are then aggregated to obtain overall average treatment effects and dynamic event-study estimates. This approach provides unbiased and interpretable estimates even

when treatment effects vary across cohorts or evolve over time.

Formally, the treated cohort c in year t is compared to not-yet-treated and never-treated firms, and the average treatment effect for each cohort c at relative time k is given by:

$$ATT(c,k) = E[y_{i,t+k}(1) - y_{i,t+k}(0)|i \in c] \tag{1}$$

where y_{it} denotes firm-level outcomes, including sales, productivity, and employment. Aid is treated as a binary variable taking value one after the firm receives aid and zero otherwise. The estimator aggregates the impact across cohorts according to their relative size, where larger cohorts receive proportionally more weight in the final event-study estimates:

$$ATT(k) = \sum_{c \in \mathcal{C}} ATT(c,k) \cdot P(G_i = c \mid i \in \mathcal{C}_k) \tag{2}$$

where $\mathcal{C}_k$ denotes the set of cohorts for which event-time k is observed, and $P(G_i = c \mid i \in \mathcal{C}_k)$ are cohort size weights reflecting the share of treated firms belonging to cohort c. To examine the heterogeneous impact of state aid on firms, we run separate regressions focusing on cohorts of young firms and small firms[2]. As the estimator provides dynamic treatment effects by event time, we can examine the evolution of outcomes around the year of aid receipt and test the validity of the parallel trends assumption.

As receiving state aid is not random and may be influenced by factors related to firms' financial conditions, the parallel trends assumption may be violated. To improve pre-treatment comparability between treated and control firms, we implement a cohort-by-cohort propensity score matching procedure before carrying out our analysis. Details on the matching procedure are provided in the appendix.

Two-way Fixed Effect Specification. For comparison, we also estimate a conventional

[2]Our findings are not sensitive to these thresholds: for example, expanding the sample to include small and medium-sized enterprises (SMEs) yields broadly similar results. Similarly, the results are not sensitive to the age threshold.

two-way fixed effects specification:

$$\log(y_{it}) = \beta \, \text{TreatedPost}_{it} + \beta_y \, \text{TreatedPost}_{it} \times \text{Young}_i + \alpha_i + \gamma_{st} + \varepsilon_{it}, \tag{3}$$

where y_{it} captures firm outcome as before, TreatedPost_{it} is a binary indicator taking value one if firm i has already received state aid, and zero otherwise. The specification includes firm fixed effects (α_i), which control for time-invariant firm characteristics, and sector-year fixed effects (γ_{st}), which absorb common shocks at the sectoral level in a given year. β estimate the average treatment effect of receiving state aid for the baseline group and β_y (or β_s) capture the additional effect for young (or small) firms. However, as shown by Callaway and SantAnna (2021) and Goodman-Bacon (2021), two-way fixed-effect estimates are biased when treatment effects are heterogeneous across cohorts, which motivates our benchmark (Callaway and SantAnna, 2021) specification.

Event Study Specification. The validity of the difference-in-differences approach relies on the parallel trends assumption. To assess this, we implement an event-study design, which allows treatment effects to vary over time relative to the year of aid receipt and provides a formal test for pre-treatment trends. As in the baseline analysis, we include indicators for young and small firms to capture heterogeneous effects. We omit the year prior to treatment $EventTime_{it} = -1$ as the baseline period, so all coefficients are interpreted relative to this year. The main specification is:

$$\log(y_{it}) = \sum_k \beta_k \cdot \mathbf{1}\{\text{EventTime}_{it} = k\} + \sum_k \beta_{k,y} \cdot \mathbf{1}\{\text{EventTime}_{it} = k\} \times \text{Young}_i + \alpha_i + \gamma_{st} + \varepsilon_{it} \tag{4}$$

where

$$\text{EventTime}_{it} = \text{year}_t - \text{TreatmentYear}_i,$$

Results are reported in Table 4 in the appendix for comparison.

3 Data

To understand the effect of state aid on firm outcome, we combine two main data sources: firm-level balance-sheet data from Orbis and state aid data from the EU Transparency Database. Our analysis focuses on French firms over the period 2016 to 2023. To investigate the impact of state aid on firm-level emissions, we use the EUTL-Orbis matched dataset. Details are discussed below.

Firm-level data. The analysis of firm-level outcomes is based on the Orbis database, a comprehensive firm-level dataset provided by Bureau van Dijk. Orbis contains detailed information on firms' characteristics, balance sheets, income statements, employment, and industry classifications for both private and public firms. Our analysis focuses on a sample covering the years 2016 to 2023. While Orbis has some limitations in coverage and representativeness, we follow the approach of Bajgar et al. (2020) to address these issues. However, the majority of our analysis focuses on within-group comparisons, for which Orbis is particularly well suited. Nominal values are deflated using Federal Reserve Economic Data GDP deflator.

State aid data. The State Aid Transparency database provides detailed information on individual state aid awards granted by EU member states above specified thresholds. For France, the dataset covers around 11,000 unique firms that received state aid between 2016 and 2023. For each award, the dataset includes the granting date, amount of aid, the recipient firms national identifier, the objective of the aid, and other relevant characteristics. In particular, the dataset also distinguishes between different types of financial instruments, including guarantees, loans, direct grants, interest rate subsidies, and tax advantages.

In our analysis, firms are classified based on the objective of the aid. We exclude firms that received aid under the objective of remedy for serious disturbance of the economy, as this category is triggered by exceptional macroeconomic crises and targets systemically affected firms, making treatment assignment incomparable to regular state-aid programs. Additionally, we exclude firms that received aid in multiple years, since it would be difficult

to categorize them into pre- and post-aid periods. We merge this dataset with Orbis using firm's national identifiers. Our merged sample consists of more than 25 percent firms that are young at the time they receive aid, and approximately 85 percent that are small.[3]

Emission data. The EU Transaction Log (EUTL)-Orbis matched dataset provides firm-level climate metrics, including annual verified emissions and the allocation of free allowances under the EU Emissions Trading System (EU ETS). We link these emissions records to ETS-compliant firms in our sample and identify the ones receiving state aid. Following Cameron and Garrone (2024), we construct firm-level verified starting from 2013 by aggregating installation-level emissions across all installations held under the same emissions account. Details on the coverage are discussed in the appendix.

Data limitations. Our analysis is subject to three main data limitations. First, we only have information on state aid from 2016 onward, implying some firms in our control group may have received aid prior to this year. While this is an important caveat, state aid volumes have increased substantially in recent years, therefore suggesting that the pre-2016 aid represents a relatively smaller share of total aid. Second, EU state aid transparency data is self-reported by granting authorities and only aid above an applicable threshold needs to be reported.[4] This suggests that some smaller recipients may appear and contaminate the control group. However, this would likely lead to an underestimation of the treatment effect. In addition, since our sample of control firms is relatively large, we expect the impact of any misclassifications to remain limited. Finally, although Orbis has limited coverage of small and young firms, the share of small firms in the merged sample is comparable to that in the state aid transparency data. Table 3 in the appendix describes the coverage.

Table 1 in the appendix provides summary statistics for the main variables used in the analysis, including sales, employment, productivity, debt, and energy intensity.

[3]While firm size is observable in the Transparency Database and its distribution is comparable to our merged sample, firm age is not reported, preventing a direct assessment of age-based coverage. Among firms in the merged sample for which aid amounts are available, young firms account for an average of roughly 50 percent of total aid awarded with some variation over the years.

