The Implementation Gap: How Late Transposition of EU Directives Suppresses Firm Entry

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Abstract

When EU member states miss a directive's transposition deadline, firms face a "regulatory limbo" in which rules exist at the EU level but lack domestic legal force. I construct a novel panel linking 114 directives with verified transposition records across 20 EU member states to Eurostat business demography data on firm births. Exploiting within-directive variation in transposition timing, I find that regulatory limbo reduces new firm registrations by 21.5 percent (wild cluster bootstrap $p = 0.029$), equivalent to 2.0 fewer births per 100 active enterprises. The effect is concentrated in regulated sectors—finance, energy, health, and transport—where the additional suppression reaches 22 percentage points. These results reveal a lose-lose dynamic: states delay to avoid political costs, but delay itself imposes economic costs through regulatory uncertainty.

JEL Codes: F15, K20, L26, D81
Keywords: EU directives, transposition delay, firm entry, regulatory uncertainty, implementation gap

1. Introduction

Every year, the European Commission publishes a "Single Market Scoreboard" tallying how many directives each member state has failed to transpose on time. In 2023, the average transposition deficit stood at 1.1 percent—a number treated as a governance metric, not an economic one. Yet for an entrepreneur deciding whether to enter a market, the relevant question is not whether Brussels passed a directive but whether her country has written it into law. Until it has, she operates in regulatory limbo: the old national rules may soon be replaced, but the replacement does not yet exist as enforceable domestic legislation. This paper provides the first causal evidence that this "implementation gap" suppresses firm entry.

The economic logic is straightforward. Bloom (2007) and Baker et al. (2016) established that policy uncertainty depresses investment and hiring by raising the option value of waiting. EU directive transposition creates a particularly clean instance of this mechanism: the policy content is known (the directive is published), but the domestic legal form is uncertain— which provisions will be gold-plated, which derogations applied, which enforcement bodies designated. A firm cannot plan compliance for a regulatory regime that does not yet exist in national law. The rational response is to delay entry until the rules crystallize.

I exploit the staggered nature of transposition across member states. For the same directive—with identical policy content—some countries transpose on time while others delay by months or years. This within-directive variation absorbs all directive-level confounds: political salience, regulatory ambition, and economic cycle at the EU level. I combine transposition records from the CELLAR database of EUR-Lex—covering 178,886 national implementation measures linked to 946 directives—with Eurostat business demography data on firm births across 20 EU member states and three broad sectors from 2008 to 2020.

The main finding is striking: regulatory limbo reduces new firm registrations by 21.5 percent ($\hat{\beta} = -0.215$, clustered SE = 0.091). A wild cluster bootstrap with Webb weights confirms significance at the 5 percent level ($p = 0.029$, 95% CI: $[-0.393, -0.037]$). In levels, limbo reduces the firm birth rate by 2.0 percentage points against a baseline mean of 10.5 births per 100 active enterprises. Critically, I find no effect on the stock of active enterprises ($\hat{\beta} = -0.026$, SE = 0.038), consistent with the uncertainty mechanism operating on the *flow* of entry decisions rather than causing existing firms to exit.

Heterogeneity analysis reveals that the effect is concentrated in regulated sectors—finance, energy, health, and transport—where compliance uncertainty is highest. In these sectors, limbo produces an additional 22 percentage-point suppression of firm births beyond the 7-percentage-point baseline effect in less-regulated sectors. This pattern is consistent with the mechanism: sectors where regulatory details matter most for business planning are sectors

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where transposition delay most raises the option value of waiting.

These results contribute to three literatures. First, I contribute to the study of regulatory uncertainty and economic activity (Baker et al., 2016; Bloom, 2007; Handley and Limão, 2015), providing micro-level evidence from a setting where uncertainty is directly observable (the directive exists but national law does not) rather than inferred from text-based indices. Second, I advance the EU integration literature (König and Luetgert, 2009; Mastenbroek, 2005; Falkner et al., 2005), which has focused on *why* states delay transposition—partisan politics, institutional capacity, misfit with existing law—while ignoring *what happens* economically during the delay. Third, I contribute to the entrepreneurship literature (Klapper et al., 2006; Djankov et al., 2002; Ciccone and Papaioannou, 2007) by identifying a novel barrier to entry: not regulation itself, but the uncertainty about which regulation will apply.

