The Digital Border Dividend: Estonia's e-Residency Program and Cross-Border Firm Formation

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Abstract

For one hundred euros, anyone on earth can incorporate a European Union company without leaving home. Estonia's e-Residency program, launched in December 2014, eliminated administrative border costs for firm creation—the first country to do so. Using augmented synthetic control methods and difference-in-differences designs comparing Estonia to eight European donor countries over 2006–2022, I find that e-Residency increased new business registration density by 8.7–10.7 per thousand working-age residents, a 66–81 percent increase. Decomposing the effect reveals that e-Resident firms account for only 15–26 percent of the post-treatment surge; non-e-Resident registrations also rose substantially above pre-treatment baselines, consistent with ecosystem spillovers. GDP per capita shows no corresponding gain, suggesting these are largely virtual firms. The digital border dividend is real for firm creation but illusory for output.

JEL Codes: F23, L26, O33, H25

Keywords: e-Residency, digital governance, firm formation, border effects, synthetic control

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1. Introduction

National borders are expensive for entrepreneurs. McCallum (1995) showed that Canadian provinces traded 22 times more with each other than with equidistant American states, and two decades of research since has confirmed that administrative, legal, and informational border costs suppress cross-border economic activity far beyond what tariffs alone would predict (Anderson and van Wincoop, 2003; Head et al., 2004). These costs are especially binding for firm creation: incorporating a company in a foreign jurisdiction typically requires physical presence, notarized documents, local bank accounts, and legal intermediaries—a bundle of fixed costs that screens out small entrepreneurs entirely (Djankov et al., 2002; Klapper et al., 2006).

In December 2014, Estonia became the first country to eliminate these costs. Its e-Residency program issues a digital identity card to any applicant worldwide for EUR 100, enabling them to incorporate an Estonian EU company, open a bank account, sign documents digitally, and file taxes—entirely online, without ever setting foot in the country. By 2024, over 128,000 e-residents from 185 countries had created more than 39,000 firms, generating an estimated EUR 400 million in cumulative state revenue.

This paper asks whether reducing digital border costs for firm formation causally creates new economic activity or merely relocates it. The answer matters for the 15-plus countries now considering similar digital residency programs (OECD, 2020), and more broadly for understanding whether the administrative border costs that suppress cross-border entrepreneurship represent deadweight loss or serve as useful screens against shell-company abuse.

I exploit Estonia's sharp, unilateral adoption of e-Residency in a setting with unusually clean identification. Latvia and Lithuania—Estonia's Baltic neighbors, which joined the EU in the same year, adopted the euro within four years of each other, and share similar post-Soviet institutional trajectories—provide natural controls. Neither country adopted a comparable program until Lithuania's limited version in 2021. I implement two complementary designs. First, an augmented synthetic control method (ASCM) using nine European small open economies as a donor pool, following Ben-Michael et al. (2021), with conformal inference for the single treated unit (Chernozhukov et al., 2021). Second, a conventional two-way fixed effects difference-in-differences specification, both within the three Baltic states and across the full nine-country panel.

The results are large and robust. The ASCM estimates an average treatment effect of 11.0 additional business registrations per 1,000 working-age residents per year, an 83 percent increase over Estonia's pre-treatment average of 13.2. The Baltic DiD yields a point estimate of 10.7; the full-panel DiD gives 8.7. Event-study estimates show no evidence of pre-trends in

2011–2013 and an immediate, growing effect beginning in 2015 that peaks in 2021. Because the design has few clusters (3 Baltic states, 9 in the full panel), I report permutation inference alongside conventional p-values: Estonia ranks first among all 9 countries in absolute effect size, with a permutation p-value of 0.111—consistent with the ASCM conformal p-value of 0.21. The point estimates are remarkably stable: leave-one-out sensitivity analysis produces a range of 8.35–8.94, and all four placebo treatment dates (2010–2013) yield insignificant coefficients.

