

ENTREPRENEURSHIP UNDER ECONOMIC POLICY UNCERTAINTY: EMPIRICAL INSIGHTS FROM G7 COUNTRIES

Yu LIAO¹, Umar FAROOQ ²✉, Abdulrahman ALOMAIR³,
Abdullah A. ALJUGHAIMAN⁴

¹School of Marxism, Chongqing University, 400044 Chongqing, P.R. China

²School of Economics and Finance, Xi'an Jiaotong University, Xi'an, Shaanxi, P. R. China

³Accounting Department, School of Business, King Faisal University, 31982 Al Ahsa, Saudi Arabia

⁴Finance Department, School of Business, King Faisal University, 31982 Al Ahsa, Saudi Arabia

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Abstract. Entrepreneurship is a vital driver of economic growth, innovation, and job creation, making it essential to understand its key determinants for sustaining economic dynamism. This study examines the impact of Economic Policy Uncertainty (EPU) on entrepreneurial activity, proxied by New Business Density (NBD), across G7 economies from 1997 to 2024, employing the Cross-Sectionally Augmented Autoregressive Distributed Lag (CS-ARDL) model. The empirical findings reveal that heightened EPU significantly reduces NBD, indicating that policy unpredictability discourages new business formation. The results also highlight the roles of other macroeconomic and institutional factors, including foreign direct investment inflows, banking sector development, inflation, government subsidies, and political stability, in shaping entrepreneurial dynamics. The study concludes that policy uncertainty acts as a deterrent to entrepreneurship in advanced economies. These findings carry important implications for policymakers and stakeholders, emphasizing that reducing policy uncertainty and ensuring a stable regulatory environment are essential for fostering entrepreneurship and sustaining innovation. This study's novelty lies in theoretically and empirically linking EPU to entrepreneurial decision-making under uncertainty, demonstrating how policy unpredictability alters risk expectations and discourages new firm creation in advanced economies.

Keywords: economic policy uncertainty, entrepreneurship, new business density, G7 economies.

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✉Corresponding author. E-mail: umerrana246@gmail.com

1. Introduction

In a competitive era of rapid industrialization and economic development, it is necessary to ensure the significant existence of entrepreneurial activity (ENA hereafter). Entrepreneurial activity embodies the spirit of innovation, risk-taking, and resilience that drives economic progress and fosters societal transformation. At its core, entrepreneurship is about identifying opportunities, establishing new business ventures, and creating value for society at large through new business ideas (Ratten, 2023; Khezri & Mamkhezri, 2025). Beyond the realm of business, entrepreneurship fosters creativity among young minds, enhances problem-solving skills, and cultivates a culture of ambition and initiative. Ultimately, entrepreneurship represents a powerful force for driving positive change and shaping the future of both society and the economy (Herani et al., 2024).

However, ENA is not immune to market sensitivity and is significantly influenced by various macroeconomic and institutional forces, including price fluctuations, the entry of dominant firms, and broader economic uncertainty. Supporting this argument, Nguyen et al. (2021a) contended that an uncertain economic environment has a pronounced effect on entrepreneurship. In recent years, the intersection of Economic Policy Uncertainty (EPU) and entrepreneurship has garnered growing academic attention (Khurana et al., 2023; Wang et al., 2023). Uncertain economic policies pose considerable challenges for entrepreneurs who rely on a stable macroeconomic environment to make strategic decisions, secure financing, and plan for future growth.

In a world where global economic interdependencies are intensifying, the stability and predictability of economic policies have become crucial for entrepreneurial decision-making (Otrachshenko et al., 2022; Li et al., 2023). Entrepreneurship, characterized by innovation, risk-taking, and adaptability is particularly sensitive to policy fluctuations and regulatory ambiguity (Ou et al., 2023). The rise of technological innovation and the dynamic nature of modern markets further amplify this sensitivity, making entrepreneurs more vulnerable to shifts in policy direction. Despite the central role of entrepreneurship in driving economic growth, job creation, and innovation, there remains a pressing need to understand how EPU affects entrepreneurial activity, especially through long-term macroeconomic mechanisms.