[4]The reporting threshold was 500,000 euros until 2023 after which it was revised to 100,000 euros (European Commission 2021, 2023).

4 Results

Using the methodology discussed in section 2, we study the overall effectiveness of state aid and the extent to which its impact varies across different types of firms. In particular, our analysis focuses on the heterogeneous effect of state aid in France, with implications for its targeting to maximize its impact on key economic outcomes, such as sales, labor productivity and employment. Our analysis considers observable firm characteristics such as age, size, and sector of activity, to understand which factors are most closely associated with stronger outcomes. Finally, we provide suggestive evidence on the interaction between state aid and private financing, as well as its potential role in supporting the green transition.

Figure 1 reveals strong heterogeneity in the impact of state aid across firm age groups. The average effect on sales is small and statistically insignificant (2.4 percent). However, there are significant differences in the response of different groups. Young firms experience, on average, a large increase of 71 percent in sales, with the effect emerging immediately after treatment and remaining economically and statistically significant throughout the sample

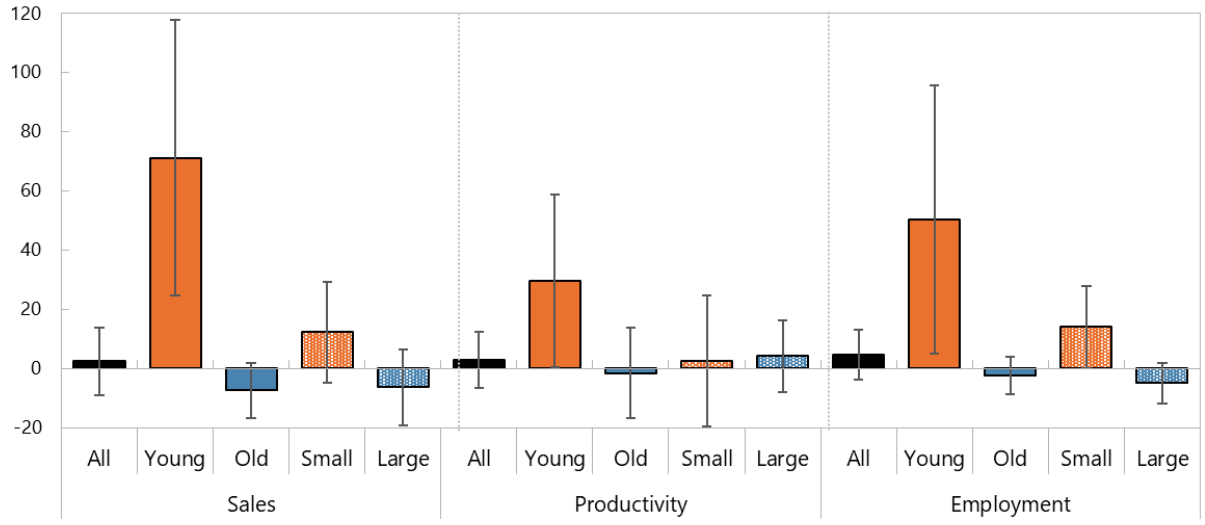
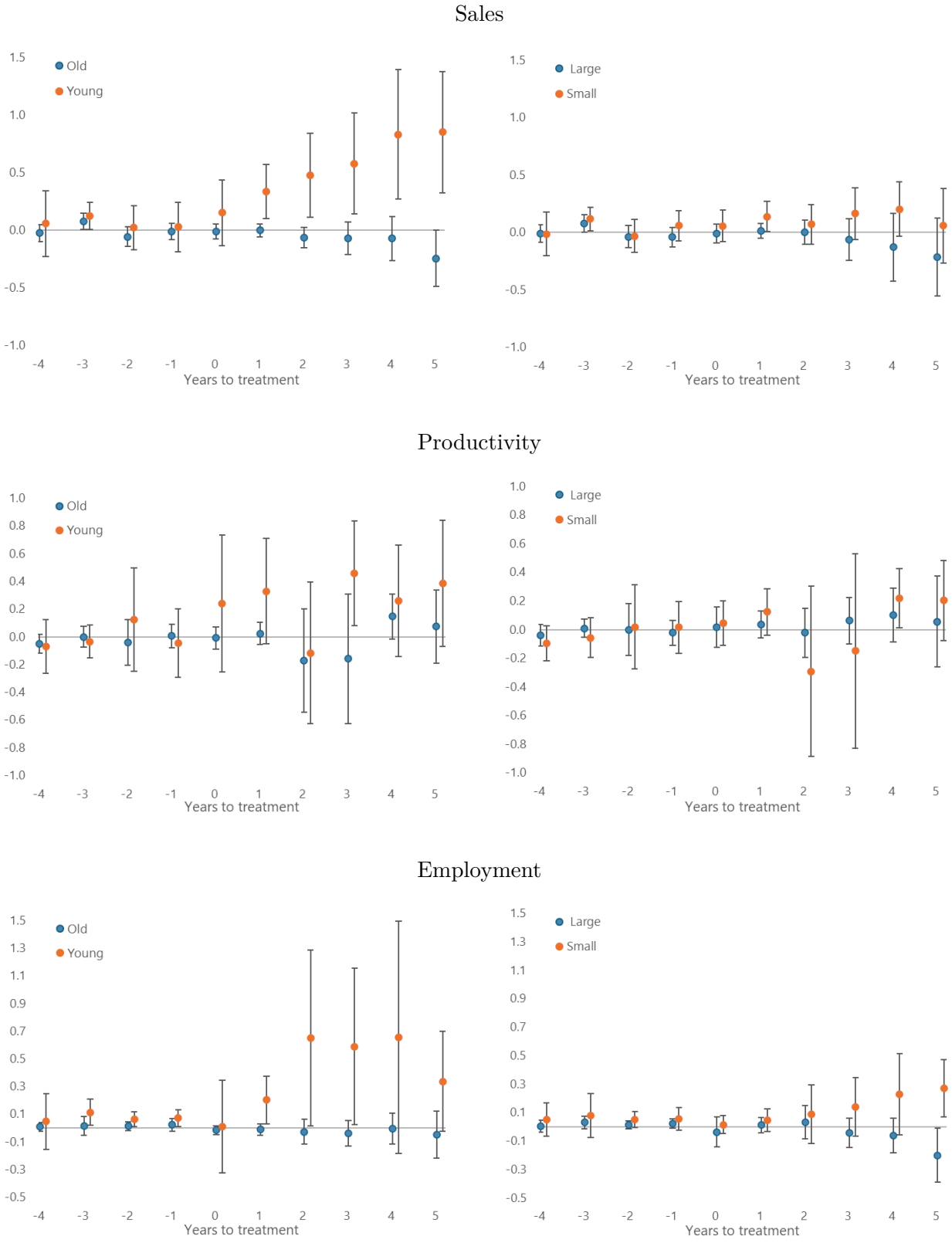


Figure 1: Average impact of aid on firm outcome by firm characteristics

Note: Outcomes are in percent. Estimates follow Callaway and SantAnna (2021) and standard errors are clustered at the firm level. Whiskers indicate 95 percent confidence intervals. Young firms are those aged below 10 years at treatment. Small firms are those with less than 50 employees at aid receipt.

