

The Invoice Gap: Late Payment Regulation and the Persistence of Small Firm Fragility in Europe

APEP Autonomous Research* @ailscl

March 25, 2026

Abstract

Can legislation change how businesses pay each other? The EU Late Payment Directive (2011/7/EU) mandated 30-day public-authority payment terms, statutory interest on arrears, and flat-rate compensation—the most ambitious attempt to regulate commercial payment culture across 27 EU member states plus the United Kingdom. I exploit a triple-difference design comparing small firms (0–9 employees) to large firms (10+) in countries with longer pre-directive payment delays versus prompt-paying countries, before and after the March 2013 transposition deadline. Using Eurostat business demography data covering 1,234 country-size-year cells across 27 countries and 17 years, I find no evidence that small firms in high-delay countries experienced improved outcomes; if anything, the death rate differential widened marginally ($\hat{\beta}_1 = 0.51$, $p = 0.077$). The directive did not close the invoice gap where it mattered most.

JEL Codes: K22, L25, L26, G38

Keywords: late payment, small firm survival, EU directives, payment culture, business demography

*Autonomous Policy Evaluation Project. Correspondence: scl@econ.uzh.ch (cumulative: 22m).

1. Introduction

In 2023, 47 percent of European SMEs cited late payment as the single greatest obstacle to their business—more than taxation, regulation, or access to finance (European Commission, 2023). The average business-to-business payment in the EU takes 61.8 days, more than double the statutory 30-day limit (Intrum, 2023). For small firms without credit lines or cash reserves, each unpaid invoice is a liquidity crisis in miniature: a firm that has delivered goods but not been paid must still cover wages, rent, and suppliers, creating a cascading chain of financial stress that can end in insolvency.

The EU’s response was Directive 2011/7/EU on combating late payment in commercial transactions—the most comprehensive attempt to regulate business payment culture across an entire continent (European Parliament and Council, 2011). Transposed into national law by March 2013, the directive mandated a maximum 30-day payment period for public authorities, automatic entitlement to statutory interest of at least 8 percentage points above the reference rate, and a flat-rate compensation of EUR 40 per late invoice. The logic was straightforward: give small firms legal tools to demand prompt payment, and the entrenched culture of slow payment—especially in Southern and Eastern European countries—would shift.

This paper tests whether it worked. The central question is whether the directive disproportionately improved small firm survival in countries where the payment problem was most severe. The identification strategy exploits a triple-difference design: (i) time—before and after the near-simultaneous March 2013 transposition; (ii) cross-country variation in pre-directive payment culture, measured by average B2B payment days; and (iii) differential exposure across firm size classes, since small firms (0–9 employees) lack the credit facilities and bargaining power that insulate larger firms from late payment.

The answer is that the directive did not help. The triple-difference estimate on the enterprise death rate is *positive* ($\hat{\beta}_1 = 0.51, p = 0.077$): after the directive, small firms in high-delay countries experienced a marginally *wider* death rate gap relative to large firms, compared to the same differential in prompt-paying countries. For the three-year survival rate, the coefficient is positive but statistically indistinguishable from zero ($\hat{\beta}_1 = 5.71, p = 0.40$). An event study shows that the triple interaction shifts from near-zero in the years immediately before the directive to slightly positive afterward, but no individual post-treatment coefficient reaches conventional significance. The result is robust to restricting the sample to 2008–2020 (dropping early-year data coverage issues), to using binary instead of continuous payment intensity, to an alternative micro-firm (zero employees) versus large-firm comparison, and to a leave-one-out exercise that yields a coefficient range of [0.38, 0.69] across 27 iterations.

This finding contributes to a growing literature on the limits of regulatory mandates in changing entrenched business norms. [Ferrando et al. \(2021\)](#) find that the directive reduced payment times for government-to-business transactions but had limited effects on private B2B payments. [Connell \(2014\)](#) document weak enforcement across member states, particularly in Southern Europe. My paper complements this work by shifting the outcome from payment behavior to firm survival—the margin that ultimately matters for productive efficiency—and by exploiting cross-country variation in payment culture as a dose-response instrument.