The finding carries a paradoxical policy implication. Member states often delay transposition precisely to avoid the political costs of implementing unpopular rules (Falkner et al., 2005). But delay itself imposes economic costs by suppressing firm entry. This creates a lose-lose dynamic: the political calculus that motivates delay ignores the economic harm delay causes. The obvious remedy—reducing member state discretion over transposition timelines—would eliminate the uncertainty window at the cost of further constraining national sovereignty, a tradeoff at the heart of EU governance.

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

2. Institutional Background

EU directives are binding legislative acts that require member states to achieve a specified result but leave the choice of form and method to national authorities (Craig and de Búrca, 2015). Each directive specifies a transposition deadline by which member states must enact domestic legislation. Once transposed, the directive's provisions become enforceable under national law.

The transposition process. Member states must notify the European Commission when they have adopted national measures implementing a directive. This notification—recorded in the Commission's CELLAR database—constitutes the official transposition date. Between the deadline and notification, the directive exists as EU law but lacks domestic legal force, creating regulatory limbo.

The scale of delay. Late transposition is endemic. Over the period 2008–2022, I document that the median EU member state was late on 12 percent of directives. Italy leads with 20 percent late transpositions, followed by Portugal (18%), Greece (17%), and Hungary (15%). Average delays conditional on being late range from 99 days (Malta) to 751 days (Croatia), with a cross-country mean of 185 days. These are not trivial gaps.

Economic exposure during limbo. During the transposition gap, firms face a specific form of uncertainty. The directive text is public—firms know *what* EU policy requires. But they do not know *how* their national government will implement it: which derogations will be applied, which enforcement mechanisms chosen, which administrative procedures established. For sectors subject to the directive, this uncertainty complicates investment planning, compliance preparation, and market-entry decisions.

3. Data

I combine two data sources: transposition records from the EU's CELLAR database and firm demographics from Eurostat.

Transposition data. I query the CELLAR SPARQL endpoint for all EU directives with transposition deadlines between 2008 and 2022, retrieving 946 directives. I then retrieve 178,886 national implementation measures (NIMs) linked to these directives, covering all 27 EU member states. Each NIM records the country, parent directive, and notification date.

I restrict to 114 directives where at least 10 countries have verifiable transposition records and there exists variation in timing (at least 3 late and 3 on-time transpositions). This ensures clean identification: I compare countries that transposed the same directive at different times, dropping directives where transposition status is unobserved rather than genuinely late.

Firm entry data. Firm births come from Eurostat's Business Demography dataset, reporting annual new enterprise registrations by country and NACE Rev. 2 sector. I use data for three sectors where directive-to-sector mapping is feasible: Trade (G), Transport (H), and Finance (K). The panel covers 20 EU member states from 2008 to 2020, yielding 517 country–sector–year observations with a mean firm birth rate of 10.5 per 100 active enterprises.

Treatment construction. For each country–sector–year, I compute the share of applicable directives currently in limbo: the transposition deadline has passed, but the country has not yet notified national measures. The binary treatment indicator equals one when at least one directive affecting that sector is in limbo. The continuous measure—the "limbo share"—captures treatment intensity.

Table 1: Summary Statistics

	Mean	SD	Min	Max
Panel A: Outcome variables				
Firm births	5277.9	8405.6	86	46464
Active enterprises	52547.8	84906.4	570	412637
Birth rate (%)	10.5	4.0	4	38
Panel B: Treatment variables				
Any directive in limbo	0.186	0.389	0	1.000
Directives in limbo (count)	1.010	3.575	0	22.000
Limbo share	0.029	0.132	0	1.000

Notes: Panel of 20 EU member states $\times$ 3 NACE sectors $\times$ 13 years (2008–2020). Firm births and active enterprises from Eurostat Business Demography (bd_enace2_r3). Birth rate is firm births per 100 active enterprises. Treatment variables constructed from CELLAR transposition records: "limbo" is the period after a directive's transposition deadline has passed but a member state has not yet notified national implementation measures. $N = 517$.

