



FORMAL ENTREPRENEURIAL ENTRY AFTER THE COVID-19 SHOCK: CROSS-ECONOMY EVIDENCE ON RESISTANCE, RECOVERY AND PRE-PANDEMIC MOMENTUM, 2006-2024

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<https://doi.org/10.70118/aijbfd.02012026015>

KEYWORDS

formal
entrepreneurship; new
business density;
resilience; business
registration; COVID-
19; panel trends

ABSTRACT

This paper asks a straightforward question: after the COVID-19 disruption, did formal entrepreneurial entry recover its earlier momentum, or did registration activity merely return to familiar levels? The evidence comes from the eighth edition of the World Bank Entrepreneurship Database for 2006-2024. We remove the 29 offshore financial-centre labels identified in the source workbook, leaving 2,493 economy-year observations for 158 economies. New business density is measured as newly registered limited-liability companies per 1,000 people aged 15-64. For every eligible economy, a log-linear trend is fitted to at least seven observations ending in 2019; eligibility also requires three or more observations between 2020 and 2024. The final trend sample covers 119 economies and 572 post-period observations. Economies carry equal weight, while 95% uncertainty intervals are obtained from 4,999 economy-level bootstrap resamples. Entry density fell 10.8% below its fitted path in 2020 [-15.8%, -5.8%]. The gap was no longer distinguishable from zero in 2021, and the estimate for 2024 was -4.8% [-15.2%, 7.2%]. Of the 115 economies observed in 2019, 2020 and 2024, 72.2% matched or exceeded their 2019 density by the final year. In 2024, low-baseline economies were 8.2% above trend [-16.5%, 41.1%], while high-baseline economies were 15.5% below trend [-28.0%, -2.1%]. Yet the direct high-minus-low difference was -23.7 percentage points [-59.4, 4.4], which is too imprecise to establish separate group paths. The 2019 placebo lies close to zero, and the observable attrition checks show no systematic differences. Alternative trend windows reproduce the initial disruption but not the same later gap. Formal entry, in short, recovered quickly on average. Evidence that it regained or surpassed its previous momentum is much weaker. The study concerns registration activity and does not measure survival, employment, productivity or the causal effect of the pandemic

ARTICLE HISTORY

Received: 13/07/2026
Revised form: 30/08/2026
Accepted: 10/09/2026
Available online: 20/09/2026

1. Introduction

COVID-19 did more than interrupt ordinary commerce. It shifted where demand arose, how transactions were completed and which ventures could enter the market. Restrictions held back conventional business formation, while online retail, delivery, digital services and other low-contact activities found new room to expand. Early research consequently reported two developments that might otherwise appear contradictory: acute distress among small firms and sizeable increases in new registrations in some advanced economies (Bahaj et al., 2024; Belitski et al., 2022). Counting registrations before and after the shock is therefore only a starting point. The harder question is whether entry returned to the course previously followed by each economy and whether that experience was broadly shared.

A formal entry is the creation of a legally distinct organisation that can enter contracts, borrow, employ workers and hold assets. This definition leaves out entrepreneurial intention, much self-employment and the large informal economy. Its advantage is a reasonably consistent administrative event that can be compared across countries. Institutions still matter because they shape the point at which entrepreneurial activity becomes a registered firm (Estrin et al., 2024). Under the World Bank methodology, new business density is the number of newly registered limited-liability companies per 1,000 people aged 15-64, derived mainly from national registry records (World Bank, 2026a, 2026b).

A recovery in incorporation is not necessarily a recovery in productive enterprise. During the pandemic, British entry was concentrated in sectors able to operate under the restrictions; these cohorts were less likely to advertise jobs

and more likely to dissolve (Bahaj et al., 2024). Cross-country averages can also mislead. Their movement reflects changes within economies, but also shifts in reporting coverage, a few unusually high-density observations and very different historical trends. An economy may therefore stand above its 2019 density and still lag behind the course implied by its earlier growth.