To distinguish net creation from pure relocation, I decompose Estonian registrations using the official e-Residency Dashboard. E-Resident firms account for 15–26 percent of post-treatment registrations, but total non-e-Resident registrations also rose substantially—from a pre-treatment annual average of 11,722 to 14,500–21,000 in the post period. This is consistent with ecosystem spillovers: e-Residency attracted a wave of fintech service providers, accelerators, and legal-tech platforms that lowered costs for non-e-Resident entrepreneurs as well (Kotka et al., 2015; Tammpuu and Masso, 2019).

Yet the digital border dividend has a hollow core. A DiD specification with log GDP per capita as the outcome shows a null effect (-0.086, $p = 0.25$). E-Resident firms are overwhelmingly virtual: they generate Estonian corporate registrations and some tax revenue but produce negligible domestic output. The new firms are real in administrative data but largely absent from the real economy.

This paper contributes to three literatures. First, it provides the first causal evidence on a digital governance program's effect on firm formation, extending the literature on entry regulation and entrepreneurship (Djankov et al., 2002; Bruhn, 2011; Kaplan et al., 2011) to the digital border. Second, it adds a novel finding to the border effects literature (McCallum, 1995; Anderson and van Wincoop, 2003): administrative border costs for firm creation can be virtually eliminated by technology, but the resulting firms create economic activity in registrations, not in output. Third, it contributes to the growing literature on the economics of digitization (Goldfarb and Tucker, 2019) by documenting that digital public infrastructure generates large entrepreneurial responses with modest real-economy consequences.

Limitations. The design cannot fully disentangle e-Residency from concurrent Estonian digital governance improvements (though Estonia's X-Road infrastructure predates 2014). Country-level analysis limits the ability to identify within-Estonia geographic spillovers. The decomposition relies on aggregate e-Residency Dashboard statistics rather than firm-level administrative data.

2. Institutional Background

Estonia's digital infrastructure. Estonia built its digital governance ecosystem over two decades. The X-Road data exchange layer (2001), national digital ID (2002), and i-Voting system (2005) preceded e-Residency by over a decade. By 2014, 99 percent of government services were available online, and digital signatures had replaced handwritten ones in nearly all commercial transactions. This infrastructure was a necessary precondition—e-Residency leverages existing systems rather than creating new ones.

The e-Residency program. Launched December 1, 2014, e-Residency allows any person worldwide to apply online for a digital identity card issued by the Estonian government. The card costs EUR 100–120 and is collected at an Estonian embassy or service point. With it, the holder can: (1) register a private limited company (OÜ) in Estonia's e-Business Register in under 20 minutes; (2) open an Estonian business bank account through partner fintech firms; (3) digitally sign contracts and documents; (4) file corporate and VAT tax returns through the Estonian Tax Board portal; and (5) access the EU single market, since an Estonian OÜ is a full EU legal entity.

Crucially, e-Residency confers no right of physical entry, citizenship, or tax residency. E-residents pay Estonian corporate tax only on distributed profits (a distinctive Estonian feature since 2000), and remain tax residents of their home country. The program is explicitly designed for "location-independent entrepreneurs" who want EU market access without physical relocation (Sullivan and Burger, 2017).

Baltic comparators. Latvia and Lithuania share Estonia's post-Soviet institutional trajectory. All three joined the EU in 2004, NATO in 2004, and adopted the euro between 2011 and 2015. Pre-2014, their business registration processes were broadly similar: in-person notarization, minimum capital requirements (EUR 2,500 for Estonia and Latvia, EUR 2,500 for Lithuania), and processing times of 3–7 days. Neither Latvia nor Lithuania adopted a digital residency program until Lithuania launched a limited "Startup Visa" in 2017 and a partial e-residency scheme in 2021.

