The Supply-Side Effects and Incidence of Investment Stimulus Policies

Paul-Emmanuel Chouc, Louis de Lachapelle*

September 12, 2025

*CREST, Palaiseau, France. Contacts: paul-emmanuel.chouc@ensae.fr, louis.delachapelle@ensae.fr. We are grateful to our advisors, Bertrand Garbinti, Clément Malgouyres and Gabriel Zucman, for their constant eagerness to discuss this ongoing project. We also thank participants to the CREST PhD Seminar for rich comments. We both acknowledge a full doctoral fellowship from Institut polytechnique de Paris (2023–2026).

Outline. Governments often resort to investment stimulus packages to foster growth and reduce unemployment. These policies have been extensively studied for their impact on investment, output, and employment of beneficiary firms. However, evidence about their effects on the pre-tax price of capital goods and suppliers' behavior is scarce and not easily reconciled. Assessing pass-through is key to evaluate the effectiveness of tax incentives, especially when the investment response can only be measured in value. Besides, upstream firms indirectly benefit from these reforms via increased demand for their products, and their response may be more or less consistent with policy-makers' objectives.

In this paper, we study a French investment incentive that allowed firms to deduct more than the full value of newly acquired capital from corporate income over time (*suramortissement*, henceforth "extra depreciation"). For a typical investment, it was roughly comparable to a 10% subsidy. We start by showing that its direct beneficiaries took up the extra depreciation scheme and responded through higher investment, output, and employment. These first results are consistent with recent assessments of bonus depreciation in the US, such as Zwick and Mahon (2017) or Curtis et al. (2021).

Then, we shift focus from investing firms to the suppliers of capital. Because the policy imposed eligibility conditions for a good to be subsidized, we can compare the manufacturers of eligible and ineligible goods. From corporate income tax returns, we confirm that the former faced a positive demand shock relatively to the latter, with domestic sales rising by 11%. From survey data, we estimate a 3% relative price increase for the producers of eligible goods. We deduce that the response of investment to extra depreciation was partly driven by a valuation effect. This echoes Goolsbee (1998), who estimated that a 10% investment tax credit increased equipment prices by 3.5% to 7%, while House and Shapiro (2008) found an imprecise null effect for bonus depreciation.

Last, we take advantage of firm-level price data to investigate which suppliers raised their prices. The price response is concentrated within the largest manufacturers. Within the top 3%, the prices of eligible good producers increased by 6% relatively to ineligible good producers, versus 2.5% among smaller firms. The large suppliers of subsidized capital also report higher profits and pay out more dividends, which we do not observe below in the firm size distribution.

Context. In 2015, France implemented a policy known as *suramortissement* which allowed companies to deduct an additional 40% of their investment costs from taxable income. This additional deduction was spread linearly over the standard depreciation period. One may assimilate the scheme to a 10% subsidy.[1] The goal was to spur firms to invest in new equipment and technology, thereby enhancing productivity and competitiveness within the French economy.

Figure 1 sketches the timeline. In short, capital goods had to be ordered between April 2015 and April 2017.[2] The temporary nature and perception of

1. This figure depends on the discount rate, the depreciation horizon and the tax rate, but most credible assumptions yield a subsidy between 9% and 11% of the investment cost.

2. Capital goods ordered late in the period could actually be received after a substan-

the scheme is crucial to interpret our findings in light of House and Shapiro (2008). It was introduced and extended over one-year windows, but supposedly one-off corporate income tax policies had already been rolled over for several years in France, and an extension beyond 2017 was discussed in Parliament.

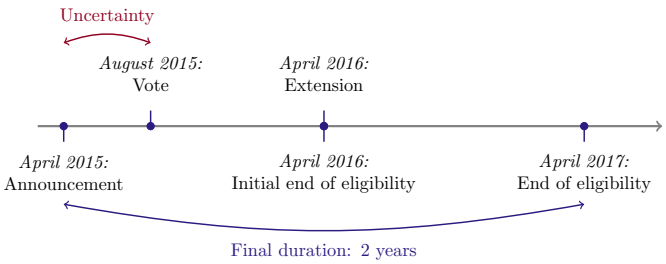


Figure 1: Overview of timing

All French firms, regardless of sector or size, were eligible. Qualifying investments consisted of tangible capital goods eligible for declining-balance depreciation. They initially had to be used for industrial manufacturing or handling operations, R&D, environmental protection, or specific forms of energy production. In April 2016, the scope was extended to all associated software, fiber-optic equipment, and supercomputers. Assets could be acquired, including under credit-lease or hire-purchase contracts, or built within the firm.