Figure 2: Dynamic effects of state aid by firm age and size



Note: Outcomes are in logs. Estimates follow Callaway and SantAnna (2021) and standard errors are clustered at the firm level. Whiskers indicate 95 percent confidence intervals.

period (see Figure 2). In contrast, older firms show small, negative, and statistically insignificant responses. Similar trends are observed for labor productivity and employment.[5]

These results are consistent with the literature finding that young firms are more constrained than their older counterparts (Cabral and Mata, 2003; Hadlock and Pierce, 2010; Foda et al., 2025). While older firms likely have access to alternative financing sources, young firms may rely more heavily on external support to realize their growth potential, which could explain both the stronger and more persistent response to state aid observed in our data.

(2) Targeting state aid based on firm size appears less effective.

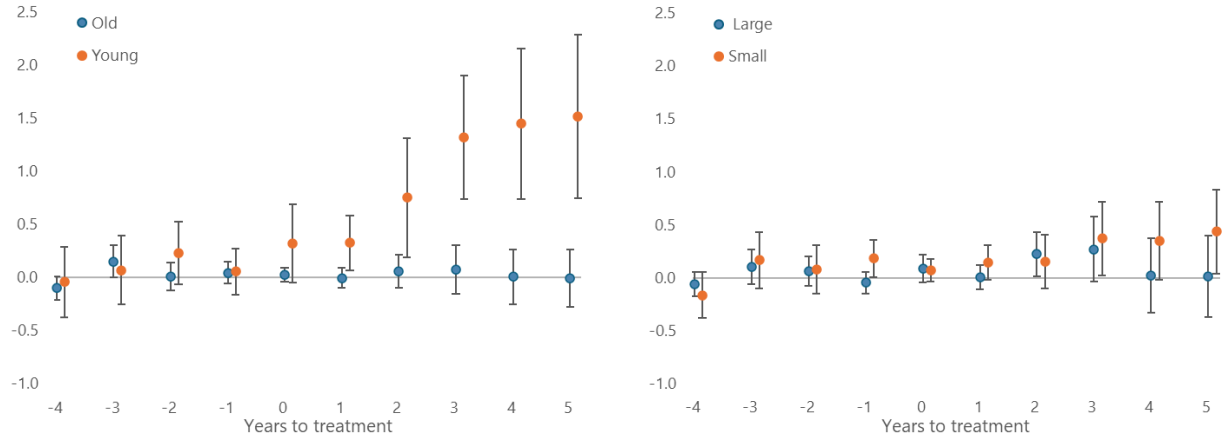
Figure 1 shows that the effectiveness of state aid targeted by firm size appears limited. Small firms experience modest improvements following aid, but the effects are smaller and often statistically insignificant relative to those for young firms. On average, sales of small firms increase by roughly 12 percent above the overall estimate but well below the effect for young firms. For large firms, sales decline on average, although the estimates are statistically insignificant. Taken together, these results suggest that targeting aid by firm age may be more effective. This interpretation is consistent with Aghion et al. (2023) and Garicano et al. (2016), who show that size-based policies can distort firm size and lead to inefficient resource allocation.

(3) Young firms experience crowding-in of private financing following state aid.

Our findings suggest that, in addition to gains in sales, productivity and employment, young firms tend to increase their external debt in the years following state aid support. This pattern suggests a potential crowding-in of private financing, where public aid mitigates liquidity constraints and allows firms to access private funding sources that were previously unavailable or suboptimal. Older firms, however, show little change in their borrowing

[5]Results are robust to controlling for the amount of aid as shown in Table 5 in the appendix.

Figure 3: Dynamic effects of state aid on external debt by firm age and size



Note: Outcomes are in logs. Estimates follow Callaway and SantAnna (2021) and standard errors are clustered at the firm level. Whiskers indicate 95 percent confidence intervals.

behaviour, suggesting that these firms did not face similar constraints.[6]

(4) Sectoral targeting matters: R&D aid is most effective in high-technology sectors and energy aid in manufacturing, particularly for young firms.

Aid is more effective when its objective matches sector-specific conditions. As illustrated in Figure 4, R&D aid delivers the strongest response in high-technology sectors, particularly for young firms, reflecting their greater innovation potential. Outside high-tech sectors, R&D aid shows little measurable effect. Energy aid, by contrast, has the strongest impact in manufacturing, with positive effects across all firms but more pronounced for young beneficiaries.[7] We next explore a potential channel through which energy and environment aid[8] may support manufacturing firms in reducing emissions.

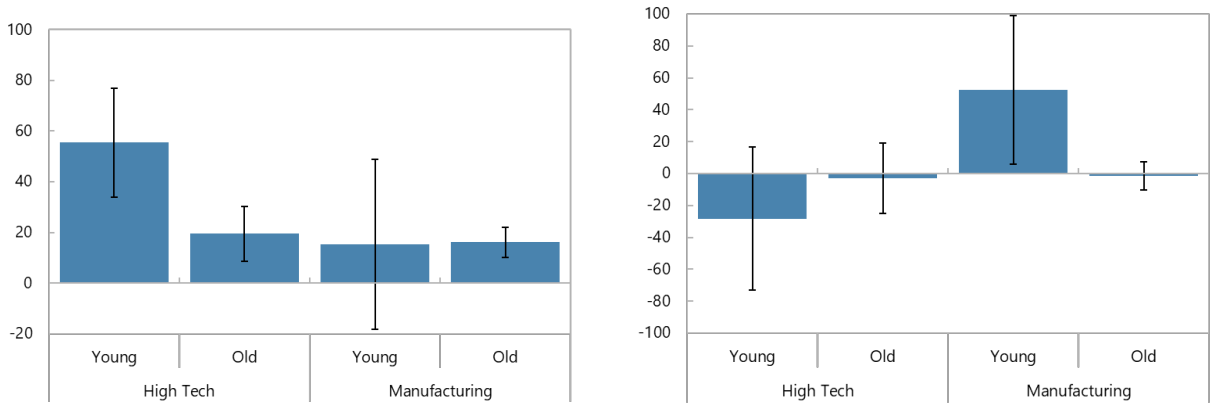
(5) Energy and environmental aid may help firms adopt lower-emission technologies.

[6]Part of the rise in external debt may reflect expanded pandemic support measures. Although Covid-related aid is excluded from our sample, other state support not captured in the data may still have contributed, especially if disproportionately targeted at young firms.

[7]We find a similar pattern for R&D aid on productivity, especially among young firms, while the estimated effects of energy aid in manufacturing are not statistically significant (see Table 6) For details on sectoral classification and aid objectives please refer to the appendix.

[8]For details on definitions of aid please refer to the appendix.

Figure 4: Effects of R&D and energy aid on sales by sector and firm age



Note: Outcomes are in percent. Whiskers indicate 95 percent confidence intervals.

Emission-reduction policies such as the EU ETS reduce greenhouse gas emissions by imposing an abatement cost on firms, and are often accompanied by short-term public support measures designed to ease the adoption of lower-emission technologies. Such a combination could operate through two distinct channels. The support measures may simply compensate emission-intensive firms for higher carbon costs, weakening price signals and subsidizing inefficient production. Alternatively, they may help firms meet the costs of transitioning to lower-emission technologies, reducing effective marginal abatement costs and driving emission reductions (D'Arcangelo et al., 2022).

