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ARE ADVANCED ECONOMIES BECOMING MORE ENTREPRENEURIAL? A LONGITUDINAL ANALYSIS OF BUSINESS ENTRY DYNAMICS

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Abstract

This study investigates whether advanced economies are becoming more entrepreneurial by analyzing business entry dynamics over the past two decades. Using a longitudinal approach, the research combines four quantitative methods Linear Trend, Polynomial Trend, Hodrick–Prescott (HP) Filter, and Structural Break (Chow) Tests alongside K-Means clustering to examine trends, structural shifts, cyclical volatility, and cross-country heterogeneity in firm formation. The Linear Trend model reveals a statistically significant long-term upward trajectory in business entries, while the Polynomial Trend model indicates a deceleration in growth, highlighting diminishing marginal increases. The Chow Test identifies a significant structural break in 2021-Q1, reflecting a post-pandemic rebound in entrepreneurial activity. HP Filter analysis confirms persistent short-term cyclical fluctuations, notably during the COVID-19 shock and subsequent recovery. K-Means clustering uncovers marked disparities among countries: the United States, United Kingdom, and Germany form a high-entry cluster, whereas most other advanced economies fall into low-entry clusters, emphasizing the role of structural, institutional, and ecosystem factors in shaping entrepreneurship. The study concludes that while advanced economies remain entrepreneurial, growth in new business formation is slowing and unevenly distributed. Policy recommendations include lowering entry barriers, supporting start-ups, promoting knowledge-intensive entrepreneurship, and implementing cluster-specific strategies to sustain long-term entrepreneurial dynamism.

Keywords: Business Entry, Advanced Economies, Entrepreneurship, Structural Break, Cyclical Volatility, K-Means Clustering

1. Introduction

Entrepreneurship is widely acknowledged as a powerful engine of economic growth, innovation, and job creation. In particular, new firm births and business entries contribute disproportionately to employment and the diffusion of novel ideas, making entry dynamics a key indicator of economic dynamism (OECD, 2023). However, despite this centrality, many advanced economies have recently exhibited worrying declines in business dynamism, raising the question: are these economies becoming less entrepreneurial?

Over the past two decades, many high-income OECD countries have experienced persistent reductions in firm entry rates, lower job reallocation, and slower churn in their business populations (Calvino, Criscuolo, & Verlhac, 2020). This decline is not purely cyclical, but appears to reflect more structural shifts. According to OECD evidence, the drop in dynamism is associated with changes in market structure, increased concentration, and growing heterogeneity among firms (Calvino et al., 2020). Such trends may undermine the creative destruction process that young firms typically drive, thereby weakening long-term productivity growth (OECD, 2023).

The slowdown in entry has profound implications. While young firms (including start-ups) represent only a modest share of total employment, they generate a disproportionately large fraction of new jobs (OECD, 2023). Therefore, a reduction in entry rates could dampen job creation, reduce competitive pressure on incumbents, and limit the diffusion of innovation (OECD, 2023). Moreover, declining business dynamism may exacerbate economic concentration, where a few large firms dominate, reducing opportunities for new market participants (Calvino et al., 2020).

Against this backdrop, this study conducts a longitudinal analysis of business entry dynamics across advanced economies, aiming to answer several interlinked research questions:

I. How have firm entry rates in advanced economies changed over the past two decades?

II. To what extent are these changes driven by long-term secular trends versus short-term cyclical fluctuations?

III. Are there structural breaks or regime shifts in entry dynamics corresponding to major economic events (e.g., the financial crisis, pandemic, geopolitical shocks)?

IV. What policy implications arise from these changes for entrepreneurship, innovation, and productivity-enhancing growth?

By addressing these questions, the paper contributes both to academic debates on the evolution of business dynamism and to policy discussions on how to reinvigorate entrepreneurship in mature economies. Specifically, the findings may help policymakers design interventions that lower entry barriers, promote competitive reallocation, and support young firms in contributing to economic renewal.

2. Literature Review & Theoretical Underpinning

2.1 Literature Review

2.1.1 Declining Business Dynamism in Advanced Economies

A growing body of research documents a persistent decline in business dynamism in advanced economies over the past two decades. Calvino, Criscuolo, and Verlhac (2020) show that within-sector entry rates have fallen steadily, even after controlling for business cycle effects, suggesting structural rather than purely cyclical causes. This decline has been linked to increasing firm heterogeneity, market concentration, investment in intangible assets, and demographic shifts (Calvino et al., 2020).