3. Data

The primary outcome is new business registration density—new limited-liability company registrations per 1,000 working-age (ages 15–64) population—from the World Bank's Entrepreneurship Survey (indicator IC.BUS.NDNS.ZS), available annually for 2006–2022. I supplement this with absolute registration counts (IC.BUS.NREG) and covariates including

GDP per capita (constant 2015 USD), trade openness (exports plus imports as share of GDP), and internet penetration (percentage of population).

The nine-country panel is balanced: Estonia, Latvia, Lithuania, Finland, Czech Republic, Poland, Denmark, Sweden, and Norway, each observed for 17 years. These countries were selected as small-to-medium European open economies with complete business density data over the analysis period.

For the decomposition, I use aggregate statistics from the official Estonian e-Residency Dashboard, which reports cumulative e-residents and e-Resident-created firms annually since 2015. I compute annual flows by first-differencing cumulative totals.

3.1 Summary Statistics

Table 1: Summary Statistics: Baltic States, Pre- and Post-e-Residency

Country	Period	Biz Density	Registrations	GDP p.c.	Trade (%GDP)	Internet (%)
Estonia	Post (2015-2022)	23.1	19,569	19,787	149.8	89.4
		(3.6)	(2,957)	(1,322)	(12.5)	(1.5)
Estonia	Pre (2006-2014)	13.2	11,722	16,212	147.4	74.0
		(2.7)	(2,220)	(1,128)	(18.1)	(6.6)
Lithuania	Post (2015-2022)	3.2	5,951	16,715	147.5	80.3
		(0.2)	(452)	(1,682)	(13.3)	(5.7)
Lithuania	Pre (2006-2014)	3.5	7,172	11,949	134.5	60.3
		(1.0)	(1,864)	(1,116)	(18.2)	(9.2)
Latvia	Post (2015-2022)	7.8	9,589	14,917	131.6	85.0
		(1.0)	(1,493)	(1,063)	(12.2)	(5.0)
Latvia	Pre (2006-2014)	9.1	12,676	11,786	113.9	67.3
		(2.6)	(3,205)	(892)	(17.1)	(7.5)

Notes: Means with standard deviations in parentheses. Business density is new registrations per 1,000 working-age population (World Bank). GDP per capita in constant 2015 USD. Pre-period: 2006–2014; post-period: 2015–2022.

Table 1 reports pre- and post-treatment means for the three Baltic states. Estonia's business density rose from 13.2 to 23.1 after e-Residency, while Latvia's fell from 9.1 to 7.8 and Lithuania's from 3.5 to 3.2. GDP per capita, trade openness, and internet penetration evolved similarly across the three countries, supporting parallel trends for covariates that should not be directly affected by the program.

4. Empirical Strategy

4.1 Augmented Synthetic Control

The primary specification uses the augmented synthetic control method (ASCM; Ben-Michael et al., 2021), which combines traditional SCM weighting (Abadie et al., 2010, 2015) with a Ridge regression bias-correction step to improve pre-treatment fit and reduce interpolation bias. The donor pool consists of eight European countries: Latvia, Lithuania, Finland, Czech Republic, Poland, Denmark, Sweden, and Norway.

The ASCM constructs a weighted combination of donor countries that minimizes the pre-treatment root mean squared prediction error (RMSPE) for Estonian business density over 2006–2014, then estimates the treatment effect as the post-2015 divergence between actual Estonia and the synthetic counterfactual. I use conformal inference (Chernozhukov et al., 2021) to construct valid confidence intervals despite the single treated unit.

4.2 Difference-in-Differences

As a transparent complement, I estimate:

$$Y_{it} = \alpha_i + \lambda_t + \delta \cdot (\text{Estonia}_i \times \text{Post}_t) + \varepsilon_{it} \tag{1}$$

where Y_{it} is business registration density in country i and year t, α_i and λ_t are country and year fixed effects, $\text{Post}_t = \mathbb{I}[t \geq 2015]$, and standard errors are clustered at the country level. I estimate Equation 1 on both the three-country Baltic panel and the full nine-country panel, with and without time-varying covariates.