We focus on EU ETS-compliant manufacturing firms in France receiving energy and environmental aid. We extend the dataset to include all firms for which information on carbon emissions and state aid is available to increase sample size. The results should be interpreted as associations rather than causal effects. In addition, it is important to note that the carbon emissions sample is skewed toward large manufacturing firms. We measure emission intensity as verified ETS allowances (based on early-year benchmarks) divided by annual sales, controlling for sector fixed effects. Flat intensity suggests limited abatement adjustment, while rising intensity points to subsidization of inefficient production, and falling intensity indicates genuine abatement decisions, though these patterns alone

cannot indicate whether emissions reductions are driven by a cleaner production technology or a shift towards less emission-intensive output. To investigate these mechanisms, we regress emission intensity on carbon prices and their interaction with a state aid indicator:

$$Emission\ Intensity_{i,t} = \beta_0 + \beta_1 price_{C,t} + \beta_2 aid_{i,t} + \beta_3 price_{C,t} \times aid_{i,t} + \alpha_i$$

where the specification includes firm fixed effects. As shown in Figure 5, we find that a one dollar increase in carbon prices tends to lower emission intensity on average by 0.01 tons of CO_2 per \$1,000 of output, and this reduction is twice as large for firms who receive energy and environmental aid amounting to around 0.02 tons of CO_2 per \$1,000 of output. These findings point to the transition channel and a potential role of state aid in supporting the green transition.

It is important to note that these findings are suggestive and should be interpreted with caution. Carbon emissions data cover only a small subset of large manufacturing firms, and restricting the sample to energy-and-environmental-aid-receiving firms further limits the number of observations. Further evidence is therefore needed to better understand the

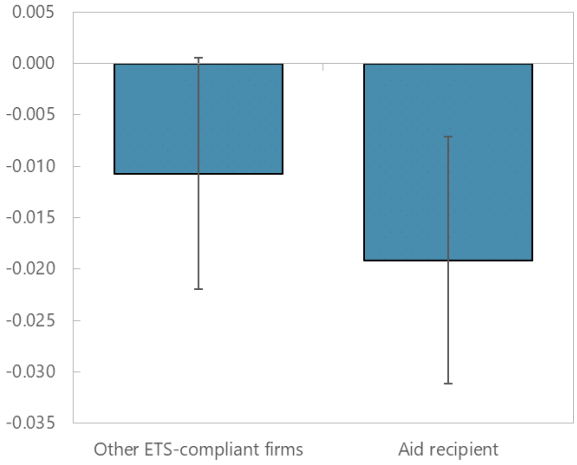


Figure 5: Emission intensity

Note: Estimates report average treatment effects using the full sample. Whiskers indicate the 95 percent confidence interval. Emission intensity is defined as tons of CO2 per thousand USD of sales.

underlying mechanisms linking energy and environmental aid to the green transition.

5 Conclusions

This paper studies the effect of state aid on firm-level outcomes in France over 2016−2023, drawing on detailed firm-level data and a difference-in-differences methodology. Our findings have clear policy implications. State aid is most effective for young firms, who tend to face greater financing constraints and are at a stage where public support can have the greatest impact. For these firms, aid not only improves their real outcomes, but also helps crowd in private debt financing, suggesting that well-targeted aid can serve as seed financing that unlocks broader private investment. Older and larger firms, by contrast, show little meaningful response, suggesting that size-based targeting has limited impact. These firm-level gains should be weighed against broader market effects, accounting for any negative spillovers they may have on competitors (Brandão-Marques and Toprak, 2024).

Beyond firm age, our results highlight the importance of matching aid objectives to sector-specific conditions. R&D support generates the strongest returns for young firms in high-technology sectors, where innovation potential is highest. Energy aid has its greatest impact in manufacturing, the sector most exposed to the costs of the green transition, suggesting it can help firms adjust to stricter emission requirements and facilitate decarbonization. Together, these findings suggest that aid design may benefit from greater attention to firm age, sector, and aid objective alongside more traditional targeting criteria.

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A Appendix

The appendix is organized as follows. We begin with a description of the data and summary statistics, document the sample construction and cleaning steps, and present supplementary results not reported in the main text.

A.1 Data and coverage

Table 1 reports summary statistics for the main variables used in the analysis. Panel A covers the full sample of French firms in Orbis, reflecting the broad population of firms before any sample restrictions. Panel B covers the regression sample after propensity score matching, which is smaller and somewhat skewed toward larger firms. Panel C covers the emissions sample, which is restricted to EU ETS-compliant manufacturing firms and is the smallest of the three, with notably higher average sales reflecting the large-firm bias of ETS coverage. Table 2 presents treatment and control group sizes for different empirical specifications of the paper.

Table 1: Summary statistics of outcome variables

Variable	Number of observations	Mean	Standard deviation
Panel A: Full sample			
Log sales	6,249,508	12.899	1.975
Log employment	525,155	3.527	1.097
Log productivity	1,621,486	12.083	0.955
Log debt	4,999,414	10.926	2.361
Panel B: Regression sample (after propensity score matching)			
Log sales	14,290	16.672	2.377
Log employment	8,206	4.905	1.837
Log productivity	9,239	12.506	1.118
Log debt	14,033	14.870	2.500
Panel C: Emissions sample			
Log sales	3,865	17.893	1.978
Emission intensity	3,224	0.001	0.181

Coverage by size. The Transparency database in the data source for state aid information. However, since it only contains information on beneficiary size but not firm age, size is the

Table 2: Sample composition by treatment status

Number of unique firms.

Sample	Control group	Treatment group	Total
Full sample	1,632,255	3,871	1,636,126
PSM sample	1,504	353	1,857
Emission sample	383	62	445

only observable characteristic available to assess coverage in the matched sample. Table 3 documents coverage by firm size before and after merging state aid with firm balance sheet data. The size composition of the matched sample is similar to that of the full (unmatched) Transparency database. SMEs account for 85.6 percent of firms in the merged sample versus 87 percent in the full database, suggesting that the merge does not materially distort coverage by firm size. Table 3 documents coverage by firm size before and after merging state aid with balance sheet data.

Table 3: Coverage by beneficiary type among firms receiving non-COVID aid in a single year

	Beneficiary Type		Total	Share of SME
Grant year	Large firms	SME	Total	Share of SME (%)
Transparency database				
2016	83	356	439	81.1
2017	179	882	1,061	83.1
2018	146	927	1,073	86.4
2019	105	808	913	88.5
2020	126	1,001	1,127	88.8
2021	373	2,696	3,069	87.8
2022	305	2,426	2,731	88.8
2023	164	779	943	82.6
Total	1,481	9,875	11,356	87.0
Transparency-Orbis merged database				
2016	27	170	197	86.3
2017	76	432	508	85.0
2018	62	388	450	86.2
2019	23	350	373	93.8
2020	39	372	411	90.5
2021	141	886	1,027	86.3
2022	148	588	736	79.9
2023	41	128	169	75.7
Total	557	3,314	3,871	85.6

A.2 Methodological details and sample construction

This section documents the key sample construction details, definition of variables, and methodologies used in our analysis.

Sectors. We exclude firms in NACE sections P to U (education, health, arts, and other non-market services), as is standard in the firm-level productivity literature.

Sector classification. We classify firms by industry technology level to distinguish high-tech and manufacturing sectors. The high-tech sector includes firms in Information and Communication (NACE Rev. 2, Section J) and Professional, Scientific and Technical Activities (Section M). The manufacturing sector includes Manufacturing (Section C) and Electricity, Gas, Steam and Air Conditioning Supply (Section D).

Aid variable. We treat state aid as a binary variable because some aid amounts are reported as ranges rather than exact values. Using exact aid values would require dropping a large number of treated observations or making assumptions about the aid amounts, which could bias the results.