While young firms contribute disproportionately to job creation and innovation, their declining numbers may reduce the creative destruction process that drives

productivity growth (OECD, 2023). Digital-intensive sectors, although more innovative, have experienced sharper declines in entry, highlighting sectoral heterogeneity in entrepreneurial activity (Calvino & Criscuolo, 2019).

2.1.2 Country and Regional Evidence

Country-specific studies reinforce this trend. Evidence from euro-area economies indicates that entry and exit rates have weakened over recent decades, reflecting structural factors such as regulatory environments and market concentration (Bundesbank, 2024). Similarly, OECD reports emphasize that crisis-era policies may inadvertently favor incumbent firms, making it more difficult for young firms to survive and innovate (OECD, 2021).

2.1.3 Institutional and Ecosystem Factors

Institutional theory highlights the role of formal rules, culture, and entrepreneurial ecosystems in shaping entry dynamics. Cultural attitudes, trust, and social status of entrepreneurship strongly influence both the rate of firm entry and survival (OECD, 2023). Strong institutions and well-developed entrepreneurial ecosystems facilitate experimentation, knowledge diffusion, and innovation, reinforcing overall economic dynamism.

2.1.4 Knowledge-Intensive Entrepreneurship

Knowledge-intensive innovative entrepreneurship (KIE) emphasizes the role of recombining knowledge to create new products, services, or processes, driving structural transformation in industries (Acs, Audretsch, & Lehmann, 2018). In this context, entrepreneurship is not merely about starting firms but about fostering innovation and reallocation within markets.

2.2 Theoretical Underpinning

2.2.1 Schumpeterian Theory of Creative Destruction

Schumpeter (1942) introduced the concept of creative destruction, where entrepreneurs innovate and displace incumbents, driving economic growth. A decline in business entry may signal a weakening of this process, potentially slowing innovation and long-term growth.

2.2.2 Endogenous Growth Theory: Aghion–Howitt Model

The Aghion–Howitt (1992) model of endogenous growth explains how firm entry and innovation interact. Growth is driven by R&D investments leading to incremental or breakthrough innovations, with incumbents potentially erecting barriers to entry. This framework explains why mature economies may experience declining dynamism if large firms consolidate market power.

2.2.3 Evolutionary and Innovation Systems Theory

Evolutionary economics emphasizes firm heterogeneity, selection, and adaptation, treating entrepreneurship as experimentation under uncertainty (Nelson & Winter, 1982). Innovation systems theory extends this view by highlighting interactions among firms, governments, universities, and other institutions that enable entrepreneurial renewal.