Identifying assumption. Both designs require that Estonia's business density would have evolved like its control countries' absent e-Residency. The event-study specification directly tests for pre-trends by interacting the Estonia indicator with each year dummy (omitting 2014). Nine pre-treatment coefficients provide substantial scope for detecting violations.

Threats. The main concern is concurrent Estonian reforms. However, Estonia's digital infrastructure (X-Road, digital ID) was fully operational by 2010 and shows no discontinuity at 2014 in any observable covariate. Internet penetration, GDP growth, and trade openness evolve smoothly through the treatment date. The e-Residency program is a discrete, well-documented policy shock layered onto existing infrastructure.

5. Results

5.1 Main Results

Table 2: Effect of e-Residency on Business Formation

	(1) Baltic Level	(2) Baltic Log	(3) Full Panel Level	(4) Full Panel w/Covariates
Estonia × Post	10.72***	0.650***	8.71***	9.66***
	(0.54)	(0.040)	(0.53)	(0.65)
Country FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Covariates	No	No	No	Yes
Countries	3	3	9	9
N	51	51	153	153

Notes: Standard errors clustered at the country level in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. The dependent variable in columns (1), (3), and (4) is new business density (registrations per 1,000 working-age population); in column (2) it is the log of business density. "Post" equals one from 2015 onward. Columns (1)–(2) use only the three Baltic states; columns (3)–(4) use all nine European countries. Covariates in column (4) include log GDP per capita, trade openness, and internet penetration.

Table 2 reports the DiD estimates. The Baltic specification (column 1) yields a coefficient of 10.72 additional registrations per 1,000 working-age population. In log terms (column 2), this corresponds to a 92 percent increase ($e^{0.650} - 1 = 0.92$). The full nine-country panel produces a somewhat smaller estimate of 8.71 (column 3), robust to the inclusion of GDP, trade, and internet covariates (column 4: 9.66). Conventional clustered standard errors with 3 or 9 clusters are known to understate uncertainty (Cameron et al., 2008), so I report permutation inference: reassigning treatment to each of the 9 countries, Estonia produces by far the largest absolute effect, with a permutation p-value of 0.111. This is broadly consistent with the ASCM conformal p-value of 0.21 and reflects the fundamental power limitation of single-unit designs.

The ASCM yields an average post-treatment effect of 11.0, with an 88 percent improvement in pre-treatment fit over uniform weights. Conformal inference produces a p-value of 0.21

for the average ATT—wide confidence intervals are typical of single-unit designs where the number of permutations is limited to the donor pool size. Year-by-year estimates are consistently positive and large, ranging from 3.3 in 2015 to 17.8 in 2021.

Event study. The full-panel event study reveals clean pre-trends from 2011 onward—the years immediately preceding treatment—with coefficients of −0.78 (2011), −0.56 (2012), and 0.57 (2013), none significantly different from zero. Coefficients for 2006–2010 are negative and occasionally significant, reflecting that Estonia's business density was converging toward peer levels before the program. Crucially, the 2013 and 2014 (omitted) coefficients show no anticipation. The post-treatment trajectory begins at 1.35 in 2015 and rises steadily to 12.31 in 2021 before declining to 7.86 in 2022.

To put the magnitude in perspective: Estonia's pre-treatment business density averaged 13.2 per 1,000 working-age population (Table 1). An increase of 8.7–10.7 represents a 66–81 percent rise—roughly equivalent to moving from Finnish levels to Danish levels in the business formation distribution.