EPU refers to the unpredictability surrounding economic policies, stemming from factors such as political instability, fiscal and monetary policy shifts, regulatory changes, and unexpected governmental interventions (Baker et al., 2016). These uncertainties manifest in various ways delayed legislation, ambiguous policy announcements, or abrupt regulatory reforms that collectively create a challenging environment for entrepreneurs. As entrepreneurship involves identifying and capitalizing on opportunities through new business creation, such instability can deter potential entrants from launching new ventures. Consequently, New Business Density (NBD) defined as the number of newly registered firms per 1,000 working-age individuals serves as a robust measure of entrepreneurial activity, reflecting the rate at which new businesses emerge within an economy. High levels of EPU tend to increase regulatory ambiguity and financial risk, discouraging new entrants and reducing new business formation. Policy unpredictability raises investors' risk aversion, restricts credit availability, and complicates long-term planning (Liu & Gao, 2024; Yujia et al., 2024). These dynamics collectively suppress entrepreneurial enthusiasm and delay the establishment of new firms. Therefore, understanding the empirical relationship between EPU and NBD is critical for formulating policies that promote entrepreneurship and economic stability.

This study is motivated by the growing yet inconclusive debate on the role of EPU in shaping entrepreneurial activity, particularly within advanced economies where institutional complexity and regulatory intensity are high. While prior studies offer mixed evidence, limited attention has been given to how uncertainty operates within structurally mature and highly regulated environments such as the G7 economies, thereby creating a critical gap in the literature. Addressing this gap is important not only for advancing academic understanding but also for informing policymakers seeking to promote stable and innovation-driven economic systems. In this context, the study contributes by providing novel theoretical and empirical insights into how EPU influences entrepreneurial decision-making under

uncertainty, particularly by highlighting its deterrent effect on new business formation in advanced economies.

In this study, we empirically examine the impact of EPU on entrepreneurial activity, proxied by new business density, across G7 economies using the CS-ARDL model. The analysis provides fresh insights into how uncertainty in economic policymaking influences the creation of new businesses in developed economies. The findings reveal that EPU exerts a significantly negative effect on NBD, highlighting that elevated uncertainty discourages new business formation. Additionally, control variables such as FDI inflows, banking sector development, government subsidies, and political stability exhibit positive effects on entrepreneurship, while inflation exerts a negative influence. These results provide evidence that macroeconomic and institutional stability are vital for sustaining entrepreneurship.

Theoretically, the study contributes to the literature by challenging the prevailing notion that uncertainty can stimulate entrepreneurial behavior. While several studies (Nguyen et al., 2021a; Khurana et al., 2023; Wang et al., 2023; Paule-Vianez et al., 2024) suggest a positive association between EPU and entrepreneurship, our findings reveal a contrary pattern for G7 economies. This divergence may reflect the structural and institutional context of advanced economies, where high regulation and governance complexity translate uncertainty into deterrents for risk-taking and new firm creation. Hence, in these economies, EPU operates more as a constraint than as a motivator of entrepreneurship. Grounded in institutional theory, this finding underscores how policy instability weakens institutional support mechanisms, thereby discouraging entrepreneurial entry in highly regulated economic environments.

Empirically, the study offers robust evidence of the adverse effect of EPU on new business formation. By employing the CS-ARDL model on data spanning 1997–2024, this research provides a nuanced understanding of how uncertainty undermines entrepreneurial dynamism in highly regulated environments. From a policy perspective, the findings underscore the importance of reducing policy volatility to foster entrepreneurship. Governments in G7 economies can use these insights to promote stable regulatory environments and predictable economic frameworks, encouraging risk-taking and innovation among entrepreneurs. Entrepreneurs, in turn, can leverage this understanding to design adaptive strategies that mitigate exposure to policy risks. Overall, the study provides actionable implications for fostering resilient, innovative, and sustainable entrepreneurial ecosystems in advanced economies.