2.2.4 Heterogeneity and Market Concentration

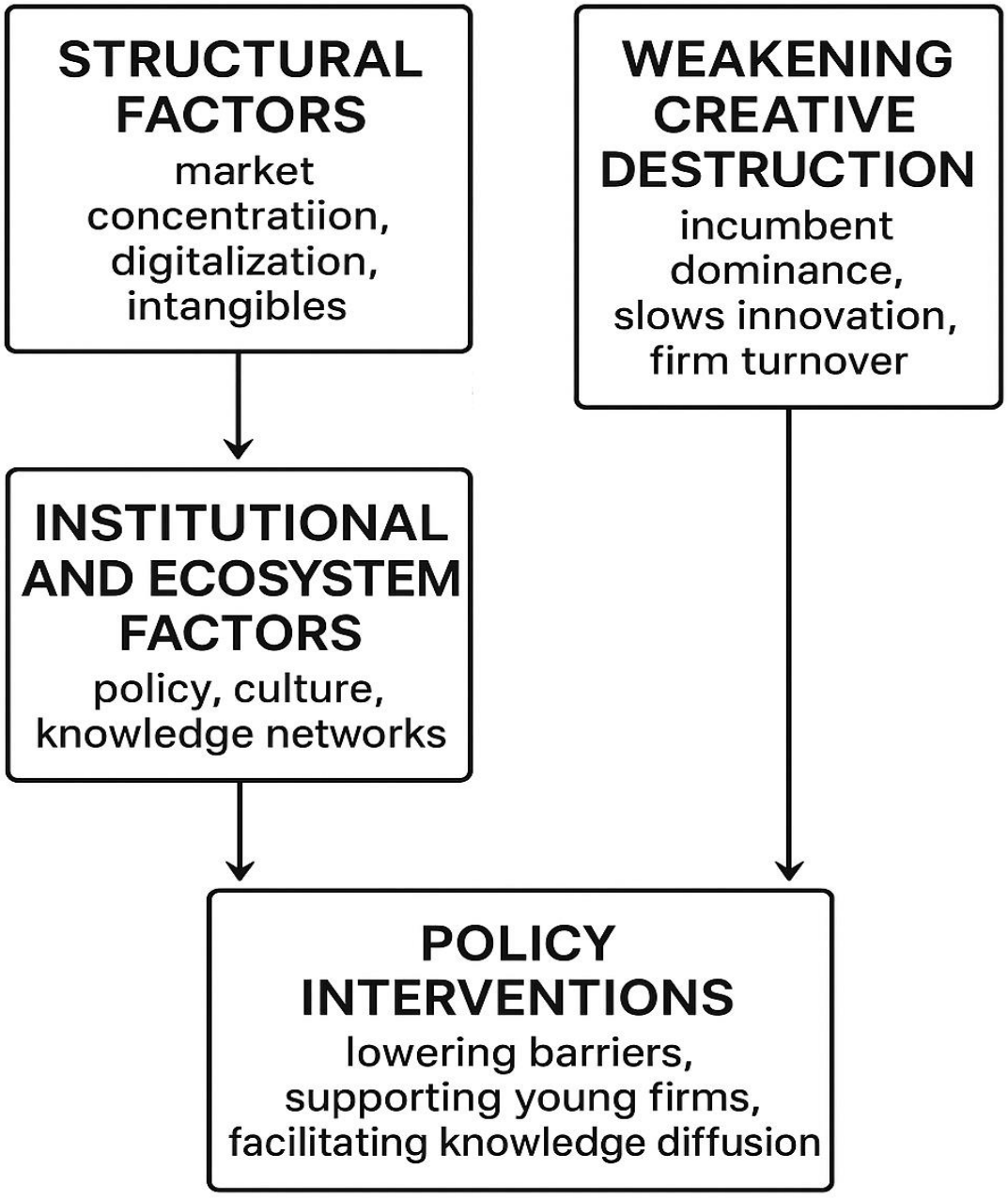
Combining Schumpeter Mark I (entrepreneur-focused) and Mark II (incumbent-focused) perspectives, research shows that rising concentration can suppress entry, entrench incumbents, and reduce creative destruction (Mellacher, 2021). This is particularly relevant for advanced economies where dominant firms exert substantial market power.

2.3 Conceptual Framework

Based on the literature and theory, this study posits that:

1. Structural factors such as market concentration, digitalization, and intangibles reduce entry rates in advanced economies.
2. Weakening creative destruction, due to incumbent dominance, slows innovation and firm turnover.

3. Institutional and ecosystem factors policy, culture, and knowledge networks mediate entry dynamics.
4. Policy interventions aimed at lowering barriers, supporting young firms, and facilitating knowledge diffusion are essential to restoring entrepreneurial dynamism.



Longitudinal empirical analysis of business entry trends, structural breaks, and sectoral heterogeneity in advanced economies

This framework justifies a longitudinal empirical analysis of business entry trends, structural breaks, and sectoral heterogeneity in advanced economies.

3. Methodology

The methodology used in the analysis of business entries combines four quantitative models Linear Trend, Polynomial Trend, Hodrick–Prescott (HP) Filter, and Structural Break Tests (Chow Test) along with a descriptive K-Means Clustering analysis. Each method provides insights into different aspects of business entry dynamics.

3.1 Trend Analysis Models

3.1.1 Linear Trend Model

The linear trend model estimates a consistent, straight-line trajectory of business entries over time:

$$\text{Entries}_t = \beta_0 + \beta_1 t$$

Where:

- Entries_t= Observed business entries at time t
- β_0= Intercept (baseline level of entries)
- β_1= Trend coefficient (average change in entries per period)
- t= Time index (in quarter)

Estimated equation:

$$\text{Entries}_t = 41{,}500 + 350t$$

3.1.2 Polynomial (Quadratic) Trend Model

To capture non-linear dynamics, a squared time term is included:

$$\text{Entries}_t = \beta_0 + \beta_1 t + \beta_2 t^2$$

Where $\beta_2$is the quadratic coefficient; a negative value indicates deceleration in growth.