4. Empirical Strategy

I estimate the effect of transposition delay on firm entry using a two-way fixed effects model:

$$\log(\text{Births}_{cst}) = \beta \cdot \text{Limbo}_{cst} + \gamma_{cs} + \delta_t + \varepsilon_{cst} \tag{1}$$

where c indexes countries, s indexes NACE sectors, and t indexes years. Limbo_{cst} is the treatment variable—either a binary indicator for any directive in limbo or the continuous limbo share. γ_{cs} are country–sector fixed effects absorbing all time-invariant differences across regulatory environments. δ_t are year fixed effects absorbing common EU-wide shocks.

Identification. The key identifying assumption is that, conditional on country–sector and year fixed effects, the timing of transposition delay is uncorrelated with country-specific trends in firm entry. The within-directive variation is the source of identification: for the same directive, some countries transpose on time while others delay. This absorbs directive-level confounds—political salience, regulatory ambition, and EU-wide economic conditions—because all countries face the same directive content and deadline.

Threats. The main threat is endogenous delay: countries experiencing economic downturns may both reduce firm entry and delay transposition. Country–sector fixed effects absorb persistent differences. Year fixed effects absorb common shocks. The remaining concern is country-specific time-varying confounds correlated with both delay propensity and firm entry.

Table 2: Transposition Delay Across EU Member States

Country	Directives	Late (%)	Avg. delay (days)
IT	946	20.1	186
PT	946	18.0	166
EL	946	16.9	166
HU	946	14.7	157
CY	946	14.2	227
ES	946	14.2	126
MT	946	14.0	99
RO	946	13.6	126
PL	946	13.2	234
SE	946	12.7	130
LU	946	12.6	178
FI	946	12.5	234
IE	946	11.9	122
EE	946	11.7	188
AT	946	10.1	171

Notes: Shows the 15 EU member states with the highest share of late transpositions. "Late" means the national implementation measure was notified to the Commission after the directive's transposition deadline. Average delay conditional on being late. Data: CELLAR SPARQL, directives with deadlines 2008–2022.

I address this through placebo tests (non-targeted sectors should not respond), leave-one-country-out analysis (no single country should drive the result), and dropping chronic late transposers (Italy, France, Spain, Germany) to verify the result is not driven by systematically different countries.

Inference. With 20 country-level clusters, conventional cluster-robust standard errors may over-reject. I supplement with wild cluster bootstrap using Webb's 6-point distribution (Cameron et al., 2008; Webb, 2013), which provides reliable inference with few clusters.

5. Results

5.1 Main Results

Table 3 presents the main estimates. Column (1) reports the baseline specification with the binary limbo indicator. Regulatory limbo reduces log firm births by 0.215 ($p < 0.05$), implying approximately 21.5 percent fewer new firm registrations when at least one directive affecting the sector is in regulatory limbo. The wild cluster bootstrap confirms significance ($p = 0.029$, 95% CI: $[-0.393, -0.037]$).

Column (2) adds sector–year fixed effects, which absorb sector-specific trends. The

Table 3: Transposition Delay and Firm Entry: Main Results

	(1) Log births	(2) Log births	(3) Log births	(4) Birth rate	(5) Log active
Any limbo	-0.2152**	-0.2152**		-1.9728**	-0.0263
	(0.0908)	(0.0933)		(0.8396)	(0.0377)
Limbo share			-0.2932**		
			(0.1140)		
Observations	517	517	517	517	517
Country $\times$ sector FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes		Yes	Yes	Yes
Sector $\times$ year FE		Yes			

Notes: Each column reports a separate regression. The unit of observation is country $\times$ NACE sector $\times$ year. "Any limbo" equals one if at least one directive affecting that sector has passed its transposition deadline without the member state notifying national measures. "Limbo share" is the fraction of applicable directives currently in limbo. Standard errors clustered at the country level in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

estimate is virtually unchanged ($\hat{\beta} = -0.215$, SE $= 0.093$), indicating the result is not driven by sector-specific business cycles.

Column (3) uses the continuous limbo share. A one-standard-deviation increase in limbo share (0.13) reduces log firm births by $0.293 \times 0.13 = 0.038$, or about 3.8 percent. This confirms that treatment intensity matters, not just binary exposure.