Data. We leverage rich administrative data sources. First, corporate income tax returns include balance sheet information on the evolution and composition of assets. We also draw various outcomes—e.g., sales, EBITDA, profits—from the associated income statement. Second, we rely on an annual production survey, exhaustive above 10 employees in the manufacturing industry. It breaks down firms' output into thin product and service categories. Third, we mobilize a more restrictive quarterly survey that focuses on prices and covers slightly more than 4,000 manufacturing firms per year. Until 2017, prices are expressed in basis points relatively to 2010; later on, 2015 becomes the reference year.

Direct effect. We start by assessing the impact of the policy on investing firms—its direct beneficiaries. We confirm that we retrieve the effects consistently identified in the literature for investment, output, and other outcomes.

We exploit differential exposure to the reform at the industry level, in a similar spirit to Zwick and Mahon (2017). For each five-digit sector, we compute the pre-reform share of eligible assets in the total stock of depreciable assets. Within three-digit industries, we rank the sectors according to this measure of exposure and split them into treatment or control groups. This provides sufficient variation to estimate a difference-in-differences model within industries. Our

tial delay. They would then give rise to new depreciation claims after several years. Extra depreciation claims peaked in 2019, well after the eligibility window closed.

identifying assumption states that, absent the reform, treated and control firms would have evolved in a parallel fashion, while allowing for industry-specific trends at the three-digit level.

We find that the reform spurred investment in both eligible and ineligible tangible assets, raising sales and total factor productivity. It also increased employment, though with a compositional shift: the shares of engineers and R&D staff in hours worked rose, while that of blue-collar workers declined. Overall, the subsidy boosted investment, output, and productivity, while reorienting employment towards skilled occupations, speaking to the literature on capital deepening and labor demand (Acemoglu and Restrepo 2020; Aghion et al. 2020).

Supply-side responses. Beyond the direct beneficiaries of the policy, the core of our analysis relates to the suppliers of subsidized capital goods.

We first determine, based on the precise eligibility rules, whether manufactured goods in an eight-digit product classification are subsidized through extra depreciation. Combined with the production survey, we deduce each manufacturer's share of eligible capital goods in pre-reform sales (Share_i). Finally, we estimate a difference-in-differences model with continuous treatment that compares the firms selling more or less of the subsidized goods. We allow for industry-specific trends, at the four-digit level. To isolate the effect of the positive demand shock, we also control for manufacturers' pre-reform exposure to extra depreciation as direct beneficiaries. Our specification writes as:

$$Y_{i,t} = \sum_{\substack{l=-T^{\text{Pre}} \\ l\neq 0}}^{T^{\text{Post}}} \beta_t \times \text{Share}_i \times \mathbb{1}\{l = t\} + X_{i,t} + \gamma_i + \delta_t + \eta_{S(i),t} + \varepsilon_{i,t} \quad (1)$$

Where index i designates the manufacturing firm, $S(i)$ the associated four-digit industry, and t the year or quarter. γ_i and δ_t are the usual unit and time fixed effects, while the fixed effects $\eta_{S(i),t}$ correspond to the industry-specific trends. We denote by $X_{i,t}$ the control for the firm's exposure to extra depreciation as a direct beneficiary.[3] The β_t's are the parameters of interest. If treatment effects scale linearly with exposure, they reflect the effect of producing only eligible capital goods relatively to not producing any.

We start with domestic sales, measured in corporate income tax returns and logarithmically transformed, as outcome. Figure 2 plots the corresponding event study. Albeit imperfect, the pre-reform trend tends to corroborate our identifying assumption. Post-reform coefficients increase gradually before stabilizing until the end of the period. The static difference-in-differences yields that, following the subsidy, the sales of eligible capital good producers in France increased by 11% relatively to the other manufacturers. The estimate is strongly significant. Reassuringly for the link with extra depreciation, exports do not react, neither at the intensive margin nor at the extensive one. The shape of the

3. We compute all manufacturers' pre-reform share of eligible assets in their total stock of depreciable assets. We split manufacturers in deciles of this exposure measure. $X_{i,t}$ is then obtained as the interaction of the firm's decile with time dummies.

event study also tracks aggregate extra depreciation benefits over the period, including the slight dump in 2018.