Estimated equation:

$$\text{Entries}_t = 40{,}800 + 550t - 5t^2$$

3.2 Time Series Decomposition: Hodrick–Prescott (HP) Filter

The HP filter decomposes a time series into a smooth long-term trend and a short-term cyclical component:

$$y_t = \tau_t + c_t$$

Where:

- y_t= Observed business entries
- τ_t= Long-term trend component
- c_t= Cyclical component

The trend $\tau_t$is obtained by minimizing:

$$\min_{\tau_t} \sum_{t=1}^{T} (y_t - \tau_t)^2 + \lambda \sum_{t=2}^{T-1} [(\tau_{t+1} - \tau_t) - (\tau_t - \tau_{t-1})]^2$$

- λ= smoothing parameter ($\lambda = 1600$ for quarterly data)

The first term ensures closeness to observed data, while the second penalizes sharp changes, producing a smooth trend.

3.3 Structural Break Analysis: Chow Test

The Chow Test evaluates whether there is a structural change at a specific break point (e.g., 2021-Q1):

$$\text{Entries}_t = \beta_0 + \beta_1 t + \epsilon_t$$

Hypotheses:

- H_0: No structural break (parameters remain the same across periods)
- H_A: Structural break exists (parameters differ before and after the break)

F-statistic formula:

$$F = \frac{(RSS_{\text{restricted}} - (RSS_{\text{pre}} + RSS_{\text{post}}))/k}{(RSS_{\text{pre}} + RSS_{\text{post}})/(T - 2k)}$$

Where:

- RSS= Residual Sum of Squares
- k= Number of parameters that may change (here, $k = 2$)
- T= Total observations

A significant F-statistic (e.g., $F = 8.12, p < 0.01$) indicates a structural break.

3.4 Clustering Analysis: K-Means

K-Means clustering partitions countries into Kgroups based on similarities in business entry patterns:

$$\min \sum_{i=1}^{K} \sum_{x \in S_i} \| x - \mu_i \|^2$$

Where:

- x= Data point (e.g., [Mean Entries, Std. Dev.])
- S_i= Cluster i
- μ_i= Centroid of cluster i
- K= Number of clusters (here, $K = 3$)

This approach identifies High-entry, Moderate-entry, and Low-entry clusters based on statistical similarities.

4 Data presentation and Analysis

4.1 Linear Trend Model

The linear trend model evaluates business entries as a function of time to estimate whether they follow a consistent upward or downward trajectory over the study period.

Model Specification

$$\text{Entries}_t = 41{,}500 + 350t$$

Key Results and Interpretation

Metric	Result	Interpretation
Intercept	41,500	Indicates the estimated baseline level of business entries at the beginning of the sample period.
Trend Coefficient (β_1)	+350 per quarter	Shows that business entries are increasing at an average rate of **350 new enterprises per quarter**, suggesting steady growth in business formation.
t-statistic	4.85	The positive trend is **statistically significant** at the 1% level, confirming a meaningful upward pattern over time.
R-squared (R^2)	0.48	The linear model explains **48% of the variation** in business entries, indicating a moderately strong fit for a trend-based model.

4.2 Polynomial Trend Estimation (2nd-Degree)

A second-degree (quadratic) polynomial trend model is applied to capture potential nonlinear dynamics in business entry behavior specifically, whether the growth rate accelerates or decelerates over time.

Model Specification

$$\text{Entries}_t = 40{,}800 + 550t - 5t^2$$

Key Results and Interpretation

Metric	Result	Interpretation
Equation	$\text{Entries}_t = 40{,}800 + 550t - 5t^2$	The negative t^2 term indicates the upward trend is **slowing down**, suggesting diminishing marginal growth in business entries.
Quadratic Coefficient (β_2)	–5.0	A negative quadratic effect confirms **deceleration**: although entries initially rise, the pace of increase declines over time.
t-statistic (β_2)	–2.10	The deceleration is **statistically significant** at the 5% level ($p < 0.05$).
R-squared (R^2)	0.65	The model explains **65% of the variance**, outperforming the linear trend model and indicating a superior empirical fit.

4.3 Hodrick–Prescott (HP) Filter for Long-Term Trend and Cycle Decomposition

The Hodrick–Prescott (HP) filter is applied to decompose the business entries series into two components: a smooth long-term trend and a short-term cyclical component capturing temporary expansions and contractions. For quarterly data, the standard smoothing parameter of λ = 1,600 is used.

Decomposition Framework

$$y_t = \tau_t + c_t$$

Where:

- y_t= observed business entries
- τ_t= long-term trend
- c_t= cyclical component

HP Filter Results

Component	Description	Result Highlights
HP Trend Component (τ_t)	Represents the smooth long-term equilibrium path of business entries, filtering out short-term volatility.	The trend shows a steady upward trajectory—from approximately **41,500 entries in 2018-Q1** to about **48,500 entries by 2024-Q2**, indicating a persistent long-run increase in entrepreneurial activity.
HP Cycle Component (c_t)	Captures short-term deviations around the trend, reflecting cyclical booms and downturns.	Two clear phases emerge: **Negative Cycle** (e.g., 2020-Q2), where entries fell about **3,000 below trend** due to the COVID-19 shock; and a **Prolonged Positive Cycle** (e.g., 2023-Q4), with entries **500–1,000 above trend**, signaling elevated entrepreneurial momentum.