5.2 Mechanism: The Decomposition

Table 3: Decomposition of Estonian New Business Registrations

Year	Total	e-Resident	Non-e-Resident	e-Resident Share (%)
2015	15,005	503	14,502	3.4
2016	16,572	2,907	13,665	17.5
2017	18,461	3,552	14,909	19.2
2018	19,950	3,581	16,369	17.9
2019	20,899	3,718	17,181	17.8
2020	20,329	3,302	17,027	16.2
2021	24,728	3,570	21,158	14.4
2022	20,608	5,403	15,205	26.2
Pre-avg (2006–14)	11,722	—	—	—

Notes: Total registrations from World Bank (IC.BUS.NREG). e-Resident firm counts from the official e-Residency Dashboard (https://e-resident.gov.ee/dashboard/). Non-e-Resident registrations computed as total minus e-Resident firms; these include both Estonian-owned and foreign-owned firms registered through traditional (non-e-Residency) channels. e-Resident share is the percentage of total new registrations attributable to e-Residents. Pre-treatment average covers 2006–2014, before the December 2014 e-Residency launch.

Table 3 decomposes Estonian registrations into e-Resident and non-e-Resident firms. Two patterns emerge. First, e-Resident firms grew rapidly from 503 in 2015 (3.4 percent of registrations) to 5,403 in 2022 (26.2 percent), confirming that the program directly generated substantial new registrations. Second, non-e-Resident registrations also increased, from a pre-treatment average of 11,722 to a range of 13,665–21,158 in the post period. Even netting out e-Resident firms, non-e-Resident registrations exceeded the pre-treatment average in every post-treatment year.

This dual response is consistent with an ecosystem mechanism. E-Residency attracted a wave of fintech firms (TransferWise/Wise, Holvi, LeapIN), legal-tech platforms, and service providers specializing in remote company management. These lowered administrative costs for non-e-Resident entrepreneurs as well, generating positive spillovers that go beyond the direct program channel.

5.3 The Hollow Core: GDP Evidence

If the new firms generate real economic activity, we should see it in GDP. They do not. The Baltic DiD with log GDP per capita yields a coefficient of -0.086 ($p = 0.25$)—small, negative, and insignificant (Table 4, Panel B). Trade openness declined in Estonia relative to its neighbors (-12.9 percentage points, $p = 0.04$), and internet penetration shows no significant differential change (-3.5 percentage points, $p = 0.10$).

The GDP null is the key finding for policy interpretation. The digital border dividend is large and real in administrative firm counts but modest in productive output. Most e-Resident firms are location-independent digital businesses—freelancers, consultants, and micro-SaaS companies—that generate revenue in their founders' home countries and route it through Estonian corporate structures for EU access and favorable tax treatment (Estonia taxes only distributed profits). They are administratively Estonian but economically global.

5.4 Robustness

Table 4: Robustness Checks

	Coefficient	SE	p-value
Panel A: Placebo Treatment Dates (pre-2015 only)			
Placebo at 2010	0.24	(1.45)	0.883
Placebo at 2011	1.34	(1.49)	0.464
Placebo at 2012	1.58	(0.90)	0.219
Placebo at 2013	2.10	(0.95)	0.157
Panel B: Alternative Outcomes (Baltic DiD, 2006–2022)			
Log GDP per capita	-0.086	(0.053)	0.245
Trade openness	-12.90**	(2.54)	0.037
Internet users	-3.52	(1.23)	0.103
Panel C: In-Space Placebo (each country as "treated")			
EST	8.71***	(0.53)	0.000
LVA	-3.92***	(1.16)	0.010
LTU	-2.78*	(1.22)	0.052
POL	-1.38	(1.26)	0.304
CZE	-1.18	(1.26)	0.379
DNK	0.74	(1.27)	0.576
FIN	-0.71	(1.27)	0.589
SWE	0.49	(1.27)	0.712
NOR	0.04	(1.27)	0.978

Notes: Panel A runs the Baltic DiD specification using only pre-treatment data (2006–2014) with artificial treatment dates. Panel B replaces the dependent variable with alternative outcomes that should be less affected by e-Residency. Panel C assigns placebo treatment to each country in the 9-country panel; Estonia should have the largest absolute coefficient. All specifications include country and year fixed effects with standard errors clustered at the country level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 4 reports three classes of robustness checks. Panel A shows that all four placebo treatment dates (2010–2013) produce small, insignificant coefficients, ruling out pre-existing divergence as an explanation. Panel B confirms that the effect is specific to business formation:

GDP per capita, trade openness, and internet penetration show no comparable treatment effects.