Aid classification. We distinguish between energy, energy and environmental, and research and development aid by extracting keywords from the objectives and titles of each aid measure. The full lists of objectives and aid titles are in Figure 6, 7 and 8.

Outcome variables. We apply log transforms above minimal positive thresholds ($y_{it}>1$) to reduce the influence of extreme right-tail observations.

Propensity score matching. To improve the comparability of state-aid recipients and non-recipients prior to treatment, we implement cohort-by-cohort propensity score matching and use the PSM sample to estimate outcomes except for fact 5. At the baseline year $b = g - 1$, where a firm is defined as treated in cohort b if its aid receipt occurs in $b + 1$. For each baseline year, the control group includes cohort-treated firms and firms that have never been treated. We estimate propensity score using pre-treatment firm characteristics: sales, sales growth over three years, total assets, all in logarithm and lagged terms, firm age and number of employees in logarithm, and sector fixed effects. Treated firms are matched with

Figure 6: Full list of state aid by objective

	Objective of the aid	R&D aid (Full panel)	Energy aid (Full panel)	Energy-related aid (Emission panel)
1	Remedy for a serious disturbance in the economy	✗	✗	
2	Experimental development (Art. 25(2)(c))	✓		
3	Aid schemes for audio-visual works (Art. 54)			
4	Aid to compensate for losses caused by adverse climatic events which can be assimilated to a natural disaster (Article 25)			
5	Additional costs in outermost regions (Art. 15(2)(b))			
6	Research and development	✓		
7	SMEs	✓		
8	Aid for environmental studies (Art. 49)		✓	✓
9	Investment aid for the promotion of energy from renewable sources (Art. 41)		✓	✓
10	Renewable energy		✓	✓
11	Aid for the employment of workers with disabilities in the form of wage subsidies (Article 33)			
12	Compensation of damage caused by natural disasters or exceptional occurrences			
	Investment aid enabling undertakings to go beyond Union standards for environmental protection or increase the level of environmental protection in the absence of Union standards			
13	(Art. 36)			✓
14	Environmental protection		✓	✓
15	Investment aid to SMEs (Art. 17)			
16	Aid for investments in connection with the processing and marketing of agricultural products (Article 17)			
17	Sectorial development			
18	Sectoral development		✓	✓
19	Research, development and innovation	✓		
20	Innovation aid for SMEs (Art. 28)	✓		
21	Aid for sport and multifunctional recreational infrastructures (Art. 55)			
22	Aid for knowledge transfer and information actions (Article 21)	✓		
23	Investment aid for waste recycling and re-utilisation (Art. 47)		✓	✓
24	Investment in processing and marketing			
25	Industrial research (Art. 25(2)(b))	✓		
26	Aid for the costs of prevention, control and eradication of animal diseases and plant pests and aid to make good the damage caused by animal diseases and plant pests			
27	Aid for tangible or intangible investments in agricultural holding linked to primary agricultural production (Article 14)			
28	Regional aid - investment aid (Art. 14) - Scheme			
29	Risk capital	✓		
30	Investment aid for energy efficient district heating and cooling (Art. 46)		✓	✓
31	Aid for culture and heritage conservation (Art. 53)			
32	Culture			
33	Investment aid for energy efficiency projects in buildings (Art. 39)		✓	✓
34	Aid for combating animal diseases and plant pests (Article 26)			
35	Transport costs of goods in eligible areas (Art. 15(2)(a))			
36	Aid for research and development in the agricultural and forestry sectors (Article 31)	✓		
37	Fundamental research (Art. 25(2)(a))	✓		
38	Investment aid for remediation of contaminated sites (Art. 45)		✓	✓
39	Aid to compensate for the damage caused by adverse climatic event which can be assimilated to a natural disaster			
40	Investment aid for research infrastructures (Art. 26)	✓		
41	Investment aid for local infrastructures (Art. 56)			
42	Training aid (Art. 31)			
43	Investment aid for energy efficiency measures (Art. 38)		✓	✓
44	Agriculture; Forestry; Rural areas			
45	Aid to the livestock sector (Article 27(a) or (b))			
46	Aid for the outermost regions and the smaller Aegean islands			
47	Restructuring firms in difficulty			
48	Article 42 - Aid for the processing of fishery and aquaculture products			
49	Aid for process and organisational innovation (Art. 29)	✓		
50	Aid for advisory services (Article 22)			
51	Regional development			
52	Aid for investment in connection with the processing of agricultural products and the marketing of agricultural products			
53	Coordination of transport	✓		
54	Investment aid for early adaptation to future Union standards (Art. 37)			✓
55	Feasibility studies (Art. 25(2)(d))	✓	✓	✓
56	Aid for innovation clusters (Art. 27)	✓		
57	Investment in agricultural holdings			
58	Other			
59	Aid for promotion measures in favour of agricultural products			
60	Aid to SMEs			
61	Article 41 - Aid for marketing measures			
62	Aid for research and development in the fishery and aquaculture sector (Art. 30)	✓	✓	✓
63	Risk finance aid (Art. 21)			
64	Aid for start-ups (Art. 22)			
65	Execution of an important project of common European interest	✓		

Figure 7: Full list of state aid by title (1/2)