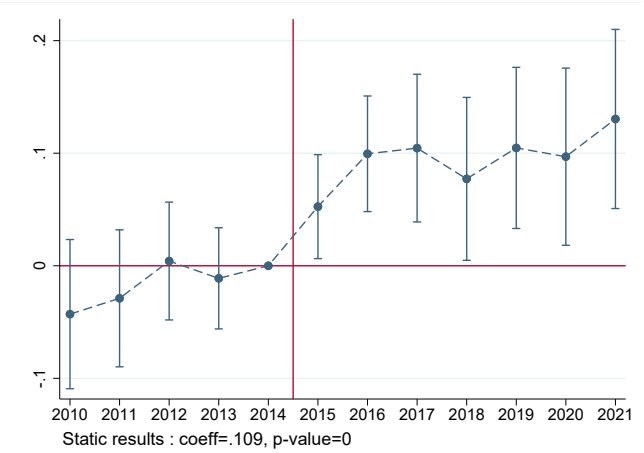


Figure 2: Effect on manufacturers' domestic sales

Next, we ask whether price effects may drive part of this increase in sales. We focus on the prices of industrial goods sold in France. We estimate Equation 1 with the logarithm of the firm's average price as outcome. Figure 3 shows the quarterly event study. Here too, the pre-reform coefficients corroborate our parallel trend assumption and, as of the last quarter of 2015, most estimates are significant at a 95% confidence level. Following the subsidy, the prices of eligible capital good producers increase by 3% relatively to the other manufacturers.

The price effect represents a substantial share—27%—of the increase in capital suppliers' domestic sales. Measuring investment in value would thus overstate the actual expansion of physical capital, especially if foreign suppliers selling in France adjusted their prices similarly to French producers. When we estimate that the value of investment by beneficiary firms increased due to the reform, only a portion of this effect matches policy-makers' objectives. Figure 3 echoes the findings and policy conclusions of Goolsbee (1998).

It may contradict the absence of market price responses in House and Shapiro (2008), although their estimates are not precise enough to detect effects of reasonable magnitude. Most useful in their work to interpret our own results is their conceptual framework. If we assume that the French extra depreciation scheme was perceived as temporary and targeted at sufficiently long-lived assets, then the theory states that the total cost of investment moved one-for-one with the subsidy. The pre-tax market price of subsidized assets rose only by a portion of the subsidy—by 3% versus a subsidy of roughly 10%. The residual portion would reveal the unobservable increase in internal adjustment costs.

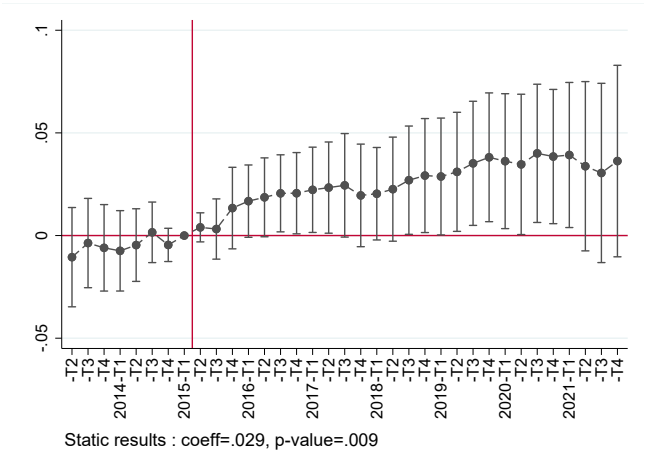


Figure 3: Effect on manufacturers' prices of industrial products sold in France

Beyond sales and price effects, the response of eligible capital producers is relevant for policy-makers. Producers increase employment by about 4%. They are also more likely to distribute dividends, and while average wages remain unchanged, executive pay rises by 9%. By contrast, there is no significant effect on the stock of physical capital, consistent with the reform being perceived as temporary and firms favoring short-run adjustments in labor and prices.

Heterogeneity. We examine whether supply-side responses differ by size. We classify as large those manufacturing firms with domestic sales above €100 million in 2010, corresponding to the top 3% of our sample. We re-estimate Equation 1 separately above and below this threshold. Among the largest firms, treated producers raise domestic prices by nearly 6%, compared to 2.5% for the rest of the distribution. Unlike smaller firms, the largest producers do not increase employment or sales after the reform. They do experience higher profits relative to their 2010 balance sheet size, as well as a fourfold stronger effect on the likelihood of paying out dividends. In summary, smaller firms use the subsidy to expand activity, whereas the largest firms increase profits through stronger price effects. This is consistent with higher market power allowing them to capture gains via prices rather than quantities. We further reflect on how heterogeneous price effects may fit House and Shapiro (2008)'s theory.