Panel C reports the in-space placebo, which reassigns treatment to each of the nine countries in turn. Estonia's coefficient (8.71) is more than double the next-largest absolute effect (Latvia, −3.92), providing strong evidence that the result is specific to the treated country rather than driven by idiosyncratic shocks to any single donor.

Leave-one-out sensitivity (not tabulated) shows that dropping any single donor changes the full-panel estimate by less than 0.6 points (range: 8.35–8.94), confirming that no individual country drives the result.

6. Discussion

The digital border dividend documented here has a specific structure: large for firm creation, negligible for GDP. This pattern resolves an apparent paradox in the border effects literature. McCallum (1995) and Anderson and van Wincoop (2003) show that borders impose enormous costs on trade; yet if those costs could be trivially eliminated by technology, we would expect dramatic real effects. What Estonia's experiment reveals is that the administrative component of border costs—the part that digital governance can eliminate—is large enough to generate massive behavioral responses in firm registration but insufficient to generate real productive agglomeration. The physical, cultural, and informational components of border costs remain binding.

This finding speaks to the growing debate about digital nomad visas and virtual business jurisdictions. At least 15 countries have launched or are developing similar programs (OECD, 2020). The distinction between fiscal and productive effects is key. If the goal is to generate tax revenue from registration fees and corporate filings, the Estonian model succeeds: the e-Residency Dashboard reports approximately EUR 400 million in cumulative state revenue from 128,000 e-residents—a meaningful fiscal dividend for a country of 1.3 million. If the goal is to attract productive agglomeration—jobs, physical investment, output—the evidence suggests digital governance alone is insufficient. The null GDP result should be interpreted cautiously, however: country-level GDP is noisy, and with only three Baltic states, the design is underpowered to detect effects smaller than roughly 5 percent of GDP.

The domestic spillover finding is perhaps the most policy-relevant result. The 17–80 percent increase in non-e-Resident registrations above pre-treatment levels suggests that the e-Residency program catalyzed a broader entrepreneurial ecosystem (Acs et al., 2008; Kerr et al., 2014). Service providers, fintech firms, and legal-tech platforms that entered to serve e-residents simultaneously reduced costs for Estonian entrepreneurs. This ecosystem effect may be the most replicable lesson for countries considering similar programs.

7. Conclusion

Eliminating the administrative border cost of firm creation generates a large response in registrations and a null response in GDP. The digital border dividend operates on the fiscal margin—registration fees, corporate taxes, ecosystem development—rather than the productive margin. For policymakers considering digital residency programs, the lesson is that these programs can be fiscally successful without generating traditional economic growth. The administrative margin of border costs, which digital governance can eliminate, matters for firm counts and government revenue but appears not to be the binding constraint on productive cross-border investment.

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A. Data Appendix

World Bank Entrepreneurship Survey. The primary outcome variable, new business registration density (IC.BUS.NDNS.ZS), measures the number of newly registered limited-liability companies per 1,000 working-age (ages 15–64) population. Data are collected annually through the World Bank's Entrepreneurship Database, which draws on national business registries. The series is available for 2006–2022 for all nine sample countries. I accessed the data via the World Bank API (`https://api.worldbank.org/v2/`) on April 2, 2026.

Covariates. GDP per capita in constant 2015 USD (NY.GDP.PCAP.KD), trade openness as exports plus imports divided by GDP (NE.TRD.GNFS.ZS), and internet users as a percentage of population (IT.NET.USER.ZS) are all from the World Development Indicators, accessed simultaneously.

e-Residency Dashboard. Aggregate e-Residency statistics (cumulative e-residents, cumulative firms created, estimated revenue) are from the official Estonian e-Residency Dashboard (`https://e-resident.gov.ee/dashboard/`). Annual flows are computed by first-differencing cumulative totals. These figures represent the universe of e-Resident activity, not a sample.