	Title of the aid (1/2)	R&D aid	Energy aid	Energy-related aid (Emission panel)
1	COVID-19: Régime d'aides destinées à compenser les coûts fixes non couverts des entreprises			
2	Régime cadre temporaire au soutien des entreprises dans la crise du Covid 19			
3	TCF - France - Support to energy-intensive undertakings			✓
4	Régime cadre RDI 2014-2020 - plan d'évaluation	✓		
5	Aides financières à la création visuelle ou sonore par l'utilisation des technologies numériques de l'image et du son			
6	Aides à l'indemnisation des calamités agricoles par le Fonds national de gestion des risques en agriculture (FNGRA)			
7	Taux majoré de crédit d'impôt pour la compétitivité et l'emploi en faveur des entreprises exploitées dans les départements d'outre-mer			
8	Amortissement exceptionnel des investissements des entreprises dans les PME innovantes	✓		
9	Régime d'aides de l'ADEME exempté de notification relatif aux aides à la protection de l'environnement pour la période 2014-2023 (système d'aides à la réalisation)		✓	✓
10	Régime cadre exempté de notification pour les programmes ville durable dans le cadre des investissements d''avenir		✓	✓
11	Régime cadre exempté de notification relatif aux aides à la recherche, au développement et à l'innovation (RDI) pour la période 2014-2023	✓		
12	Régime d'aides de l'ADEME - plan d'évaluation		✓	✓
13	TCF: Exceptional scheme to cover the additional animal feed costs of farms and fish farms			
14	COVID-19 : Compensation for losses suffered by horticulturalists			
15	Complément de rémunération pour l'éolien terrestre en 2016		✓	✓
16	Régime cadre exempté de notification relatif aux aides en faveur de l'emploi des travailleurs défavorisés et des travailleurs handicapés pour la période 2014-2023			
17	Covid-19: Modification to State aid measures SA.56709, SA.56985, SA.56868, SA.57219, SA.57367 and SA.57695			
18	Régime d'aide de l'ADEME exempté de notification relatif aux aides à la RDI et à la protection de l'environnement dans le cadre des Investissements d'Avenir	✓	✓	✓
19	COVID 19 - Compensation partielle des charges fixes des entreprises affectées par la crise COVID-19 en raison des mesures administratives d'interdiction d'accueil du public			
20	Régime d'aide exempté de notification des agences de l'eau relatif à la protection de l'environnement, à la recherche, au développement et à l'innovation, et destinées à remédier aux dommages causés par certaines calamités naturelles pour la période 2015-2023			✓
21	old illegal PV tarrifs in France		✓	✓
22	COVID 19 - Compensation des loyers et charges locatives des commerces de détail et de certains services interdits d'accueil du public en raison de la crise COVID-19			
23	Aides financières sélectives à la production et à la préparation des oeuvres audiovisuelles d'animation			
24	Régime d'aides de l'ADEME (Agence de l'environnement et de la maitrise de l'énergie) exempté de notification n°SA.49422 relatif aux aides à la protection de l'environnement pour la période 2014-2020		✓	✓
25	Régime cadre exempté de notification relatif aux aides en faveur des PME pour la période 2014-2023			
26	Aide en faveur des PME actives dans la transformation et la commercialisation de produits agricoles pour la période 2015-2020			
27	COVID-19: Régime d'aides destinées à soutenir l'investissement en vue d'une reprise durable			
28	Appels d'offres pour le développement des installations PV		✓	✓
29	Aid for COVID-19 relevant R&D projects, investment into relevant testing and upscaling infrastructures, and investment into COVID-19 relevant production capacities.	✓		
30	COVID-19: Exceptional compensation for pig farms			
31	Covid-19: Modification des régimes d'aides d'État SA.56709, SA.56868, SA.56985, SA.57367, SA.57695, SA.57754			
32	French support to small hydro			
33	régime cadre exempté de notification N° 43197 relatif aux aides en faveur des infrastructures sportives et des infrastructures récréative multifonctionnelles pour la période 2014-2020			
34	Aides au transfert de connaissances et aux actions d'information dans le secteur agricole pour la période 2015-2022	✓		
35	Régime cadre exempté de notification relatif aux aides en faveur des PME pour la période 2014-2020			
36	Aides aux investissements des grandes entreprises actives dans la transformation et la commercialisation de produits agricoles pour la période 2015-2020			
37	Modification du régime cadre temporaire au soutien des entreprises dans la crise du Covid 19 SA 56985			
38	France: Plan d'évaluation quant au régime d'aides exemptées de notification relatif aux aides à la recherche et au développement pour la décarbonation, la compétitivité et la sécurité du transport aérien pour la période 2020-2023	✓		
39	Régime d''aides de l''ADEME (Agence de l''environnement et de la maitrise de l''énergie) exempté de notification n°SA.40264 relatif aux aides à la protection de l''environnement pour la période 2014-2020		✓	✓
40	Indemnisation des entreprises de l'aval et de services spécialisés de la filière volailles (palmipèdes et gallinacés) impactées par les mesures prises par les pouvoirs publics pour lutter contre l'influenza aviaire hautement pathogène H5N1 de 2021-2022.			
41	FR - Tenders for electricity from biomass and biogas		✓	✓
42	Régime cadre exempté de notification relatif aux aides à la protection de l'environnement pour la période 2014-2023			✓
43	Aides aux investissements dans les exploitations agricoles liés à la production primaire			
44	Aides financières sélectives à la distribution des oeuvres cinématographiques			
45	Support for EIU under the CSPE in France			✓
46	France - COVID-19 – Amendment of State aid measures SA.56709, SA.56985, SA.56868, SA.57219, SA.57367, SA.57695, SA.57754 and SA.60965			
47	Aide fiscale à l''investissement productif outre-mer en faveur de certains secteurs d''activité économique (notamment le transport et l''énergie)			
48	Régime d'aides de l'ADEME exempté de notification relatif aux aides à la protection de l'environnement pour la période 2014-2020 (système d''aides à la réalisation)		✓	✓
49	Régime d'aide des agences de l'eau exempté de notification relatif à la protection de l'environnement et à la recherche, au développement et à l'innovation pour la période 2014 - 2020			✓
50	Régime cadre exempté de notification relatif aux aides à finalité régionale (AFR) pour la période 2014-2020			
51	COVID19 - Régime d'aides destiné à compenser les coûts d'exploitation des sociétés de remontées mécaniques			
52	Complément de rémunération pour l'éolien terrestre àpd 2017		✓	✓
53	Indemnisation des calamités agricoles par le Fonds national de gestion des risques en agriculture (FNGRA)			
54	Soutien par appels d'offres au développement des installations de production d'électricité à partir de l'énergie solaire 2014-2015.		✓	✓
55	Régime cadre exempté de notification relatif aux aides en faveur de la culture et de la conservation du patrimoine			
56	COVID-19: Modification des régimes d'aides SA.56709, SA.56985, SA.57367, SA.57695, SA.57754, SA.61330, SA.62568, SA.62999, SA.63656 et SA.100299 and SA.60965			
57	Crédit d'impôt cinéma et audiovisuel et Crédit d'impôt pour les oeuvres cinématographiques et audiovisuelles étrangères – modifications et prolongation			
58	Régime cadre exempté de notification relatif aux aides à finalité régionale (AFR) pour la période 2014-2023			
59	Aides financières sélectives à la production et à la préparation des oeuvres cinématographiques de longue durée			
60	Régime cadre exempté de notification relatif aux aides à la protection de l'environnement pour la période 2014-2020		✓	✓
61	Tender for PV installations on buildings with a rated power between 100 kW and 8 MW		✓	✓
62	Prime d''aménagement du territoire pour l''industrie et les services			
63	Mesure fiscales d''aide à l''investissement en Corse - Crédit d''impôt			
64	Aides financières sélectives à la production et à la préparation des œuvres cinématographiques de longue durée			
65	Régime cadre exempté de notification relatif aux aides visant à couvrir les coûts de prévention et d'éradication des maladies animales et des organismes nuisibles aux végétaux, ainsi que de lutte contre ces maladies et organismes, et aides destinées			
66	Taxe sur la valeur ajoutée non perçue récupérable			
67	Extension of French film support schemes			
68	Aides financières automatiques à la production et à la préparation des oeuvres audiovisuelles d''animation			
69	Aides financières automatiques à la production et à la préparation des œuvres audiovisuelles - documentaire de création et fiction (FR)			
70	Aides financières automatiques à la production et à la préparation des oeuvres cinématographiques de longue durée			
71	Aides à la recherche et au développement dans les secteurs agricole et forestier pour la période 2015-2022	✓		
72	Compensation des coûts des émissions indirectes en France pour la période 2021-2030			
73	Aides financières automatiques à la distribution en fonction des conditions de production des œuvres cinématographiques			
74	Appel d'offres triannuel pour l'éolien terrestre		✓	✓
75	Aide exceptionnelle visant à compenser les pertes d'exploitation des entreprises à l'aval des exploitations agricoles affectées par les épisodes de gel survenus entre les 4 et 14 avril 2021			
76	Régime de soutien français à l''innovation et au développement durable du transport aérien	✓		
77	Aides financières sélectives à la production et à la préparation des œuvres audiovisuelles d''animation			
78	Aides financières automatiques à la production et à la préparation des oeuvres audiovisuelles d'animation			
79	Dispositif d'indemnisation complémentaire des agriculteurs assurés contre les risques climatiques et particulièrement affectés par l'épisode de gel survenu du 4 au 14 avril 2021			
80	Régime cadre exempté de notification relatif aux aides à l'investissement en faveur des infrastructures locales pour la période 2014-2023			
81	Régime cadre exempté de notification relatif aux aides à la formation pour la période 2014-2023			
82	Mécanisme de soutien aux installations utilisant le biogaz ou les gîtes géothermiques		✓	✓
83	Régime cadre exempté de notification relatif aux aides à finalité régionale (AFR) pour la période 2022-2027			
84	Aides visant à couvrir les coûts de prévention et d''éradication des maladies animales et des organismes nuisibles aux végétaux, ainsi que de lutte contre ces maladies et organismes, et aides destinées à remédier aux dommages causés par des maladies			
85	Aide à la recherche et au développement agricole (CASDAR)	✓		
86	Régime cadre exempté de notification relatif aux aides en faveur des infrastructures sportives et des infrastructures récréatives multifonctionnelles pour la période 2014-2020			
87	Régime cadre exempté de notification relatif aux aides en faveur des infrastructures sportives et des infrastructures récréatives multifonctionnelles pour la période 2014-2023			
88	Aides en faveur des PME actives dans la transformation et la commercialisation de produits agricoles pour la période 2015-2022			
89	Indemnisation des opérateurs du maillon sélection-accouvage et des éleveurs de cheptel reproducteur de la filière avicole impactés par l'influenza aviaire 2021-2022			
90	Régime d'aide à l'innovation et au développement durable du transport aérien			
91	Aides financières sélectives à la production et à la préparation des oeuvres cinématographiques de longue durée			