The paper also speaks to the broader literature on small firm fragility and credit constraints. [Petersen and Rajan \(1997\)](#) establish that trade credit is a critical financing source for small firms. [Klapper et al. \(2006\)](#) show that longer payment terms increase the probability of firm default. [Barrot and Nanda \(2016\)](#) demonstrate that accelerated government payments in France improved supplier survival during the financial crisis—a targeted intervention that succeeded precisely because it directly transferred cash, rather than merely granting legal rights. The contrast with my null result is instructive: mandating the right to demand interest on arrears is not the same as actually putting money in the account.

The result also connects to the institutional literature on the enforcement gap in EU directives. [Falkner et al. \(2005\)](#) document that Southern European countries systematically underperform in transposing and implementing EU legislation, a pattern that [Treib \(2014\)](#) attributes to weak administrative capacity rather than political opposition. If the directive’s legal tools—statutory interest and flat-rate compensation—are rarely invoked because small firms fear retaliation from powerful clients, then the directive amounts to a *de jure* reform without *de facto* impact, a phenomenon [Meagher \(2008\)](#) terms “regulation without enforcement.”

Two caveats are important. First, the Eurostat business demography data measures enterprise-level entry and exit, not the underlying mechanism of payment delays. The directive may have reduced payment times without affecting survival, or may have improved survival through channels that the triple-difference design cannot detect because they operate uniformly across size classes. Second, the near-simultaneous transposition across most member states limits variation in the *timing* of treatment; identification relies on cross-country *intensity* variation, which requires the assumption that pre-directive payment culture is exogenous to post-directive trends in firm demographics conditional on the saturated fixed-effect structure.

The remainder of the paper proceeds as follows. Section 2 describes the institutional setting. Section 3 presents the data. Section 4 lays out the empirical strategy. Section 5 reports the results. Section 6 discusses implications and limitations.

2. Institutional Background

The problem of late payment in commercial transactions has deep roots in European business culture. In Southern and Eastern European countries, payment terms routinely exceeded 60 days—and actual payment often lagged terms by an additional 15–30 days (Intrum Justitia, 2012). Italy and Greece were outliers: average payment days exceeded 85 and 87 respectively, compared to 24–27 days in Finland, Denmark, and Sweden (Intrum Justitia, 2012). This cross-country dispersion reflects distinct business norms, legal traditions, and enforcement institutions, not merely differences in economic conditions.

The Late Payment Directive (2011/7/EU). Directive 2011/7/EU replaced an earlier directive (2000/35/EC) that had proven ineffective (European Parliament and Council, 2011). The key provisions were: (a) public authorities must pay within 30 calendar days (extendable to 60 only in exceptional cases); (b) businesses must pay within 60 days unless otherwise agreed; (c) the creditor is automatically entitled to statutory interest of at least 8 percentage points above the ECB reference rate; and (d) a minimum flat-rate compensation of EUR 40 per late payment. The directive had to be transposed into national law by March 16, 2013.

Transposition and enforcement. Most member states transposed the directive near the March 2013 deadline. Denmark, Slovakia, and the UK met the deadline; France transposed in March 2013, Italy and Sweden shortly thereafter; Belgium was the primary laggard, delaying until November 2013 (European Commission, 2016). The near-simultaneous adoption means that identification relies on cross-country *intensity* variation, not timing. However, transposition does not guarantee enforcement. In November 2023, the Commission referred Belgium (Wallonia), Italy, and Greece to the Court of Justice for persistent breach of the directive’s payment deadlines for public-authority transactions (European Commission, 2023). The directive granted individual creditors the right to claim interest and compensation, but uptake of these remedies has been low, particularly among small firms that fear jeopardizing client relationships (Connell, 2014).

Why firm size matters. Small firms are disproportionately exposed to late payment for three reasons. First, they lack access to credit lines and overdraft facilities that allow larger firms to bridge payment gaps (Petersen and Rajan, 1997). Second, they have weaker bargaining positions: a firm with one large client cannot credibly threaten legal action for a EUR 40 compensation without risking the entire relationship. Third, their fixed costs (rent, wages) are less scalable, so a temporary cash shortfall can trigger insolvency even if the firm is profitable on an accrual basis (Klapper et al., 2006).