The remainder of the paper is structured as follows: Section 2 reviews the relevant literature and presents the hypotheses; Section 3 describes the data and methodology; Section 4 presents the empirical analysis; Section 5 provides a detailed discussion of the results; and Section 6 presents the theoretical and practical implications, along with limitations and directions for future research, followed by the conclusion in Section 7.

2. Literature review

Entrepreneurial activity unfolds within the broader institutional and policy environment that governs economic interactions, resource allocation, and opportunity recognition. Institutional theory offers a robust framework to interpret how such environments shape entrepreneurial behavior. According to North (1990), institutions constitute the “rules of the game” that define incentives and constraints, while Scott (1995) emphasizes the regulative, normative,

and cognitive pillars that determine organizational legitimacy and action. In this context, the stability and predictability of economic policies are fundamental to a supportive entrepreneurial ecosystem. When fiscal, monetary, and regulatory directions are clear, entrepreneurs can make informed investment decisions and commit to long-term innovation. Conversely, Economic Policy Uncertainty (EPU) disrupts institutional stability by introducing ambiguity about future policy directions, which distorts expectations, alters entrepreneurial incentives, and complicates access to financial resources. Hence, drawing on institutional theory, EPU can be conceptualized as an institutional void, a situation where weak or fluctuating policy signals undermine entrepreneurs' confidence and deter new business formation.

Institutional theory also explains how policy uncertainty affects the three institutional pillars simultaneously: it weakens the regulative pillar by eroding policy credibility and enforcement; it disrupts the normative pillar by changing social expectations toward risk-taking and innovation; and it destabilizes the cognitive pillar by reducing shared beliefs about economic continuity. Prior literature underscores that entrepreneurial decisions are not purely market-driven but socially and institutionally embedded (Baumol, 1990; Acs & Audretsch, 2005; Bruton et al., 2010). Under stable institutions, entrepreneurs engage in productive and opportunity-driven ventures. Under uncertainty, however, risk aversion may increase, opportunity recognition may decline, and informal or necessity-based entrepreneurship may rise (Aidis et al., 2008; Estrin et al., 2013). Therefore, EPU operates as both a constraint and a potential catalyst, shaping entrepreneurial outcomes according to institutional configurations and perceptions of uncertainty.

From an audit perspective, the existing literature can be broadly categorized into four key strands: (i) EPU and entrepreneurial behavior, (ii) EPU and entrepreneurial finance, (iii) institutional and socio-cultural moderators, and (iv) emerging perspectives on digital, sustainable, and technology-driven entrepreneurship. This structured synthesis helps link prior findings with the study's objective of examining the impact of EPU on New Business Density (NBD) in advanced economies.

Empirical evidence reveals mixed findings on the nexus between EPU and entrepreneurship. Nguyen et al. (2021a) found that policy uncertainty can stimulate pro-entrepreneurial norms and new business creation across 23 economies (2006–2016), suggesting that ambiguity may spur adaptive behavior. Similarly, Khurana et al. (2023), using panel data from 26 countries, observed that higher EPU increases necessity entrepreneurship, implying that individuals turn to self-employment when policy instability restricts wage opportunities. Paule-Vianez et al. (2024), analyzing 13 European countries, showed that while EPU enhances legitimacy perceptions, it constrains opportunity-driven entrepreneurship, producing a divergence between perceived opportunity and actual business formation. Manocha et al. (2024) added that the effects of EPU are gender-contingent, where female entrepreneurs are more sensitive to policy ambiguity, reflecting both institutional and behavioral asymmetries. Collectively, these studies highlight that EPU's effects are context-dependent and mediated by entrepreneurs' perceptions, risk tolerance, and institutional credibility.