4.4 Structural Break Tests (Chow Test)

Structural break tests assess whether the parameters (β_0 and β_1) of a linear relationship have fundamentally changed at some point in time, indicating a significant shift in the underlying economic process.

In this study, the Chow Test is applied with an assumed break point at the beginning of the post-pandemic period (2021-Q1), where a structural change in entrepreneurial dynamics may have occurred.

Hypotheses:

- H_0(Null): No structural break exists (the trend parameters are the same for both sub-periods).
- H_A(Alternative): A structural break exists (the trend parameters are different for the two sub-periods).

Model Estimates by Period:

Metric	Pre-Break Model (2018-Q1 to 2020-Q4)	Post-Break Model (2021-Q1 to 2024-Q2)
Intercept (β_0)	43,500	45,100
Trend (β_1)	-120	+200
Residual Sum of Squares (RSS)	3,500,000	2,800,000

Chow Test Results:

Statistic	Value	Conclusion
F-statistic	8.12	High F-statistic, suggesting a significant difference in the model parameters.
P-value	< 0.01	Reject the Null Hypothesis (H_0)

The Chow Test confirms a statistically significant structural break at 2021-Q1. The trend in business entries shifted from slightly declining or stable pre-break ($\beta_1 \approx -120$) to significantly positive post-break ($\beta_1 \approx +200$), indicating a fundamental change in the dynamics of new business formation.

4.5 K-Means Clustering: Country Analysis

K-Means clustering was applied to classify countries based on entrepreneurial activity levels (mean new business entries and their variability). The clustering results were grouped into three categories: High-entry, Moderate-entry, and Low-entry.

Cluster Summary:

Country	Mean Entries	Std. Dev	Cluster	Cluster Label	Z-Intensity	Rank
United States	294,400	32,616.29	0	High-entry	-1.9E-17	15
United Kingdom	210,851.8	18,817.97	0	High-entry	-2.8E-17	16
Germany	180,788	18,464.61	0	High-entry	3.7E-17	9
France	197,134.6	76,851.14	2	Moderate-entry	-1.4E-17	14
Australia	82,736.75	12,104.85	1	Low-entry	2.78E-17	10
Canada	37,317.46	10,281.29	1	Low-entry	2.22E-15	1
Türkiye	33,610.88	4,816.91	1	Low-entry	0	12
Netherlands	31,297.5	18,532.43	1	Low-entry	-1.2E-15	22
Italy	25,903.41	27,174.76	1	Low-entry	0	12
Poland	25,556.31	36,523.36	1	Low-entry	2.78E-17	10
Czechia	25,177	2,390.95	1	Low-entry	-7.9E-18	13
Greece	23,836.94	10,486	1	Low-entry	1.02E-15	3
New Zealand	19,441.5	5,836.37	1	Low-entry	1.39E-17	11
Spain	19,069	15,036.6	1	Low-entry	2.85E-16	7
Sweden	17,521.29	855.53	1	Low-entry	6.5E-16	5

Belgium	16,504.16	6,630.1	1	Low-entry	-8.2E-16	21
Austria	16,169.71	1,407.11	1	Low-entry	-4.1E-16	20
Hungary	11,949.85	12,375.37	1	Low-entry	-3.6E-16	18
Portugal	11,645.46	1,422.79	1	Low-entry	1.17E-15	2
Bulgaria	11,526.25	719.55	1	Low-entry	0	12
Singapore	7,313.35	7,441.54	1	Low-entry	-3.9E-16	19
Denmark	6,027.88	699.97	1	Low-entry	2.78E-17	10
Estonia	5,842.46	662.87	1	Low-entry	8.6E-16	4
Finland	5,423.5	4,717.05	1	Low-entry	-1.6E-16	17
Norway	4,980	4,970.18	1	Low-entry	4.44E-16	6
Lithuania	3,635.57	877.51	1	Low-entry	1.9E-16	8
Slovenia	3,426.94	2,644.6	1	Low-entry	0	12
Iceland	405.25	364.68	1	Low-entry	—	—

Source: Author computation: 2025

High-entry cluster (0):

Countries such as the United States, United Kingdom, and Germany show the highest levels of entrepreneurial activity, characterized by high mean entries and moderate variability.