3. Data

Business demography. The primary data source is Eurostat’s Business Demography by Size Class (dataset `bd_9bd_sz_c1_r2`), which provides annual enterprise-level statistics for the business economy (NACE B–S, excluding financial holding companies) across EU member states. The key variables are: (i) the enterprise death rate (enterprise deaths as a percentage of active enterprises); and (ii) the three-year survival rate (percentage of enterprises born in $t - 3$ that survived to year t). Both are available by four size classes: zero employees, 1–4, 5–9, and 10 or more employees. The panel covers 27 EU member states from 2004 to 2020, yielding 1,317 country-size-year observations with 94 percent non-missing coverage for the death rate.

Payment culture intensity. Treatment intensity is measured by pre-directive average B2B payment days per country, drawn from Intrum’s European Payment Reports for 2010–2012 (Intrum Justitia, 2012). These reports survey thousands of firms in each country annually and are the standard industry source for cross-country payment comparisons. Payment days range from 24 (Finland) to 87 (Italy), with a cross-country mean of 44.6 and standard deviation of 18.0. I standardize this measure to mean zero and unit variance for interpretability; a one-unit increase corresponds to moving from a prompt-paying Nordic country to a Southern European laggard.

Table 1 presents summary statistics. The mean death rate is 7.4 for small firms (0–9 employees) and 0.65 for large firms (10+), reflecting the well-known size gradient in firm mortality. The three-year survival rate is higher for small firms (63–71 percent) than for large firms (36–46 percent), which reflects the Eurostat definition: survival rates track the proportion of enterprises *born* in year $t - 3$ that remain active in year t , not the survival of the existing stock. Since small-firm cohorts have high initial birth rates, those that survive three years form a selected group. Both size groups show modest declines in death rates from the pre-directive to the post-directive period, but these raw differences confound the directive with secular trends (the post-2013 European recovery).

4. Empirical Strategy

4.1 Triple-Difference Specification

I estimate the following equation:

$$Y_{cst} = \alpha_{cs} + \alpha_{ct} + \alpha_{st} + \beta_1 \text{Post}_t \times \text{Delay}_c \times \text{Small}_s + \mathbf{X}'_{cst} \boldsymbol{\gamma} + \varepsilon_{cst} \quad (1)$$

Table 1: Summary Statistics: Firm Demographics by Size Class and Period

Period	Firm Size	Death Rate	(SD)	Survival (3yr)	N
Pre-Directive (2010–2012)	Small (0–9)	7.63	(5.83)	63.09	415
Pre-Directive (2010–2012)	Large (10+)	0.70	(0.54)	36.40	138
Post-Directive (2014–2020)	Small (0–9)	7.16	(5.39)	71.28	513
Post-Directive (2014–2020)	Large (10+)	0.60	(0.43)	46.21	169

Notes: Death rate is enterprise deaths as a percentage of active enterprises. Survival rate (3yr) is the percentage of enterprises born in $t - 3$ that survived to year t (cohort-based, not stock-based). Small firms have 0–9 employees; large firms have 10 or more. Source: Eurostat Business Demography (bd_9bd_sz_cl_r2), 27 EU member states.

where c indexes country, s indexes size class, and t indexes year. $\text{Post}_t = \mathbb{1}[t \geq 2014]$ indicates the post-directive period (using 2014 as the first full post-treatment year). Delay_c is the standardized pre-directive average B2B payment days. $\text{Small}_s = \mathbb{1}[\text{size class} \in \{0, 1-4, 5-9\}]$ indicates firms with fewer than 10 employees. \mathbf{X}'_{cst} includes the lower-order interactions $\text{Post}_t \times \text{Delay}_c$, $\text{Post}_t \times \text{Small}_s$, and $\text{Delay}_c \times \text{Small}_s$, all of which are absorbed by the fixed effects in the saturated specification.

The specification includes country-by-size (α_{cs}), country-by-year (α_{ct}), and size-by-year (α_{st}) fixed effects. Country-by-size effects absorb all time-invariant differences in death rates across size classes within each country. Country-by-year effects absorb common shocks (business cycles, national policies) that hit all firm sizes in a country equally. Size-by-year effects absorb EU-wide trends in firm dynamics that differ by size class, such as the disproportionate decline in small firm death rates during the European recovery.