Recent contributions further extend this debate by incorporating technological and behavioral dimensions of entrepreneurship. For instance, studies on artificial intelligence and entrepreneurial ecosystems show that digital intelligence reshapes consumer behavior and

entrepreneurial opportunity recognition under uncertainty, thereby influencing firm entry decisions (Ahmed et al., 2026a). Similarly, research on green-hushing and dynamic capabilities highlights how firms strategically respond to uncertainty by adjusting sustainability disclosure and innovation strategies, indicating that uncertainty may suppress visible entrepreneurial activity even when underlying innovation persists (Ahmed et al., 2026b).

A second stream of research links EPU with entrepreneurial finance and investment behavior. The availability of financing is central to entrepreneurial activity, and uncertainty in economic policy can influence both investors' confidence and capital costs. Erdoğan et al. (2023) found that increased EPU in 14 OECD countries led to higher venture capital investments, reflecting strategic repositioning and long-term portfolio adjustments by investors seeking to capitalize on future policy shifts. In contrast, Shi et al. (2020), examining large Chinese firms with subsidiaries, demonstrated that EPU restricts external financing and hampers operational flexibility. Similarly, Hoang et al. (2023) reported that Japanese start-ups reduce investment in response to EPU, though venture-backed firms exhibit a counterintuitive increase due to greater risk absorption capacity. Hamza et al. (2024) provided additional nuance, showing that EPU can sometimes improve investment efficiency by curbing both over- and under-investment, especially in industries with strong competition and information transparency. These findings suggest that the financial effects of EPU depend on the broader institutional environment governing information flow, financial regulation, and investor protection.

The interaction between EPU and institutional and cultural dimensions also receives growing attention. Aparicio et al. (2021) found that informal institutions such as education and media foster entrepreneurial potential by shaping attitudes toward uncertainty and opportunity. Damaraju et al. (2023) demonstrated that national cultural traits, particularly uncertainty avoidance and tolerance for failure moderate the link between institutional stigma and entrepreneurship. Similarly, Fernandez (2025) revealed that gender-discriminatory laws and weak legal enforcement significantly increase entrepreneurial exit rates, particularly among women, highlighting how institutional quality and inclusiveness condition the effects of EPU. Together, these studies reinforce the idea that policy uncertainty interacts with both formal (laws, regulations) and informal (social norms, cultural values) institutions in determining entrepreneurial dynamics.

Extending this perspective, recent evidence from emerging and developing economies emphasizes the role of institutional entrepreneurship and social innovation in mitigating environmental and economic challenges. For example, studies on BRICS economies demonstrate that institutional innovation and social entrepreneurship contribute to reducing carbon footprints while promoting inclusive growth, suggesting that institutional quality can moderate the adverse effects of uncertainty on entrepreneurial outcomes (Ayoungman et al., 2023). Moreover, research on entrepreneurial orientation and firm performance highlights that individual-level entrepreneurial traits, when supported by conducive institutional frameworks, enhance firm-level outcomes even under uncertain environments (Imran et al., 2019).

Recent work has also connected EPU with innovation-oriented and sustainable entrepreneurship. Gu et al. (2022) showed that EPU can foster economic, environmental, and social development when aligned with green entrepreneurship, suggesting that uncertainty may prompt adaptation and sustainability-oriented innovation. Wang et al. (2023) found that EPU

stimulates exploitative innovation but hampers exploratory innovation in Chinese A-share firms, depending on managerial ownership and government subsidies. Dabbous et al. (2023) emphasized that robust digital infrastructure mitigates the negative effects of EPU by reducing information asymmetry and transaction costs, thereby supporting entrepreneurship. Ou et al. (2023) observed that while EPU dampens manufacturing performance in China, service transformation strategies can buffer these effects, especially for non-state-owned enterprises. Yujia et al. (2024) further demonstrated that EPU contributes to macroeconomic fluctuations in both China and the United States, influencing business cycles and entrepreneurial expectations through cross-country spillovers.