The analysis therefore keeps two benchmarks separate. The first asks whether an economy regained its observed 2019 level of formal entry. The second asks whether it returned to the trajectory implied by its own pre-pandemic record. This distinction addresses a practical research problem. A rise in the number of registrations after a crisis can be described as recovery even when entry remains below the path that prevailed before the shock. Cross-economy evidence is also vulnerable to changing reporting coverage, extreme observations and differences in national registration histories. Unless these matters are separated, a rebound in administrative counts may be mistaken for restoration of entrepreneurial momentum.

Accordingly, this study has three objectives: to determine the extent to which formal entrepreneurial entry departed from economy-specific pre-2020 trends in 2020; to examine whether the departure narrowed during 2021-2024 and whether economies recovered their 2019 level of entry; and to assess whether the post-shock pattern differed across economies with low, middle and high pre-pandemic entry density. The analysis applies the offshore exclusion already marked in the source workbook, gives each economy equal weight and resamples whole economy histories when constructing uncertainty intervals. Alternative starting dates and a strictly balanced panel provide further checks. Since there is no

unaffected comparison group, the results are treated as descriptive departures from historical benchmarks rather than causal estimates.

2. Literature and analytical framework

2.1 Crisis exposure and formal entry

Firm formation normally weakens when economic activity contracts. Demand softens, finance becomes harder to obtain and uncertainty makes postponement valuable. COVID-19 added temporary registry closures, mobility controls and broken supply relationships. Young ventures were especially exposed because many had little cash, short borrowing histories and a heavy dependence on outside networks. Reviews by the OECD document these vulnerabilities, as well as the exceptional use of wage support, liquidity assistance and credit guarantees during the crisis (OECD, 2021, 2023).

Even so, the entry response did not resemble an ordinary recession everywhere. Formation rebounded rapidly in several countries. United States applications rose sharply, led in part by non-store retail and other activities suited to remote exchange (Haltiwanger, 2022). European work raised a different concern: the absence of high-growth start-ups during the crisis could translate into lasting employment losses (Benedetti-Fasil et al., 2022). Registrations may rise through opportunity, necessity or easier procedures. Incorporation nevertheless captures a narrower and more formal type of entry than self-employment.

The broader crisis literature also shows why registration figures require cautious interpretation. Kuckertz and Brändle (2022) describe the early entrepreneurship response to COVID-19 as a process of disruption and reconstruction in which resource constraints, adaptation and policy support operated together.

Belitski et al. (2022) similarly report that the pandemic affected entrepreneurial activity through several channels rather than a single uniform mechanism. Zahra (2021) argues that changes in markets, technology and international business conditions altered both the opportunities available to entrepreneurs and the constraints under which they operated. Taken together, this work suggests that a post-shock increase in formal entry may reflect adaptation, necessity, procedural change or newly enabled opportunities. It should not, by itself, be read as evidence that the entrepreneurial system has become stronger.

2.2 Resistance, recovery and renewal

Resilience is treated here as a sequence rather than a single outcome. Resistance is the size of the initial break from the historical path. Recovery occurs as that break closes. Renewal would require activity to move persistently beyond the old trajectory. The distinctions matter. A country can register more firms than it did in 2019 but still trail a previously steep upward trend. Where the earlier trend was falling, the same two comparisons may point in opposite directions.

The level of entry before the pandemic is not a clean measure of institutional strength. It also reflects the legal forms in common use, registry coverage, income, demography and the established place of incorporation in business life. For that reason, the terciles serve only to show how the results vary across the distribution. They are not rankings of strong and weak ecosystems. Likewise, a significant estimate for one group and an insignificant estimate for another does not establish a group difference. The difference itself has to be estimated.

External-enablement theory offers a useful framework for interpreting crisis-period

entrepreneurship. Davidsson et al. (2021) propose that an external change can alter the conditions for entrepreneurial action by enabling some activities while constraining others. The COVID-19 shock fits this logic because mobility restrictions, altered demand and accelerated use of digital channels did not affect all forms of entry in the same way. Digital tools could lower some barriers to market access and organisation, but their usefulness depended on access, capability and the nature of the activity concerned (Santos et al., 2023). The theory therefore does not imply a uniform positive response. It permits an initial interruption followed by recovery, with the speed and extent of that recovery varying across economies.