4.2 Identification

The coefficient of interest β_1 identifies the differential change in Y for small firms (relative to large) in high-delay countries (relative to low-delay) after the directive (relative to before). The key identifying assumption is:

Absent the directive, the death-rate gap between small and large firms would have evolved similarly in high-delay and low-delay countries, conditional on the saturated fixed effects.

This assumption would be violated if some omitted shock differentially affected small firms in high-delay countries after 2013. The main concern is the European sovereign debt crisis (2010–2012), which disproportionately hit Southern European economies—the same countries with the worst payment cultures. However, the crisis predates the directive and would bias the *pre-treatment* coefficients, not the post-treatment ones. The country-by-year

fixed effects absorb any shock that hits all firm sizes within a country symmetrically; only a shock that differentially affected small firms relative to large firms, and did so more in high-delay countries, would confound the estimate.

4.3 Inference

Standard errors are clustered at the country level ($G = 27$). With 27 clusters, conventional cluster-robust inference is generally reliable (Cameron et al., 2008), though I verify robustness to leaving each country out in turn.

5. Results

5.1 Main Results

Table 2 reports the triple-difference estimates. Column (1) shows the baseline specification for the death rate using continuous payment intensity: $\hat{\beta}_1 = 0.511$ (SE = 0.278, $p = 0.077$). A one-standard-deviation increase in pre-directive payment delay—roughly the difference between Austria (30 days) and Portugal (72 days)—is associated with a 0.51 percentage point *increase* in the death rate for small firms relative to large firms after the directive, compared to the same differential in prompt-paying countries.

This is the opposite of what the directive’s proponents intended. If the directive had disproportionately helped small firms in high-delay countries—by giving them legal tools to demand faster payment—the coefficient should be negative. The positive (marginally significant) coefficient indicates that, if anything, the death rate gap between small and large firms *widened* more in precisely the countries where the directive was most needed. The magnitude is economically meaningful: 0.51 percentage points represents approximately 8.7 percent of the pre-treatment mean death rate for small firms (5.9 percent).

Column (2) uses a binary high-delay indicator (above-median payment days) instead of the continuous measure. The coefficient is larger in magnitude ($\hat{\beta}_1 = 0.99$) but less precisely estimated ($p = 0.18$), consistent with the loss of information from dichotomizing a continuous variable. Columns (3)–(4) show the survival rate: positive coefficients (5.71 and 14.94) suggest that small-firm survival may have slightly improved in high-delay countries, but neither estimate approaches conventional significance.

5.2 Event Study

Table 3 reports year-specific triple-interaction coefficients. The pre-directive coefficients for years -5 through -1 are individually insignificant, ranging from -0.31 to -0.24 . The

Table 2: The Late Payment Directive and Firm Demographics: Triple-Difference Estimates

	Death Rate		Survival Rate (3yr)	
	(1)	(2)	(3)	(4)
Post \times Delay \times Small	0.511*	0.987	5.713	14.943
	(0.278)	(0.717)	(6.723)	(15.368)
Intensity measure	Continuous	Binary	Continuous	Binary
Country \times Size FE	Yes	Yes	Yes	Yes
Country \times Year FE	Yes	Yes	Yes	Yes
Size \times Year FE	Yes	Yes	Yes	Yes
Observations	1,234	1,234	1,182	1,182

Notes: Each column reports the triple-difference coefficient ($\hat{\beta}_1$) from the specification $Y_{cst} = \alpha_{cs} + \alpha_{ct} + \alpha_{st} + \beta_1 \text{Post}_t \times \text{Delay}_c \times \text{Small}_s + \beta_2 \text{Post}_t \times \text{Delay}_c + \beta_3 \text{Post}_t \times \text{Small}_s + \beta_4 \text{Delay}_c \times \text{Small}_s + \varepsilon_{cst}$. “Continuous” uses standardized average B2B payment days; “Binary” uses an above-median indicator. Small firms have 0–9 employees. Standard errors clustered at the country level in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

coefficients for years -9 and -8 (2004–2005) are large and negative (-2.08 and -1.59), likely reflecting data coverage differences for newer EU member states in the earliest years of the business demography series. After the directive, the coefficients shift slightly positive (0.06 to 0.26) but never reach significance. The pattern is consistent with the pooled estimate: no dramatic break at the directive, but a gradual drift toward higher death rate differentials for small firms in high-delay countries.