Taken together, these studies confirm that the relationship between EPU and entrepreneurship is multifaceted and institutionally conditioned. Some research highlights the adaptive responses that uncertainty can provoke (Nguyen et al., 2021a; Gu et al., 2022; Hamza et al., 2024), while others underscore its adverse consequences on opportunity formation, financing, and innovation (Shi et al., 2020; Hoang et al., 2023; Ou et al., 2023). However, there remains limited empirical evidence on how EPU influences New Business Density (NBD), a key indicator of entrepreneurial activity within advanced institutional contexts such as the G7 countries, where policy sophistication and institutional maturity can moderate uncertainty differently. Therefore, linking the above strands to the study objective, this research specifically addresses the gap by examining how EPU translates into observable entrepreneurial outcomes (NBD) in highly developed economies, where institutional stability is expected but policy uncertainty may still disrupt entrepreneurial entry decisions.

Building on institutional theory, this study seeks to fill this gap by analyzing how EPU affects entrepreneurial activity, measured through NBD, in G7 economies from 1997 to 2024. By applying the CS-ARDL model, it empirically investigates the dynamic relationship between economic policy uncertainty and the rate of new business formation. Accordingly, the study hypothesizes that:

H1: *Economic policy uncertainty has a significant but negative relationship with entrepreneurial activity.*

3. Data and methods

3.1. Research design

The study adopts a quantitative, macro-panel research design to examine the impact of Economic Policy Uncertainty (EPU) on entrepreneurial activity across countries. It draws on a macro-level panel dataset covering the period from 1997 to 2024. This design enables the analysis of both cross-country variations and temporal dynamics, making it suitable for capturing long-run and short-run relationships in a multi-country setting.

3.2. Data and sample

The study draws on a macro-level panel dataset covering the period from 1997 to 2024. In principle, the broader population of interest includes countries where consistent and comparable data on Economic Policy Uncertainty (EPU) and entrepreneurial activity are available.

However, due to data limitations and the need for institutional and economic comparability, the analysis focuses on a balanced sample of G7 (Group of Seven) economies including Canada, France, Germany, Italy, Japan, the United Kingdom, and the United States. The choice of the G7 sample is well justified. These countries represent some of the world's most advanced and institutionally developed economies, collectively accounting for a substantial share of global GDP and exerting significant influence on international economic policy. Their relatively mature financial systems, stable governance structures, and well-documented policy environments make them particularly suitable for examining how EPU affects entrepreneurial activity. Moreover, focusing on G7 economies ensures data consistency and reduces heterogeneity arising from structural differences typically observed between developed and developing countries.

The selected time frame of 1997–2024 further strengthens the analysis by capturing multiple economic cycles, including periods of expansion, recession, and recovery. This allows for a comprehensive assessment of both short-run and long-run dynamics between EPU and entrepreneurship. Additionally, the period encompasses major global events, policy shifts, and technological transformations, providing a rich empirical context to understand how uncertainty influences new business formation over time. This extended period also captures significant policy shifts, technological advancements and globalization trends, and thus offered a rich context for understanding the evolving relationship between policy uncertainty and entrepreneurial activities.

3.3. Data collection method

The data on EPU were collected from an online site (Economic Policy Uncertainty Index, n.d.) mainly developed by Baker et al. (2016), which provides a widely recognized index of economic policy uncertainty. Data on the remaining variables were sourced from the World Development Indicators (WDI) of the World Bank (n.d.), ensuring reliability, consistency, and cross-country comparability.

3.4. Measures of variables

Explaining the variables of study, EPU is a measure of the unpredictability or uncertainty regarding economic policies that can arise from political instability, legislative gridlock, frequent changes in fiscal and monetary policies, and sudden regulatory shifts. According to Baker et al. (2016), EPU quantifies uncertainty by capturing the frequency of newspaper articles that mention terms related to the economy, uncertainty, and policy. These counts are normalized to construct an index reflecting the level of policy uncertainty. Higher values indicate greater uncertainty, influencing economic decision-making processes.