In this study the theory is used as an interpretive frame rather than as a causal model. Resistance refers to the immediate departure from an economy's established path, recovery to the closing of that departure, and renewal to a sustained movement at or above the earlier trajectory. These stages are analytically distinct. A country may recover its 2019 registration level without recovering the growth momentum that preceded the pandemic. Registry totals also cannot identify whether the observed response arose from digitalisation, public support, necessity entrepreneurship or other enabling conditions. The empirical analysis therefore tests the pattern implied by the framework while avoiding claims about the mechanism that produced it.

2.3 Empirical gap, research questions and objectives

Existing studies establish that business formation was disrupted and, in some countries, rebounded rapidly after the first phase of COVID-19. Much of that evidence, however, is country-specific, concentrates on raw applications or registrations, or compares post-

pandemic values with a single pre-pandemic year. This leaves a narrower empirical gap: cross-economy evidence is limited on whether formal entry recovered relative to each economy's own pre-shock momentum, whether conclusions change when reporting composition is held more carefully in view, and whether apparent differences between low- and high-entry economies survive a direct statistical comparison. The present study addresses that gap with economy-specific historical trends, matched level comparisons, equal-economy weighting, bootstrap uncertainty intervals and sensitivity tests.

Three questions follow from this gap. Did formal entry move away from each economy's pre-2020 path in 2020? Did the average gap close during 2021-2024? And did the pattern vary among economies with low, middle and high pre-pandemic density? Correspondingly, the objectives are to estimate the initial trend departure, assess the subsequent recovery in both level and momentum, and examine descriptive heterogeneity across the three baseline groups. The last objective is deliberately descriptive. Tercile membership is not a treatment, and variation in point estimates is not sufficient evidence of different responses unless the group difference itself is estimated.

3. Data and methods

3.1 Source, outcome and cleaning

We use the firms worksheet in the eighth-edition World Bank Entrepreneurship Database. It contains 3,591 source rows. Density is calculated from new limited-liability-company registrations and the population aged 15-64. The cleaning process retains positive reported values, standardises economy labels and removes every one of the 29 asterisked offshore financial-centre labels. Regional totals are not counted as

economies. These decisions leave an unbalanced panel of 2,493 observations for 158 economies.

Coverage is 142 economies in 2019, 143 in 2020 and 116 in 2024.

Table 1. Study design and reproducible analytical samples

Component	Rule	Coverage
Source firms worksheet	All administrative firm records	3,591 rows; 190 raw labels
Density panel	Positive entry density; 29 starred offshore labels excluded	2,493 observations; 158 economies
Primary trend sample	≥ 7 observations through 2019; ≥ 3 observations in 2020-2024	119 economies; 572 post-period observations
Direct recovery cohort	Observed in 2019, 2020 and 2024	115 economies

Note. The source page notes partial national coverage for several economies, including Canada and China; registry comparability is therefore administrative rather than perfectly national in every case.

3.2 Estimation

The usual event-study arrangement is unavailable in this setting. Every economy reaches event time zero in 2020, so event-time indicators coincide with calendar-year effects. Instead, we estimate $\ln(\text{Density}_{it}) = \alpha_i + \beta_i \text{Year}_t + \varepsilon_{it}$ separately for each eligible economy using the observations available through 2019. That fitted line is projected from 2020 to 2024. The economy-year departure is $d_{it} = \ln(\text{Density}_{it}) - \ln(\text{Predicted Density}_{it})$.

Within each post-2020 year, the departures are averaged across reporting economies and expressed as percentages using $100[\exp(\text{mean } d_t) - 1]$. Each economy has one vote in that average. The percentile 95% intervals come from 4,999 draws of complete economies with replacement, using seed 20260729. Sampling an entire economy history retains the dependence among its annual observations. The intervals represent variation in the cross-economy estimate. They do not allow for later registry revisions or uncertainty around every economy's fitted trend.