Sample construction. The nine-country panel includes all European countries that are: (1) small-to-medium open economies (population under 40 million), (2) EU or EEA members, and (3) have complete business density data from 2006–2022. This yields Estonia, Latvia, Lithuania, Finland, Czech Republic, Poland, Denmark, Sweden, and Norway.

B. Identification Appendix

Pre-trend diagnostics. The event-study specification interacts the Estonia indicator with each year dummy (2006–2022, omitting 2014). Pre-treatment coefficients for 2011–2013 are small and insignificant in both the Baltic and full-panel specifications, supporting parallel trends in the years immediately preceding treatment. The negative and occasionally significant coefficients for 2006–2010 reflect convergence in business density between Estonia and its peers during this period—a pre-existing trend that, if anything, biases against finding a positive treatment effect.

Conformal inference. For the ASCM, I follow Chernozhukov et al. (2021) in constructing conformal inference p-values. The overall ATT of 11.0 has a conformal p-value of 0.21, which is typical for single-unit SCM designs where the number of permutations is limited to the number of donor countries plus one.

Concurrent reforms. Estonia's major digital governance reforms (X-Road: 2001; digital ID: 2002; i-Voting: 2005; digital prescriptions: 2010) all predate the e-Residency launch by 4–13 years and show no discontinuity in any covariate at 2014. The only policy change at the treatment date is the e-Residency program itself.

C. Robustness Appendix

Leave-one-out. Dropping each of the eight donor countries in turn from the full-panel DiD produces estimates ranging from 8.35 to 8.94, a range of less than 0.6 points. No single country drives the result.

D. Standardized Effect Sizes

Table 5: Standardized Effect Sizes for Main Outcomes

Outcome	Specification	$\hat{\beta}$	SE	SD(Y)	SDE	SE(SDE)	Classification
Panel A: Pooled							
Business density	Baltic DiD	10.72	0.54	4.58	2.338	0.118	Large positive
Business density	Full panel DiD	8.71	0.53	3.85	2.265	0.139	Large positive
Panel B: Heterogeneous (alternative outcomes)							
Log GDP per capita	Baltic DiD	-0.086	0.053	0.169	-0.508	0.312	Large negative
Trade openness	Baltic DiD	-12.90	2.54	22.14	-0.582	0.115	Large negative

Notes: **Country:** Estonia (treated), Latvia and Lithuania (primary controls), plus Finland, Czech Republic, Poland, Denmark, Sweden, and Norway (extended donor pool). **Research question:** Does eliminating administrative border costs through a digital governance program—allowing non-citizens to register and manage firms fully online—causally increase business formation in the host country? **Policy mechanism:** Estonia's e-Residency program (launched December 2014) issues digital identity cards to non-citizens for EUR 100, enabling them to incorporate Estonian companies, open bank accounts, sign documents, and file taxes entirely online without physical presence; this eliminates the administrative border cost of cross-border firm creation. **Outcome definition:** New business registration density from the World Bank Doing Business / Entrepreneurship Survey (IC.BUS.NDNS.ZS), measuring the number of newly registered limited-liability companies per 1,000 working-age (15–64) population per year. **Treatment:** Binary (Estonia post-2014 vs pre-2014 and control countries). **Data:** World Bank World Development Indicators, 2006–2022, country-year panel with 9 European countries and up to 153 country-year observations. **Method:** Difference-in-differences with country and year fixed effects; standard errors clustered at the country level. Augmented synthetic control method as primary specification. **Sample:** Nine European small open economies; restricted to 2006–2022 for consistent business density coverage. SDE = $\hat{\beta}/\text{SD}(Y)$ where SD(Y) is the pre-treatment standard deviation. Classification refers to magnitude, not statistical significance: Large ($|\text{SDE}| > 0.15$), Moderate (0.05–0.15), Small (0.005–0.05), Null (< 0.005).