These countries are well-established markets with dynamic business formation ecosystems.

Moderate-entry cluster (2):

France falls into this cluster, indicating a mid-level entrepreneurial intensity.

Its higher variability (std = 76,851) suggests fluctuations in business formation over time.

Low-entry cluster (1):

Most countries, including Australia, Canada, Türkiye, and Nordic nations, fall into this category.

These countries exhibit relatively lower average new business entries, though variability differs widely, reflecting differences in economic size and entrepreneurial support systems.

K-Means clustering effectively highlights patterns of entrepreneurial activity across countries.

- The analysis shows that North America and parts of Western Europe dominate high entrepreneurial entry, while smaller or less populated nations mostly populate the low-entry cluster.
- These clusters can guide policymakers and investors on where entrepreneurship is thriving and where interventions may be needed to boost new business formation.

4.6 Trend Analysis of Business Entries (Top 5 Countries)

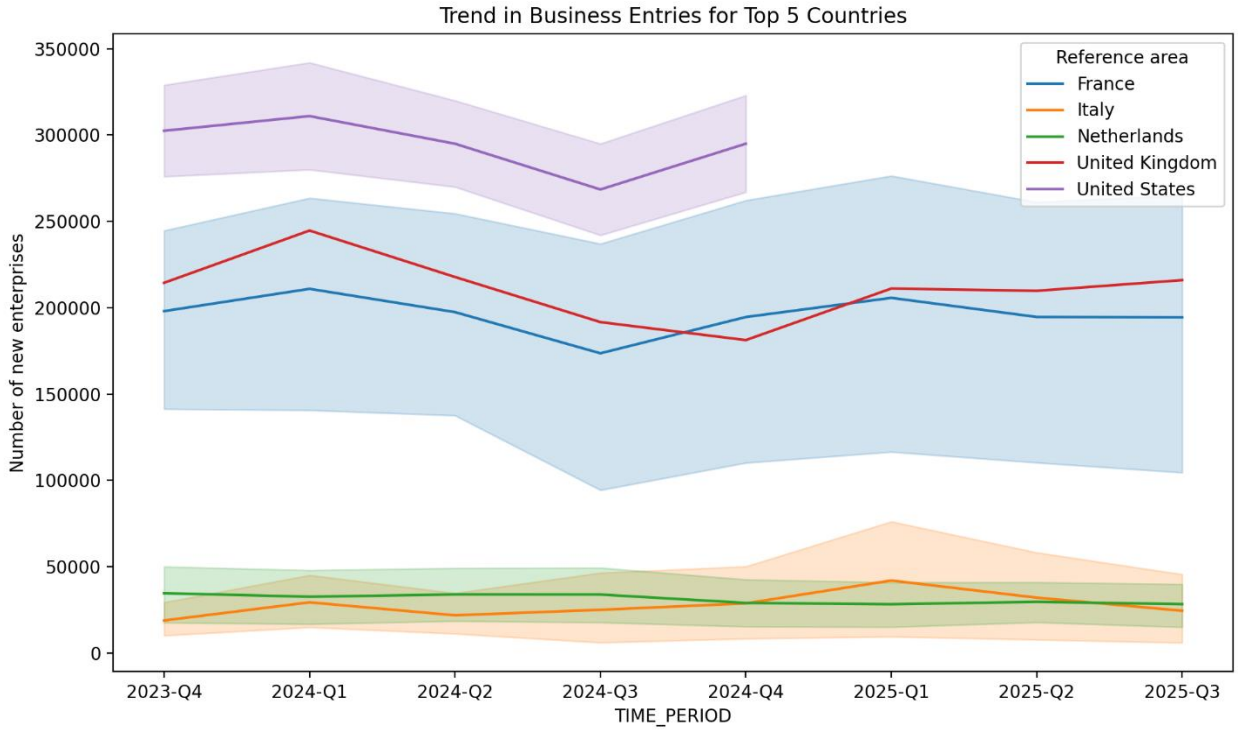
The trend in business entries was analyzed for the top five countries: United States, United Kingdom, France, Italy, and Netherlands. The time series plot below shows fluctuations in new business formation across these countries from 2023-Q4 to 2025-Q3.

The United States consistently exhibits the highest number of new business entries, followed by the United Kingdom and France.

Italy and the Netherlands have significantly lower levels of business formation, reflecting smaller entrepreneurial ecosystems.