Pre-pandemic position is measured by average density in 2017-2019, divided into terciles among the eligible economies. Matched comparisons then relate later observations

directly to 2019. A common three-year cohort is used to calculate the proportion that reached or exceeded its 2019 density by 2024. Sensitivity checks begin the historical trend in 2010 and 2013 and, separately, retain only economies reporting in every year from 2017 to 2024. Because the implied counterfactual changes across these exercises, some variation in the estimates is expected.

The diagnostics address calibration, missingness and group comparison. First, trends ending in 2018 are used to predict 2019 as a placebo. Second, economies reporting in 2024 are compared with non-reporters on their 2019 density and fitted pre-pandemic slope; reporting rates are also compared across terciles with a chi-square test. Third, the planned 2024 high-minus-low contrast is bootstrapped by resampling separately within the two groups. It is this direct contrast, rather than the significance of two separate estimates, that bears on whether the groups differ.

3.3 Scope of inference

These calculations describe departures from projected paths. They do not isolate a causal COVID-19 effect. All economies were exposed, and later observations also reflect inflation, interest-rate tightening, energy prices, conflict and changes in registry practice. A straight-line

projection becomes increasingly contestable as it moves away from 2019. Equal weighting and the balanced sample lessen some composition

concerns, although neither can correct selection driven by entrepreneurial conditions that the database does not record.

4. Results

4.1 Observed density and direct recovery

Table 2. New business density, 2019-2024

Year	Economies	Mean	Median	SD
2019	142	3.48	1.87	4.42
2020	143	3.31	1.78	4.30
2021	130	4.08	1.97	5.58
2022	133	4.01	2.22	5.08
2023	122	4.18	2.26	5.06
2024	116	4.30	2.19	5.22

Note. Unweighted annual statistics after excluding the 29 offshore labels marked in the source workbook. Changing reporting coverage means adjacent annual values are not a matched-sample estimate.

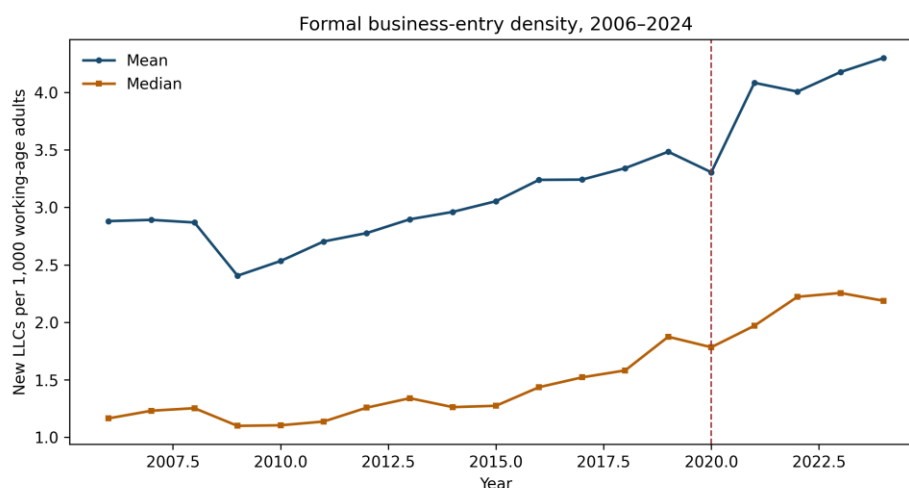


Figure 1. Formal business-entry density, 2006-2024

Median density moved from 1.87 registrations per 1,000 working-age people in 2019 to 1.78 in 2020, then rose to 2.19 in 2024. The mean sits well above the median throughout,

showing the influence of a long right tail. This feature favours a logarithmic specification and makes clear why the arithmetic mean should not be taken as the experience of a typical economy.

Table 3. Matched changes relative to 2019

Comparison	Economies	Mean change %	Median change %	Declining %
2020 versus 2019	142	-3.8	-4.2	62.7
2021 versus 2019	128	19.9	13.5	29.7
2024 versus 2019	115	42.6	18.1	27.8

Note. Each row uses economies observed in both endpoint years. The three-endpoint cohort contains 115 economies; 72.2% had 2024 density at or above 2019.