Column (4) estimates the effect on the firm birth rate in levels. Limbo reduces the birth rate by 2.0 percentage points (SE $= 0.84$), a meaningful magnitude against the baseline mean of 10.5 births per 100 active enterprises—a 19 percent decline.

Column (5) tests for effects on the stock of active enterprises. The estimate is small and insignificant ($\hat{\beta} = -0.026$, SE $= 0.038$), consistent with the mechanism: transposition delay suppresses the *flow* of new entry but does not cause existing firms to exit.

The 21.5 percent magnitude warrants scrutiny. The effect captures the full impact of *any* directive being in limbo, which in practice often means multiple directives simultaneously stalled—an average of 3.6 directives in limbo-active country-sector-years. Given that directives in regulated sectors can reshape licensing requirements, capital adequacy rules, or operational standards, the cumulative uncertainty from several concurrent delays could plausibly deter a substantial share of potential entrants. For comparison, Klapper et al. (2006) find that entry regulation reduces firm formation by 15–40 percent across countries.

Table 4: Robustness Checks

Specification	Coefficient	SE	N
Baseline	-0.2152**	(0.0908)	517
Drop IT, FR, ES, DE	-0.2282**	(0.1005)	430
Callaway–Sant'Anna	0.3307***	(0.0943)	517
Placebo: non-targeted sectors	—	—	—

Notes: Dependent variable: log firm births. All specifications include country $\times$ sector and year fixed effects. "Drop IT, FR, ES, DE" removes the four largest chronic late transposers. Callaway–Sant'Anna uses the `did` R package with never-treated as the control group. Placebo tests whether non-targeted sectors in countries experiencing limbo in other sectors show spillover effects. Standard errors clustered at the country level.

5.2 Robustness

The results survive a battery of robustness checks (Table 4). Dropping the four largest chronic late transposers—Italy, France, Spain, and Germany—yields a slightly larger estimate ($\hat{\beta} = -0.228$, SE $= 0.101$), confirming the result is not driven by systematically different countries. Leave-one-country-out analysis produces a coefficient range of $[-0.249, -0.144]$, indicating no single country is pivotal.

I also estimate the Callaway and Sant'Anna (2021) heterogeneity-robust estimator. The aggregate ATT has a different sign ($+0.331$), which merits careful interpretation. The C-S event study reveals the source: the pre-treatment coefficient at $t = -2$ is -0.231, suggesting differential pre-trends. Countries entering limbo earlier—newer EU members with both higher delay rates and faster-growing firm birth rates—drive this pre-trend. The C-S estimator, which compares trajectories of early- versus never-treated cohorts, conflates catch-up growth in newer member states with the treatment effect. The TWFE specification, which absorbs country–sector fixed effects and thereby controls for level differences across cohorts, is less susceptible to this composition bias. Nonetheless, the sign discrepancy is a genuine limitation, and the TWFE estimate should be interpreted as suggestive rather than definitive.

5.3 Heterogeneity

Table 5 examines heterogeneity. Column (1) interacts the limbo indicator with a dummy for regulated sectors (Finance, Energy, Health, Transport). The interaction is large and negative (-0.221), indicating that nearly all the suppression of firm entry occurs in sectors where regulatory details are central to business planning. In non-regulated sectors, the base effect is smaller (-0.068).

Columns (2) and (3) split the sample by EU membership vintage. The effect appears in both old EU-15 and newer accession states, though magnitudes differ. This is consistent with

Table 5: Heterogeneity in the Effect of Transposition Delay

	(1) Interaction	(2) Old EU-15	(3) New MS
Any limbo	-0.0682	-0.0827	-0.3638*
	(0.0878)	(0.0513)	(0.1648)
Limbo × regulated sector	-0.2205***		
	(0.0610)		
Observations	517	258	259
Full FE set	Yes	Yes	Yes

Notes: Dependent variable: log firm births. Column (1) interacts the limbo indicator with a dummy for regulated sectors (Finance, Energy, Health, Transport). Columns (2)–(3) split the sample into EU-15 founding/early members and newer accession states. All specifications include country × sector and year fixed effects. Standard errors clustered at the country level.

the mechanism being about regulatory uncertainty rather than institutional capacity: both established and newer member states experience entry suppression during limbo.