Explaining the measures of entrepreneurship, NBD was utilized as a proxy variable of entrepreneurship which indicates the number of new businesses registered per 1,000 working-age people in an economy. It provides insight into the level of entrepreneurial activity and market dynamism. NBD is significant because a higher density reflects a vibrant entrepreneurial ecosystem with frequent new entries. Some contemporary studies considered similar measurements for entrepreneurship (Canestrino et al., 2020; Nguyen et al., 2021b; Boudreaux et al., 2023; Sobhan & Hassan, 2024). Table 1 demonstrates the summary of all variables.

Table 1. Variables (source: previous studies)

Acronyms	Variables	Measurement	Role	Data source
NBD	New Business density	New business density (new registrations per 1,000 people ages 15–64)	Dependent	World Bank (n.d.)
EPU	Economic policy uncertainty	EPU index	Independent	Economic Policy Uncertainty Index (n.d.)
FDI	FDI inflow	Foreign direct investment, net inflows (% of GDP)	Control	World Bank (n.d.)
IFR	Inflation rates	Inflation, GDP deflator (annual %)	Control	World Bank (n.d.)
BSD	Banking development	Domestic credit to private sector by banks (% of GDP)	Control	World Bank (n.d.)
SUB	Subsidies	Subsidies and other transfers (% of expense)	Control	World Bank (n.d.)
PSB	Political stability	Political Stability and Absence of Violence/Terrorism: Estimate	Control	World Bank (n.d.)

3.5. Model specification

As we mainly employ the CS-ARDL model for regression analysis, therefore the equations can be written in the following ways:

$$\begin{aligned}
 \Delta NBD_{it} = & \beta_0 + \sum_{i=1}^p \alpha_i \Delta NBB_{it-1} + \sum_{i=1}^p \beta_i \Delta EPU_{it-1} + \sum_{i=1}^p \gamma_i \Delta FDI_{it-1} + \\
 & \sum_{i=1}^p \gamma_2 \Delta IFR_{it-1} + \sum_{i=1}^p \gamma_3 \Delta BSD_{it-1} + \sum_{i=1}^p \gamma_4 \Delta SUB_{it-1} + \\
 & \sum_{i=1}^p \gamma_5 \Delta PSB_{it-1} + \varphi_1 NBD_{it-1} + \varphi_2 EPU_{it-1} + \varphi_3 FDI_{it-1} + \varphi_4 IFR_{it-1} + \\
 & \varphi_5 BSD_{it-1} + \varphi_6 SUB_{it-1} + \varphi_7 PSB_{it-1} + \varepsilon_{it}.
 \end{aligned} \tag{1}$$

Eq. (1) mainly demonstrates the impact of EPU (economic policy uncertainty) on NBD (new business density). Other control variables include FDI (FDI inflow), IFR (inflation rates), BSD (banking sector development), SUB (government subsidies), and PSB (political stability). In this equation, β_0 is the intercept or constant term, while α , β , and γ are the coefficients. The summation $\sum_{i=1}^p$ accounts for the lagged short-run dynamics while the terms φ_1 to φ_7 correspond to the long-run coefficients associated with the level values of the respective variables. Finally, ε_{it} denotes the error term capturing unobserved shocks or disturbances for country i at time t . The year fixed-effects are included to control for unobserved time-specific shocks, such as global economic crises, policy shifts, and technological changes that may simultaneously influence all countries. This helps isolate the net effect of economic policy uncertainty on entrepreneurial activity by removing common temporal influences.