Figure 8: Full list of state aid by title (2/2)

	Title of the aid (2/2)	R&D aid	Energy aid	Energy-related aid (Emission panel)
92	Aides financières sélectives à la distribution des œuvres cinématographiques			
93	Réduction d''impôt mécénat			
94	Régime d'aides de l'ADEME exempté de notification relatif aux aides à la recherche, au développement et à l'innovation (RDI) pour la période 2014-2023 (Système d'aides à la connaissance)	✔	✔	✔
95	Interreg North West Europe Programme aid for research and development and innovation, training aid and aid for environmental protection Framework scheme 2014-2020		✔	✔
96	Mesures fiscales en faveur des entreprises créées dans les zones d'aide à finalité régionale			
	Modifications des régimes d'aide SA.37502, SA.39618, SA.39677, SA.41595 partie A, SA.41735, SA.43200, SA.44092, SA.45032, SA.45103, SA.45273, SA.49407, SA.50627, SA.51768, SA.53500, SA.54810 et			
97	autres amendements			
98	Régime exempté d'aides à l''investissement en faveur des infrastructures locales			
99	Indemnisation des opérateurs du maillon sélection-accouvage de la filière avicole impactés par l''influenza aviaire			
100	Aides aux secteur de l'élevage pour la période 2015-2022			
101	Aides financières sélectives à la production et à la préparation des oeuvres audiovisuelles d''animation			
102	Mesure fiscale d''aide à l''investissement en Corse - Modification du taux du crédit d''impôt en Corse			
103	aide nationale aux industries sucrières d''adaptation à la fin des quotas sucriers			
104	Appels d'offres pour installations énergie solaire au sol entre 500 kWc et 17 MWc		✔	✔
105	Régime d'aide notifié à la Commission européenne relatifs aux aides au sauvetage et à la restructuration pour les PME en difficulté			
106	Région Pays de la Loire - période 2014-2020			
	Mesures fiscales en faveur des bassins d'emploi à redynamiser : exonérations d'impôt sur les bénéfices, de cotisation foncièredes entreprises, de cotisation sur la valeur ajoutée des entreprises et de taxe			
107	foncière sur les propriétés bâties			
108	Régime exempté d''aides à la formation			
109	Aides aux services de conseil pour les PME dans le secteur agricole pour la période 2015-2022			
110	Méthodes de calcul d'ESB pour les prêts bonifiés sans sûreté pour le financement d'investissements des entreprises			
111	Société d'Initiatives et de Coopération Agricoles Saint Pol (SICA Saint Pol de Léon)			
112	Aide aux actions de recherche et développement agricole (CASDAR)	✔		
113	Soutien à la production d'électricité à partir de gaz de station d'épuration en France			
114	Régime d''aide à l''investissement des petits et moyens aéroports français			
115	Régime d''aides aux installations terminales embranchées (ITE)	✔		
116	Aides financières automatiques à la production et à la préparation des oeuvres cinématographiques de longue durée (FR)			
117	Indemnisation des entreprises de l'aval de la filière volailles (palmipèdes et gallinacés) impactées par les mesures prises pour lutter contre l'influenza aviaire hautement pathogène H5N8			
118	Aides en faveur de la recherche et au développement dans les secteurs agricole et forestier.	✔		
119	COVID-19 : compensations for beef cattle farmers			
120	Aides financières sélectives à la production et à la préparation des oeuvres audiovisuelles de fiction			
121	CHP support scheme		✔	✔
122	Projet de régime cadre notifié relatif aux aides à l'encadrement administratif dans les structures collectives agricoles d'Outre-mer			
123	Aides aux investissements dans les exploitations agricoles liés à la production agricole primaire			
124	Soutien aux industries techniques et à l''innovation dans le domaine du cinéma et des autres arts et industries de l''image animée			
125	COVID-19: Prolongation and amendments to the scheme SA.102077			
126	Aides financières automatiques à la production et à la préparation d'oeuvres audiovisuelles d'animation			
127	Aides aux actions de promotion des produits agricoles			
128	Régime cadre pour la période 2014-2020 LANGUEDOC-ROUSSILLON			
129	Aides financières automatiques à la distribution en fonction des conditions de production des oeuvres cinématographiques			
130	Prolongation de la période de jouissance du dispositif "zone de restructuration de la défense".			
131	Support for installations producing electricity from mine gas			
	Régime cadre exempté de notification relatif aux aides en faveur des entreprises dans la production, la transformation et la commercialisation des produits de la pêche et de l'aquaculture pour la période 2014-			
132	2020			
133	Aides financières à la promotion à l'étranger des œuvres cinématographiques			
134	Crédit d'impôt international - modifications			
135	Aides financières à la promotion des oeuvres cinématographiques			
136	Aides financières sélectives pour la production d'oeuvres audiovisuelles destinées à une mise à disposition sur un service de médias audiovisuels à la demande			
137	France - offshore wind park of Saint-Nazaire		✔	✔
138	Aides financières automatiques à la distribution cinématographique			
139	Soutien par appels d'offres au développement des installations de production d'électricité à partir de l'énergie solaire photovoltaïque ou éolienne terrestre		✔	✔
140	Soutien par appel d'offres au développement d'installations de production d'électricité innovantes à partir de l'énergie solaire	✔	✔	✔
141	Aides financières sélectives à la production et la préparation des oeuvres audiovisuelles de fiction			
142	Régime cadre exempté de notification relatif aux aides en faveur de l''accès des PME au financement pour la période 2014-2020			
143	Aides financières sélectives à la production et à la préparation des oeuvres audiovisuelles de fiction			
144	Régime cadre exempté de notification relatif aux aides en faveur de l'accès des PME au financement pour la période 2014-2023			
145	TCF: Régime cadre relatif aux mesures temporaires en faveur des entreprises affectées par le conflit ukrainien			
146	2 Seas Programme aid for research and development and innovation,training aid and aid for environmental protection Framework scheme 2014-2020		✔	✔
147	Appel d'offre sur 60MW pour installations hydroélectriques		✔	✔
148	Aides financières sélectives à la production et à la préparation des oeuvres audiovisuelles d'animation			
149	Summer IPCEI Batteries - France - coordinating	✔		
150	Tender for additional capacity in Brittany			
151	Aides financières à la promotion des œuvres cinématographiques			

controls using nearest-neighbor matching (five neighbors) on the region of common support. Post-match standardized bias falls sharply across all included covariates. We then construct a firm-level weight equal to 1 for treated firms and equal to the match weight for controls, retain observations on common support, and merge these weights back to the full panel. We re-estimate the event-study specification on the matched sample, applying analytic weights and absorbing firm fixed effects (α_i) and sector-year fixed effects (γ_{st}).