For economies observed at both endpoints, the median was 4.2% below the 2019 value in 2020. It stood 13.5% above that value in 2021 and 18.1% above it in 2024. The stricter cohort, observed in 2019, 2020 and 2024, contains 115

economies. Of these, 72.2% had reached or passed their 2019 density by 2024. Most of the cohort therefore recovered in levels. Whether they recovered their former momentum is a separate matter.

4.2 Trend-adjusted recovery

Table 4. Deviations from economy-specific pre-2020 paths

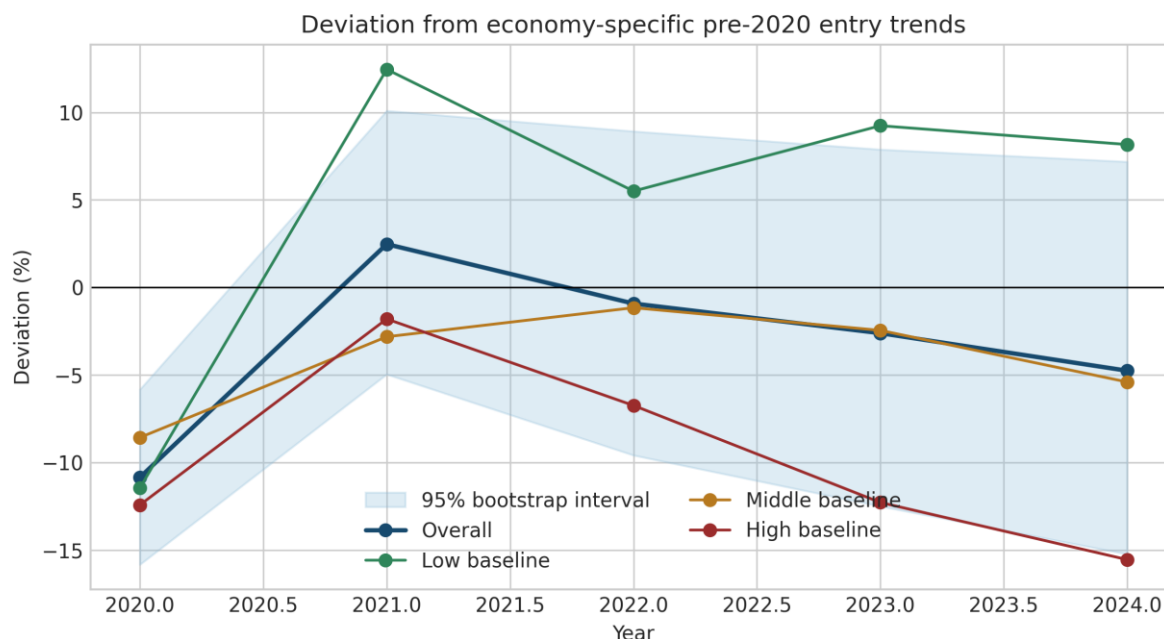
Year	Economies	Deviation %	95% bootstrap interval
2020	119	-10.8	[-15.8, -5.8]
2021	118	2.5	[-5.0, 10.1]
2022	118	-0.9	[-9.6, 8.9]
2023	111	-2.6	[-12.5, 7.9]
2024	106	-4.8	[-15.2, 7.2]

Note. Economy-specific log trends use at least seven observations through 2019 and at least three post-period observations. Intervals resample complete economies 4,999 times.

The clearest result is the break in 2020. Density was 10.8% below the fitted path, and the entire interval lies below zero. The point estimate then shifted to 2.5% in 2021, followed by -0.9%, -2.6% and -4.8% from 2022 to 2024. All four intervals after 2020 contain zero. Thus the initial

loss was followed by a return, on average, to values consistent with the range of projected paths. The figures do not support a general claim that formal entry moved into a new period of above-trend growth.