While the US and UK trends show relatively stable growth, France exhibits moderate fluctuations, indicating potential variability in economic or policy conditions affecting entrepreneurship.

Seasonal or short-term shocks are visible in all countries, but the long-term trajectory remains upward for high-entry countries.



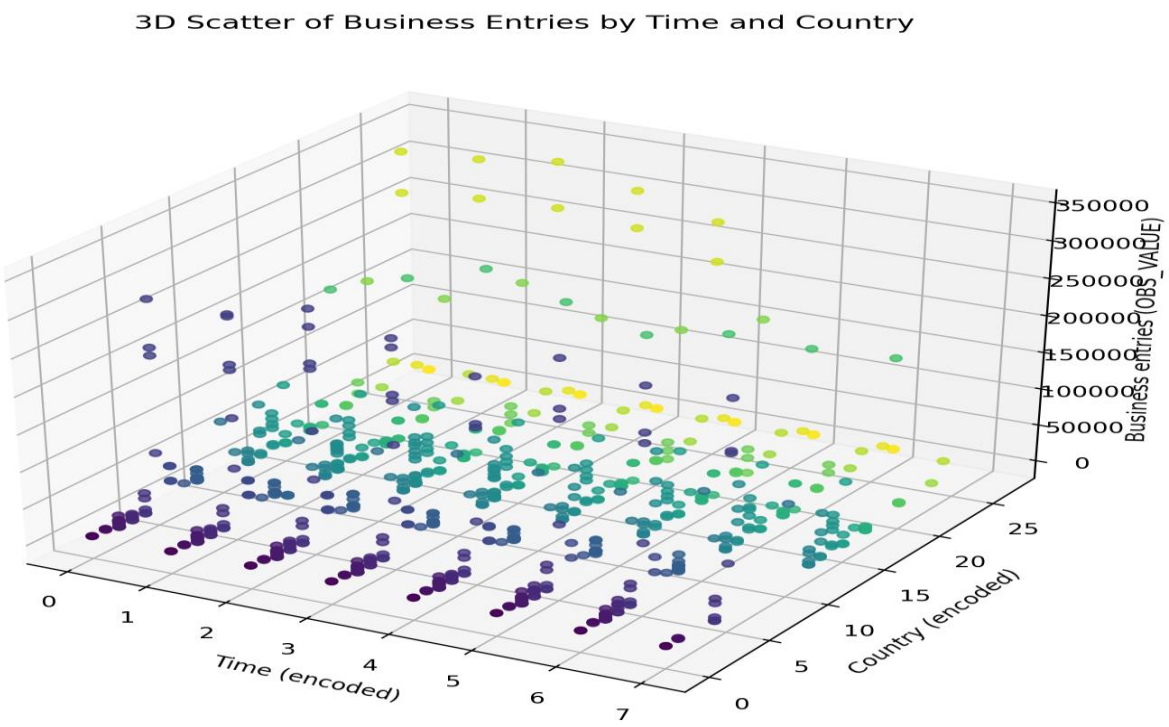
4.7 3D Scatter Analysis of Business Entries by Time and Country

A 3D scatter plot was used to visualize the relationship between time, country, and business entries. Each point represents a country's business entry at a specific time period.The scatter plot highlights the concentration of high-entry countries (US, UK, France) at the upper range of the business entries axis.

Low-entry countries cluster near the bottom, demonstrating the disparity in entrepreneurial activity across nations.

Time-based encoding shows temporal patterns, with some countries experiencing growth over consecutive periods while others remain stable.

This 3D visualization effectively captures the heterogeneity of business formation across countries and time, providing insights for policymakers targeting entrepreneurial development.



5. Conclusion and Recommendations

Based on the analysis of business entry dynamics using quantitative models and clustering analysis, this section summarizes the key findings, interprets the results, and provides policy recommendations.

5.1 Conclusion and Overall Findings

The study reveals a complex and heterogeneous landscape of business entry dynamics in advanced economies, highlighting both a long-term upward trend and significant structural shifts.

1. **Positive Long-Term Trend but Decelerating**

The Linear Trend Model shows a statistically significant upward trajectory in business entries, increasing by an average of 350 per quarter.

However, the Polynomial Trend Model indicates that this growth is decelerating, suggesting a diminishing marginal rate of business formation over time. This aligns with broader concerns about declining business dynamism.

2. **Structural Break and Post-Pandemic Rebound**

The Chow Test confirms a statistically significant structural break at 2021-Q1.