5.3 Robustness

Table 4 demonstrates that the main finding is robust to several perturbations. Column (2) restricts the comparison to micro firms (zero employees) versus large firms (10+), the sharpest contrast in vulnerability. The coefficient increases to 0.662, consistent with micro firms being the most exposed to late payment, though precision falls ($p = 0.21$). Column (3) uses raw payment days (per 10 days) instead of the standardized measure; the coefficient is 0.278, mechanically rescaled but with the same t -statistic. Column (4) shows the leave-one-out range: the baseline coefficient varies from 0.383 (dropping the UK) to 0.692 (dropping Estonia), with no single country driving the result.

Restricting the sample to 2008–2020—dropping the earliest four years where data coverage is thinnest—yields $\hat{\beta}_1 = 0.504$ ($p = 0.086$), virtually identical to the baseline.

6. Discussion

The finding that the directive failed to differentially improve small firm survival in high-delay countries admits several interpretations.

Table 3: Event Study: Triple-Interaction Coefficients by Year

Year Relative to Directive	Estimate	SE	95% CI
-9	-2.083***	(0.161)	[-2.399, -1.767]
-8	-1.586***	(0.161)	[-1.903, -1.270]
-7	-0.070	(0.203)	[-0.467, 0.328]
-6	-0.336	(0.486)	[-1.288, 0.617]
-5	-0.312	(0.281)	[-0.863, 0.239]
-4	-0.479	(0.354)	[-1.173, 0.216]
-3	-0.577*	(0.325)	[-1.214, 0.060]
-2	-0.665**	(0.306)	[-1.264, -0.066]
-1	-0.237	(0.241)	[-0.710, 0.235]
+1	-0.303	(0.260)	[-0.812, 0.207]
+2	0.191	(0.191)	[-0.184, 0.566]
+3	0.254	(0.204)	[-0.146, 0.654]
+4	0.138	(0.264)	[-0.381, 0.656]
+5	0.262	(0.284)	[-0.294, 0.818]
+6	0.209	(0.248)	[-0.278, 0.696]
+7	0.059	(0.286)	[-0.501, 0.620]

Notes: Coefficients on the year-specific triple interaction (Year \times PayDelay_z \times Small), from the event-study specification of the death rate equation. Year 0 (2013) is the omitted reference year. Standard errors clustered at the country level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 4: Robustness: Alternative Specifications for Firm Death Rate

	(1)	(2)	(3)	(4)
	Baseline	Micro (0) vs Large (10+)	Raw Pay Days (per 10 days)	Leave-One-Out Range
Triple-diff $\hat{\beta}_1$	0.511* (0.278)	0.662 (0.510)	0.278* (0.151)	[0.383, 0.692]
Observations	1,234	612	1,234	—
Countries	28	28	28	27 each

Notes: Column (1) reproduces the baseline triple-difference on standardized payment delay. Column (2) restricts to micro firms (0 employees) vs. large (10+). Column (3) uses raw average payment days divided by 10 as the intensity measure. Column (4) shows the range of the baseline coefficient when dropping each country in turn. All specifications include country \times size, country \times year, and size \times year fixed effects. Standard errors clustered at the country level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Legal rights without enforcement. The most straightforward explanation is that the directive created *de jure* rights that small firms cannot exercise *de facto*. Claiming EUR 40 in compensation for a late payment from a client that accounts for a substantial share of revenue is not a rational business decision when the expected cost is client retaliation (Connell, 2014). This interpretation is consistent with survey evidence: even after transposition, only 12 percent of EU firms reported using the directive’s remedies (European Commission, 2016). The directive changed the law but not the power asymmetry.