Figure 2. Trend-adjusted formal-entry recovery overall and by baseline tercile



4.3 Heterogeneity

Table 5. Trend deviations by baseline entry-density group (%)

Year	Low baseline	Middle baseline	High baseline
2020	-11.5	-8.6	-12.4
2021	12.5	-2.8	-1.8
2022	5.5	-1.2	-6.7
2023	9.2	-2.5	-12.3
2024	8.2	-5.4	-15.5

Note. Groups are terciles of 2017-2019 mean density. In 2024 the intervals were [-16.5, 41.1], [-21.3, 12.2] and [-28.0, -2.1], respectively. They describe each group and are not formal pairwise contrasts.

All three baseline groups recorded a negative departure in 2020. Their point estimates separated in later years, but the intervals remained broad. In 2024 the low-baseline group was 8.2% above trend and the middle group was 5.4% below it; neither estimate differs clearly from zero. High-baseline economies were 15.5% below trend, with an interval that excludes zero. This establishes a shortfall within that group. It does not establish catch-up, convergence or systematic differences between every pair of groups.

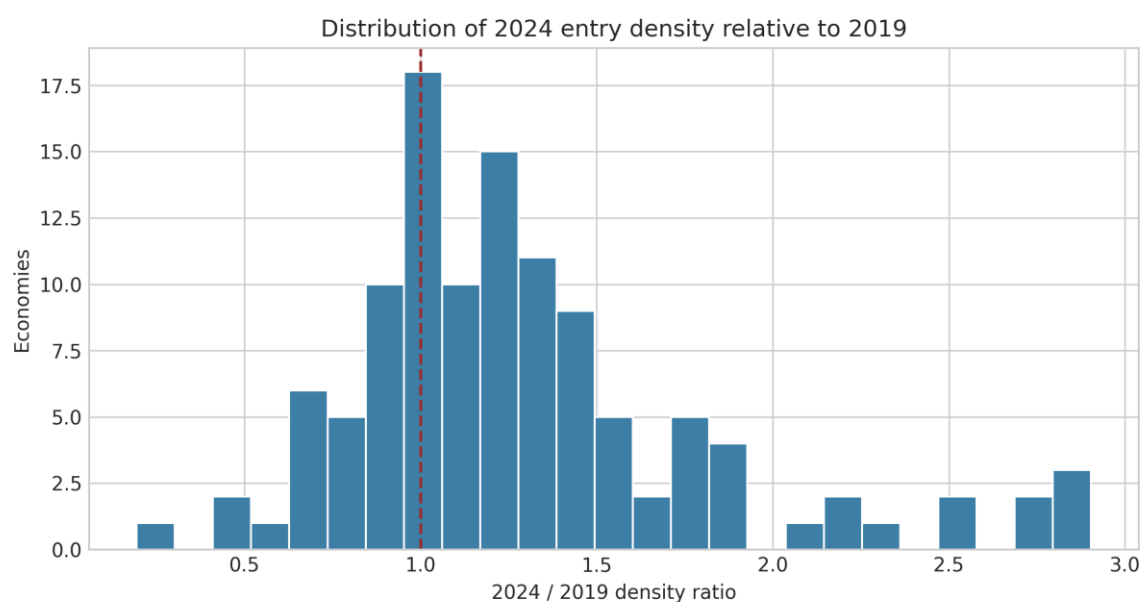


Figure 3. Distribution of observed 2024 entry density relative to 2019

4.4 Sensitivity

Table 6. Sensitivity of trend-adjusted deviations (%)

Specification	N	2020	2021	2022	2023	2024
Balanced 2017-2024	105	-10.5	2.2	-1.4	-2.9	-4.7
Pre-period 2010-2019	119	-12.0	0.8	-2.8	-5.0	-7.0
Pre-period 2013-2019	123	-12.0	0.5	-3.5	-5.0	-7.8
Primary	119	-10.8	2.5	-0.9	-2.6	-4.8

Note. Sensitivity values are equal-economy, back-transformed mean log deviations. The strict balanced panel contains economies observed in every year from 2017 to 2024.

The estimated 2020 contraction changes little across the alternative specifications, ranging from 10.5% to 12.0%. Later results are more sensitive to the chosen history. A trend beginning in 2010 gives a 2024 gap of -7.0%; beginning in 2013 gives -7.8%. Restricting the analysis to the

balanced panel produces -4.7%, compared with -4.8% in the main estimate. The first-year interruption is therefore stable. Claims about a lasting global loss of momentum depend much more heavily on the counterfactual window.