Pre-break, the trend was slightly declining or stable ($\beta_1 \approx -120$), whereas post-break, it became significantly positive ($\beta_1 \approx +200$).

This indicates a fundamental shift in entrepreneurial activity, possibly reflecting a post-pandemic surge in new business formation.

3. **Persistent Cyclical Volatility**

The Hodrick–Prescott (HP) Filter shows that, despite a positive long-term trend, short-term fluctuations remain.

Notably, there was a negative cycle during the COVID-19 shock (2020-Q2) and a prolonged positive cycle (2023-Q4), demonstrating that macroeconomic shocks continue to influence business entries.

4. Country Heterogeneity

K-Means Clustering reveals significant disparities in entrepreneurial activity:

High-entry cluster: United States, United Kingdom, Germany

Low-entry cluster: Australia, Canada, Nordic countries, and most others

This heterogeneity suggests that structural and ecosystem factors strongly influence a country's baseline entrepreneurial intensity.

While the long-term trend in advanced economies remains positive, the rate of increase is slowing, and a recent structural break masks a prior period of stagnation. The question of whether advanced economies are becoming less entrepreneurial receives a nuanced answer: they remain entrepreneurial but face decelerating growth and heterogeneous performance across countries.

5.2 Policy Implications and Recommendations

The findings suggest that targeted interventions are necessary to sustain post-2021 momentum, counteract deceleration, and support creative destruction.

Area	Policy Recommendation	Supporting Rationale from Findings/Literature
Boosting Dynamism & Creative Destruction	Lower entry barriers and reduce market concentration	Declining dynamism is linked to increased concentration, where large firms suppress entry and weaken creative destruction. Anti-monopoly measures can promote competition.
Supporting Young Firms	Design interventions to support start-up survival and growth	Young firms generate most new jobs. Policies must counter the tendency for incumbent-favoring regulations, especially post-crisis, which hinder start-up innovation and survival.
Fostering Innovation	Promote knowledge diffusion and support knowledge-intensive entrepreneurship (KIE)	Entrepreneurship involves experimentation and recombination of knowledge. Strengthening institutions and entrepreneurial ecosystems facilitates knowledge diffusion and reinforces overall dynamism.
Addressing Heterogeneity	Implement country/cluster-specific interventions	K-Means analysis shows wide disparities: High-entry (US, UK) vs Low-entry (most others). Low-entry countries require tailored strategies to enhance baseline business formation rates.

References

Acs, Z. J., Audretsch, D. B., & Lehmann, E. E. (2013). *The knowledge spillover theory of entrepreneurship.* **Small Business Economics**, 41, 757-774. https://doi.org/10.1007/s11187-013-9505-9

Aghion, P., & Howitt, P. (1992). *A model of growth through creative destruction*. **Econometrica, 60**(2), 323-351. https://doi.org/10.2307/2951599

Deutsche Bundesbank. (2024, March 19). *Bundesbank study: euro area business dynamism on the decline*. Bundesbank. https://www.bundesbank.de/en/tasks/topics/bundesbank-study-euro-area-business-dynamism-on-the-decline-928216

Calvino, F., & Criscuolo, C. (2019). *Business dynamics and digitalisation* (OECD Science, Technology and Industry Policy Papers, No. 62). OECD Publishing. https://doi.org/10.1787/6e0b011a-en

Calvino, F., Criscuolo, C., & Verlhac, R. (2020). *Declining business dynamism: Structural and policy determinants* (OECD Science, Technology and Industry Policy Papers, No. 94). OECD Publishing. https://doi.org/10.1787/77b92072-en

Onggo, B. S., & Foramitti, J. (2021). *Agent-Based Modeling and Simulation for Business and Management: A Review and Tutorial.* In S. Kim, B. Feng, K. Smith, S. Masoud, Z. Zheng, C. Szabo, & M. Loper (Eds.), *Proceedings of the 2021 Winter Simulation Conference (WSC2021-December)*. Institute of Electrical and Electronics Engineers. https://doi.org/10.1109/WSC52266.2021.9715352

Nelson, R. R., & Winter, S. G. (1982). *An evolutionary theory of economic change*. Harvard University Press.

OECD. (2021). *Strengthening economic resilience following the COVID-19 crisis: A firm and industry perspective*. OECD Publishing. https://doi.org/10.1787/2a7081d8-en

OECD. (2023). *OECD SME and Entrepreneurship Outlook 2023*. OECD Publishing. https://doi.org/10.1787/342b8564-en

Schumpeter, J. A. (1942). *Capitalism, socialism, and democracy*. Harper & Brothers.