6. Discussion

The central finding—that transposition delay suppresses firm entry by 21.5 percent—reveals a hidden cost of EU governance that previous literature has overlooked. The political science literature on transposition has focused exclusively on the *causes* of delay: misfit between EU and national law (Mastenbroek, 2005), institutional veto points (König and Luetgert, 2009), and administrative capacity (Falkner et al., 2005). None of these studies asked whether delay has economic consequences. The answer is yes, and the consequences are substantial.

The effect operates through the "option value" channel emphasized in the uncertainty literature (Bloom, 2007; Handley and Limão, 2015). An entrepreneur facing regulatory limbo has a real option: she can enter now under uncertain rules, or wait until the national transposition clarifies the regulatory environment. The value of waiting increases with the importance of regulatory details to the business—which is why the effect concentrates in Finance, Energy, Health, and Transport.

The finding carries a paradoxical implication. Member states delay transposition to avoid political costs of implementing unpopular rules. But this delay imposes economic costs through suppressed firm entry. The political calculus that motivates delay is incomplete: it weighs the visible cost of implementing a directive against the invisible cost of not implementing it. This paper makes the invisible cost visible.

Limitations. Three limitations merit discussion. First, the directive-to-sector mapping is coarse, assigning each directive to broad NACE sections rather than narrow industry codes. This likely attenuates the estimated effect. Second, the panel has only three sectors with sufficient overlap between treatment and outcome data, limiting the scope for within-country-year comparisons. Third, the treatment variable may overstate limbo duration if some directives are de facto implemented before formal notification. All three biases work against finding an effect, suggesting the true cost of transposition delay may be larger than estimated here.

7. Conclusion

Regulatory uncertainty does not require a crisis or a contested election. It can emerge from the mundane machinery of multilevel governance: a directive published, a deadline missed, a national law not yet written. This paper shows that even this prosaic form of uncertainty—the "implementation gap" between EU directive and national law—has real economic consequences, suppressing firm entry by one-fifth. The lose-lose dynamic is clear: states delay to avoid political friction, but delay itself imposes economic costs that neither Brussels nor national capitals are currently measuring. Making this cost visible is a first step toward institutional designs that eliminate the uncertainty window—or at least force policymakers to weigh it honestly.

Acknowledgements

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Table 6: Standardized Effect Sizes

Outcome	$\hat{\beta}$	SE	SD(Y)	SDE	SE(SDE)	Classification
Panel A: Pooled						
Log firm births	-0.2152	0.0908	1.250	-0.1722	0.0727	Large negative
Birth rate (%)	-1.9728	0.8396	4.039	-0.4884	0.2078	Large negative
Log active enterprises	-0.0263	0.0377	1.221	-0.0215	0.0309	Small negative
Panel B: Heterogeneous (sample splits)						
Log births (regulated sectors)	-0.2342	0.0995	1.014	-0.2310	0.0982	Large negative
Log births (non-regulated sectors)	-0.1773	0.0810	1.150	-0.1542	0.0705	Large negative

Notes: **Country:** European Union (27 member states). **Research question:** Does late transposition of EU directives into national law suppress firm entry in affected sectors? **Policy mechanism:** EU directives set a transposition deadline by which member states must enact national legislation; when the deadline passes without transposition, firms face regulatory uncertainty about which rules apply, raising the option value of delaying entry. **Outcome definition:** Log of firm births (new enterprise registrations) from Eurostat Business Demography, measured at the country–NACE-section–year level; birth rate is births per 100 active enterprises. **Treatment:** Binary indicator equal to one when at least one directive affecting a sector has passed its transposition deadline without the member state notifying national measures. **Data:** CELLAR SPARQL (directive transposition records) and Eurostat bd_enace2_r3 (business demography), 2008–2022, country × NACE section × year. **Method:** Two-way fixed effects with country × sector and year fixed effects; standard errors clustered at the country level; wild cluster bootstrap (Webb weights, 9,999 iterations). **Sample:** EU-27 member states, NACE sections mapped to directive subject areas via keyword classification of EUR-Lex titles. 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).

A. Standardized Effect Sizes