4.5 Calibration, attrition and between-group contrast

Table 7. Second-round diagnostic tests

Diagnostic	N	Estimate	95% interval / p
2019 placebo trend gap	119	1.6%	[-4.5%, 7.8%]
2024 high-minus-low trend gap	70	-23.7 pp	[-59.4, 4.4]; p = .105
2019 density: 2024 reporters vs non-reporters	115 / 27	1.820 vs 2.156	Mann-Whitney p = .467
Pre-2020 slope: reporters vs non-reporters	106 / 13	0.033 vs 0.022	Mann-Whitney p = .456
2024 reporting across baseline terciles	119	$\chi^2 = 0.623$	p = .732

Note. The placebo uses observations through 2018 to predict 2019. Reporter comparisons use medians. The group contrast resamples economies independently within the high- and low-baseline groups.

The placebo estimate is close to zero and its interval crosses zero, suggesting that the trend model is reasonably calibrated one year ahead. The observable attrition checks are also uneventful: reporters and non-reporters do not differ in baseline density or pre-pandemic slope, and reporting in 2024 does not vary by tercile. Unobserved differences in registry quality may still matter. The high-minus-low contrast provides the decisive qualification. Because its interval includes zero, the within-group shortfall among high-baseline economies cannot be converted into a secure claim that their path differed from that of low-baseline economies.

5. Discussion

5.1 What recovered?

What occurred in 2020 was a broad interruption, not an identical collapse in every economy. The shortfall is large enough to matter, estimated with reasonable precision and visible in each baseline group. This result is consistent with the crisis literature that records severe constraints on young and small firms,

interruptions to ordinary business activity and extensive policy responses during the first phase of the pandemic (OECD, 2021; Belitski et al., 2022; Kuckertz & Brändle, 2022). Registry closures, mobility controls, uncertain finance and delayed incorporation all fit the timing, but the present data do not permit their individual contributions to be separated.

Formal entry also returned surprisingly quickly. By 2021, the average trend-adjusted gap could no longer be distinguished from zero, while matched median density was already 13.5% above its 2019 level. The result accords with Haltiwanger's (2022) evidence of a rapid rise in United States business applications and with the wider finding that the pandemic created new openings in activities suited to remote exchange. External-enablement theory provides one interpretation: a disruption can close established routes to market while creating others through changes in technology and demand (Davidsson et al., 2021). The finding is compatible with that account, but it does not identify digitalisation, policy support or any other mechanism as the cause.

The rebound is nevertheless less clear when judged against historical momentum. Almost three quarters of the matched cohort exceeded their 2019 level by 2024, yet the aggregate trend-adjusted estimate remained negative and imprecise. The high-baseline group fell below its projected path, while the low-baseline estimate was positive but too uncertain to establish renewal; the direct difference between the groups also included zero. This distinction between level recovery and momentum is important in light of Bahaj et al. (2024), who show that a surge in registrations can coexist with weaker hiring and higher dissolution among new cohorts. It also accords with Benedetti-Fasil et al. (2022), whose work draws attention to the longer-run employment consequences of missing or weaker high-growth start-ups. Registrations may therefore recover without demonstrating that the new firms are durable or that the entrepreneurial system has regained its former trajectory.

5.2 Contribution

The paper's main contribution lies in the use of two distinct standards of recovery. The first is historical in levels: did an economy regain what it recorded in 2019? The second is historical in momentum: did it regain the course suggested by its earlier observations? Neither answers whether the new ventures were productive or durable. Keeping the standards apart avoids turning an administrative rebound into a broader claim about the health of an entrepreneurial ecosystem.

5.3 Recommendations

The findings support several practical recommendations. First, business registries should treat administrative continuity as part of crisis preparedness. Online filing should remain dependable when physical access is restricted, remote identity checks should be workable, processing times should be published and registry status categories should be defined

consistently. Second, registration records should, where the law permits, be linked to survival, payroll, tax and employment information. Such linkage would allow policy makers to distinguish a rise in legal incorporation from the subsequent creation of active and durable firms.