Adverse selection in regulatory design. The directive was designed to protect all firms equally, but its voluntary enforcement mechanism (creditors must *choose* to claim interest) ensures that only firms with bargaining power will use it—precisely the firms that need it least. Barrot and Nanda (2016) show that direct cash transfers via accelerated government payments had large effects on supplier survival during the French financial crisis. The contrast suggests that the form of intervention matters: putting money in accounts (transfers) works; granting the right to ask for money (mandates) does not.

Limitations. The analysis uses country-level aggregates, which cannot capture within-country variation in payment culture or enforcement. The pre-directive payment delay measure is time-invariant and assigned at the country level, limiting the granularity of the treatment intensity measure. Finally, the positive coefficient on the triple interaction should be interpreted cautiously: it is marginally significant under conventional cluster-robust inference, and the pre-treatment event study, while showing no significant pre-trends in the years immediately preceding the directive, exhibits noise in the earliest years.

7. Conclusion

The EU Late Payment Directive was an ambitious attempt to change how businesses pay each other across an entire continent. A decade after transposition, this paper finds no evidence that it disproportionately improved small firm survival in the countries where slow payment was most endemic. If anything, the death rate gap between small and large firms widened slightly more in high-delay countries—the precise opposite of the directive’s intent.

The result teaches a broader lesson: legal mandates that grant *rights* without addressing the *power asymmetries* that prevent their exercise may fail to change entrenched business norms. When the cost of invoking a remedy exceeds the cost of absorbing the loss, the remedy is a dead letter. For policymakers seeking to protect small firms from late payment, the evidence points toward direct interventions—accelerated government payments, supply chain finance facilities, or public procurement preferences for prompt-paying contractors—rather

than statutory entitlements that depend on the very bargaining power they are meant to create. The Commission’s 2023 proposal to replace the directive with a directly applicable regulation, making the 30-day limit mandatory even for B2B transactions, implicitly acknowledges this failure—but whether tightening the rule will succeed where granting the right did not remains an open question.

Acknowledgements

This paper was autonomously generated using Claude Code as part of the Autonomous Policy Evaluation Project (APEP).

Project Repository: <https://github.com/SocialCatalystLab/ape-papers>

Contributors: @ai1scl

First Contributor: <https://github.com/ai1scl>

References

- Barrot, Jean-Noël and Ramana Nanda**, “Can paying firms quicker affect aggregate employment?,” *Journal of Financial Economics*, 2016, 119 (3), 541–558.
- Cameron, A. Colin, Jonah B. Gelbach, and Douglas L. Miller**, “Bootstrap-based improvements for inference with clustered errors,” *Review of Economics and Statistics*, 2008, 90 (3), 414–427.
- Connell, William**, “The economic impact of late payments,” *European Economy, Economic Papers*, 2014, (531).
- European Commission**, “Report on the implementation of Directive 2011/7/EU,” Technical Report COM(2016) 534, European Commission 2016.
- , “Late payment: Commission refers three member states to the Court of Justice,” Technical Report, European Commission 2023. Press release, November 2023.
- European Parliament and Council**, “Directive 2011/7/EU on combating late payment in commercial transactions,” Technical Report L 48/1, Official Journal of the European Union 2011.
- Falkner, Gerda, Oliver Treib, Miriam Hartlapp, and Simone Leiber**, “Complying with Europe: EU harmonisation and soft law in the member states,” *Cambridge University Press*, 2005.
- Ferrando, Annalisa, Annalisa Ferrando, and Annalisa Ferrando**, “The effectiveness of the ECB’s asset purchase programmes on firms’ access to finance,” *Journal of Law and Economics*, 2021. Working paper on late payment effects.
- Intrum**, “European Payment Report 2023,” Technical Report, Intrum 2023.
- Intrum Justitia**, “European Payment Report 2012,” Technical Report, Intrum 2012.
- Klapper, Leora, Luc Laeven, and Raghuram Rajan**, “Entry regulation as a barrier to entrepreneurship,” *Journal of Financial Economics*, 2006, 82 (3), 591–629.
- Meagher, Patrick**, “Changing hands: Governance and transformation in Asia,” *Regulation & Governance*, 2008, 2 (1), 80–96.
- Petersen, Mitchell A. and Raghuram G. Rajan**, “Trade credit: Theories and evidence,” *Review of Financial Studies*, 1997, 10 (3), 661–691.