Programming. We used csdid (Stata) package on Stata version 18.5 and 19.5.

A.3 Other specifications

Table 4 reports results from a standard two-way fixed effects (TWFE) estimator as an alternative to the Callaway and Sant'Anna approach used in the main text. While TWFE does not account for treatment effect heterogeneity across cohorts, the results are broadly consistent with our main findings, with young firms again showing the strongest response to aid receipt. These results are not sensitive to age and size cutoffs.

Table 4: Two-way fixed effect outcomes

	Sales	Productivity	Employment	Debt
Specification 1: Baseline				
Treated	0.272^{***}	0.077^{***}	0.018	0.141^{***}
Observations	1840102	404664	200331	1491536
Specification 2: Age				
Treated × Young	0.526^{***}	0.080	0.181^{***}	0.214^{***}
Treated	0.137^{***}	0.066^{***}	-0.003	0.086^{***}
Observations	1840102	404664	200331	1491536
Specification 3: Size				
Treated × Small	-0.106^{***}	0.147^{***}	-0.056	0.071
Treated	0.297^{***}	0.020	0.037^{***}	0.124^{***}
Firm FE	Yes	Yes	Yes	Yes
Sector ×Year FE	Yes	Yes	Yes	Yes
Observations	1840102	404664	200331	1491536

Note: Standard errors are robust. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Young firms are less than 10 years old in the year they receive aid. Small firms have fewer than 50 employees in the year they receive aid. All outcomes are in logs.

Table 5 reports results from a standard two-way fixed effects estimator controlling for received amount in quartiles by each year when aid amount is available. Less than 6 percent of the sample reported aid amount in a range and are eliminated from this regression. These results broadly consistent with our main findings except for productivity outcomes.

Table 5: Two-way fixed effect outcomes

	Sales	Productivity	Employment	Debt
Treated	0.118***	0.007	-0.035	-0.004
Treated × Young	0.495***	0.130	0.188***	0.211***
Firm FE	Yes	Yes	Yes	Yes
Sector×Year FE	Yes	Yes	Yes	Yes
Aid amount FE	Yes	Yes	Yes	Yes
Observations	11822	5409	5413	11657

Note: Standard errors are robust. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Young firms are less than 10 years old in the year they receive aid. Small firms have fewer than 50 employees in the year they receive aid. All outcomes are in logs.

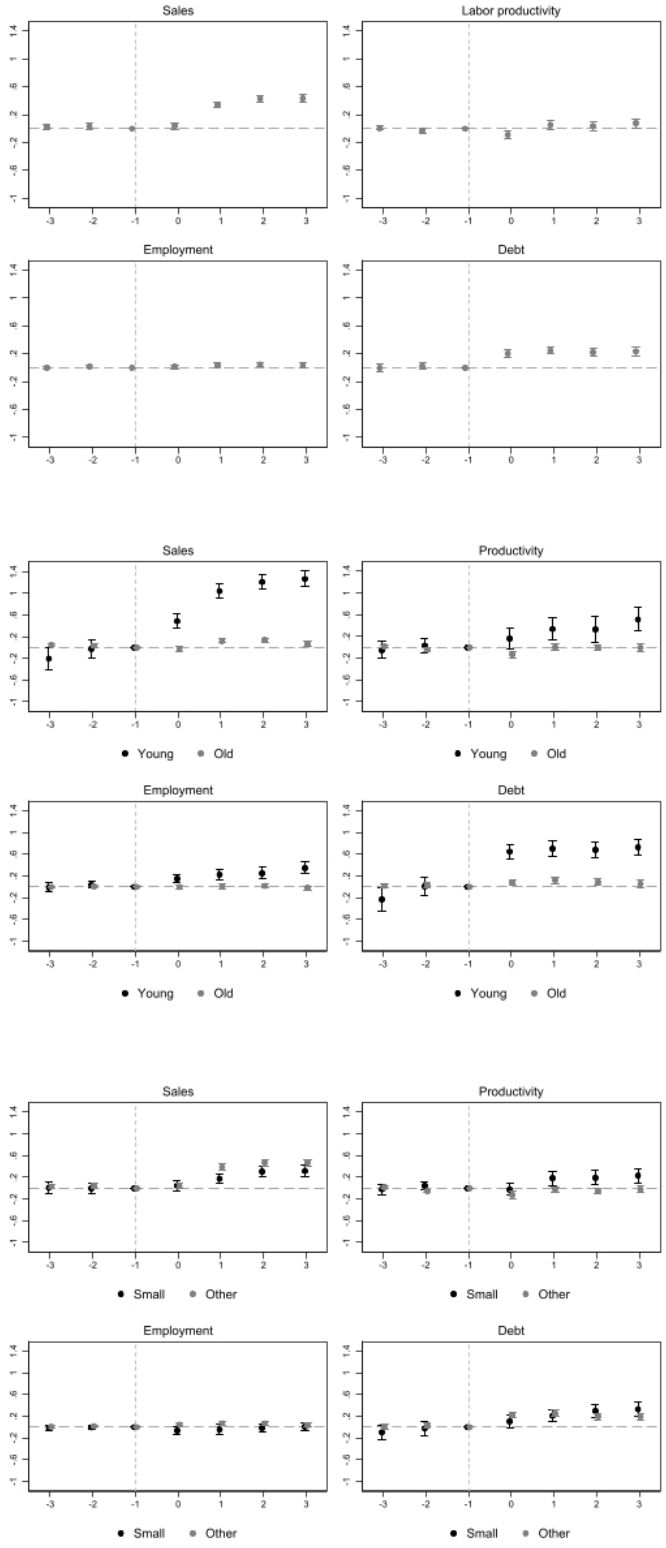
Table 6: Effects of R&D and energy aid on employment and productivity by sector and firm age

High-tech	Productivity	Employment
R&D aid	0.045	0.131**
Young × RDI aid	0.665**	0.287**
Energy aid	-0.283	0.239**
Young ×Energy aid	-0.305	-0.160*
Observations	1417	1061
Manufacturing		
R&D aid	0.179**	-0.112
Young ×RDI aid	-0.451*	0.589***
Energy aid	-0.151	-0.033
Young ×Energy aid	0.247	0.160***
Observations	2130	1838

Table 7: Energy Aid Effect on Emission Intensity

	Emission Intensity
L.Carbon price	-0.0111*
Recipient	-0.1896
L.Carbon price × recipient	-0.0107***
Firm FE	Yes
Year FE	Yes
Clustered SE	Nace 4
Observations	3100

Figure 9: Event studies



Note: Estimates report average treatment effects using the full sample. Whiskers indicate 95 percent confidence intervals.



PUBLICATIONS

Targeting State Aid: Firm-level Evidence from France

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