Third, policy assessment should avoid relying on a single registration ranking. A low-density economy may perform above its own historical trend while still recording little formal entry, whereas a high-density economy may fall below an extrapolated path after a period of exceptional earlier growth. Absolute density, change relative to 2019, economy-specific momentum and data coverage should therefore be considered together. Finally, measures that reduce the cost of formal entry should be accompanied by attention to customers, working capital, management capability and workable restructuring arrangements, since the registration event alone does not establish the quality or persistence of entrepreneurial activity.

6. Limitations and future research

The evidence has clear boundaries. Informal firms, sole proprietorships and some other legal forms lie outside the outcome. Annual totals contain no information on sector, founder characteristics, survival, jobs or productivity, and coverage is incomplete in a number of economies. Reporting becomes thinner after 2022 and may be selective. Tests using observed density, fitted slopes and tercile membership cannot detect selection associated with unmeasured registry quality. Linear trends are convenient approximations, and their credibility weakens as the projection horizon lengthens. Terciles may also conceal institutional differences within each group. The bootstrap reflects cross-economy variation, but not registry revisions or the uncertainty attached to every

fitted national path. Most importantly, common exposure to the pandemic and the arrival of other global shocks rule out causal attribution.

A stronger research design would connect business births with later survival, payroll, tax and employment records. Ownership by gender and delays in administrative reporting also warrant direct study. Where digital-registry reforms were introduced at different times, their sequencing may support more credible comparisons. Researchers should archive the exact database edition, cleaning rules and excluded labels, because revisions to registry series can alter the historical record.

7. Conclusion

Formal entrepreneurial entry was plainly disrupted in 2020. With the source workbook's offshore cases removed, density averaged 10.8% below the paths fitted from each economy's pre-pandemic experience. The average gap then narrowed quickly. By 2024, 72.2% of the 115 economies in the matched cohort had returned to or exceeded their 2019 density. High-baseline economies remained below fitted momentum, although the direct comparison with low-baseline economies was too imprecise to establish different recovery paths. Changing the trend window leaves the initial contraction intact but alters the later estimate. The central conclusion is therefore narrower than a simple account of post-pandemic growth: formal registration recovered in levels across much of the sample, whereas restoration of pre-pandemic momentum is less certain. This distinction answers the research problem that motivated the study and cautions against treating a rebound in startup births as evidence that the newly registered firms survived, created employment, raised productivity or strengthened entrepreneurial ecosystems.

Declarations

Funding: This research received no specific grant from any funding agency in the public, commercial or not-for-profit sectors.

Conflict of interest: The authors declare no conflict of interest.

Data and code availability: The official eighth-edition World Bank workbook is publicly available from the Entrepreneurship Database at <https://www.worldbank.org/en/programs/entrepreneurship>. The study-specific archive containing the source workbook, portable scripts, processed panel, model outputs, diagnostic files, figures, README, licences and checksums is deposited on this permanent Zenodo DOI: <https://doi.org/10.5281/zenodo.21761380>.

Ethics: The study uses aggregate economy-year administrative statistics and contains no personal data.

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Appendix A. Reproducibility decisions

Table A1. Exact analytical decisions

Item	Decision
Source	EntrepreneurshipDatabase 8th Edition.xlsx; Firms data sheet
Outcome	New LLCs per 1,000 people aged 15-64
Exclusion	All 29 economy labels marked with an asterisk in the source workbook
Eligibility	At least 7 positive observations through 2019 and at least 3 in 2020-2024
Estimator	Economy-specific OLS log trend; equal-economy annual mean; exponential back-transformation
Inference	4,999 economy-level bootstrap resamples; seed 20260729
Sensitivity	2010 and 2013 start years; strict 2017-2024 reporting panel
Diagnostics	2019 placebo; density and slope attrition tests; reporting-by-tercile test; high-minus-low contrast
Boundary	Descriptive deviations from projected paths; no causal pandemic effect