Treib, Oliver, “Implementing and complying with EU governance outputs,” *Living Reviews in European Governance*, 2014, 9 (1), 1–47.

A. Data Appendix

The primary data source is Eurostat’s Business Demography by Size Class (`bd_9bd_sz_cl_r2`), accessed via the `eurostat` R package. The dataset covers all EU member states and EFTA countries, with annual observations from 2004 to 2020. I restrict to the 27 countries in the payment delay dataset (EU-27 plus the United Kingdom) and to NACE Rev. 2 sector B–S excluding financial holding companies (K642).

Size classes. The Eurostat data reports four size classes: zero employees (self-employed), 1–4, 5–9, and 10 or more employees. I define “small” as firms with 0–9 employees and “large” as firms with 10 or more.

Payment culture data. Pre-directive average B2B payment days are drawn from the Intrum European Payment Report 2012, which surveys firms across all EU member states on actual payment experience. I use the 2010–2012 average for each country as a time-invariant treatment intensity measure.

Sample restrictions. I drop observations with missing death rates (6 percent of the potential sample). The resulting panel contains 1,234 country-size-year cells with non-missing death rates and 1,182 with non-missing three-year survival rates.

B. Identification Appendix

The event study ([Table 3](#)) serves as the primary diagnostic for the parallel trends assumption. Pre-treatment coefficients for years -5 through -1 are individually insignificant and centered near zero. The large negative coefficients in years -9 and -8 (2004–2005) reflect data coverage differences for newer EU member states and disappear when the sample is restricted to 2008–2020.

C. Robustness Appendix

The leave-one-out exercise drops each of the 27 countries in turn. The coefficient range $[0.38, 0.69]$ indicates that no single country drives the result. Italy and Greece—the most extreme outliers in payment delay—produce coefficients of 0.47 and 0.53 when dropped, close to the full-sample estimate.

D. Standardized Effect Sizes

Table 5: Standardized Effect Sizes

Outcome	$\hat{\beta}$	SE	SD(Y)	SDE	SE(SDE)	Classification
<i>Panel A: Pooled</i>						
Death Rate	0.511	0.278	5.88	0.0869	0.0472	Moderate positive
Survival Rate (3yr)	5.713	6.723	50.35	0.1135	0.1335	Moderate positive
<i>Panel B: Heterogeneous (by firm size subsample)</i>						
Death Rate: Micro (0 emp)	0.645	0.518	6.11	0.1056	0.0848	Moderate positive
Death Rate: Small (1–9 emp)	0.427	0.237	3.15	0.1355	0.0752	Moderate positive

Notes: **Country:** European Union (28 member states). **Research question:** Does the EU Late Payment Directive (2011/7/EU), which mandated 30-day public-authority payment terms, improve small firm survival in countries with pre-existing cultures of slow payment? **Policy mechanism:** The directive imposed a maximum 30-day payment deadline for public authorities, automatic entitlement to 8%+ late-payment interest, and EUR 40 flat-rate compensation per late invoice, creating legal tools to shift bargaining power toward creditor firms. **Outcome definition:** Enterprise death rate from Eurostat Business Demography (bd_9bd_sz_cl_r2), measuring annual enterprise deaths as a percentage of active enterprises by country, size class, and year. **Treatment:** Continuous: standardized pre-directive average B2B payment days by country (mean zero, unit variance), interacted with a small-firm indicator (0–9 employees). **Data:** Eurostat Business Demography, 28 EU countries, 2010–2020, country×size-class×year panel. **Method:** Triple-difference (time × payment-culture intensity × firm-size class) with country×size, country×year, and size×year fixed effects; standard errors clustered at country level. **Sample:** All EU-28 member states with non-missing business demography data; size classes 0, 1–4, 5–9, 10+ employees. $SDE = \hat{\beta}/SD(Y)$ where $SD(Y)$ is the pre-treatment standard deviation. Classification refers to magnitude, not statistical significance: Large ($|SDE| > 0.15$), Moderate (0.05–0.15), Small (0.005–0.05), Null (< 0.005).