3.6. Data analysis techniques

The primary estimation strategy employed in this study is the Cross-Sectionally Augmented Autoregressive Distributed Lag (CS-ARDL) model. This approach is particularly suitable for analyzing panel data where cross-sectional dependence (CD) and heterogeneity are significant concerns. The CS-ARDL model allows us to capture both short-term dynamics and long-term relationships between EPU and various measures of entrepreneurship while addressing CD issues that are inherent in macroeconomic data. Before implementing the CS-ARDL model, we conducted a CD analysis suggested by Breusch and Pagan (1980) to examine the extent of CD in our panel data. Table 2 presents the results of three different CD tests. The results indicate significant CD across all variables. To ensure the stationarity of the panel data, we performed unit root tests using the CIPS test and the CADF test (Pesaran, 2007). Table 3 summarizes the unit root test results which indicate whether the variables are stationary at level or become stationary after first differencing. The results show that most variables are non-stationary at the level but become stationary after first differencing, except for EPU, FDI, SUB, and PSB, which are stationary at the level. The mixed order of integration (I (0) and I (1)) among the variables justifies the use of the CS-ARDL model which can accommodate both I (0) and I (1) series, making it a robust choice for our analysis.

Given the evidence of CD and the mixed order of stationarity, we apply the CS-ARDL model to estimate the relationship between EPU and the various measures of entrepreneurship. The CS-ARDL approach offers several advantages: By incorporating cross-sectional averages, the CS-ARDL model effectively addresses the issue of CD issues and provides more reliable estimates. Similarly, this model distinguishes between short-term adjustments and long-term equilibrium relationships and offered a comprehensive understanding of how EPU impacts entrepreneurial activities over different time horizons. In addition, the CS-ARDL model is suitable for variables integrated of different orders (I (0) and I (1)), making it ideal for our dataset. The adoption of the CS-ARDL model in this study is informed by the empirical methodologies employed by Sohail et al. (2022) and Odionye et al. (2024).

Table 2. Cross-Section Dependence (CD) analysis

Variables	Breusch-Pagan LM		Pesaran scaled LM		Pesaran CD	
	Statistics	Probability	Statistics	Probability	Statistics	Probability
NBD	282.235	0.001	39.229	0.001	15.249	0.001
EPU	34.519	0.031	1.005	0.031	-2.164	0.030
FDI	54.201	0.001	4.043	0.001	4.916	0.001
IFR	90.462	0.001	9.638	0.001	6.290	0.001
BSD	206.053	0.001	27.474	0.001	-0.304	0.076
SUB	195.866	0.001	25.902	0.001	11.762	0.001
PSB	199.070	0.001	26.396	0.001	12.279	0.001

Note: Acronyms can be seen in the Table 1.

Table 3. Unit root testing

Variables	(CIPS)		(CADF)	
	At level	At first difference	At level	At first difference
NBD	(3.111) 0.999	(−2.468) 0.000	(4.925) 0.960	(26.765) 0.000
EPU	(−5.627) 0.000	–	(59.900) 0.000	–
FDI	(−3.744) 0.000	–	(41.586) 0.000	–
IFR	(−1.081) 0.139	(−8.129) 0.000	(20.278) 0.121	(86.126) 0.000
BSD	(−0.808) 0.209	(−4.287) 0.000	(17.918) 0.210	(46.098) 0.000
SUB	(−4.287) 0.000	–	(46.098) 0.000	–
PSB	(−2.139) 0.000	–	(23.861) 0.000	–

Note: NBD – New Business Density, EPU – Economic Policy Uncertainty, FDI – FDI inflow, IFR – Inflation Rates, BSD – Banking Sector Development, SUB – Government Subsidies, PSB – Political Stability.

4. Empirical analysis

4.1. Estimation of descriptive and average values

The descriptive statistics provide a snapshot of the central tendency, dispersion, and shape of the distribution for the variables of study. In Table 4, the NBD has a mean value of 5.647, indicating that there are about 5.647 new businesses registered per 1,000 working-age people on average, reflecting a moderate level of entrepreneurial activity within the G7 economies. The EPU has a mean value of 153.131, indicating a relatively high level of economic policy uncertainty on average across the G7 economies. High EPU can create a challenging environment for entrepreneurs, as uncertainty can deter investment and business expansion decisions. Similarly, the mean value of FDI inflow is 2.190, showing that the G7 economies receive about 2.19% of GDP as FDI inflow on average, suggesting a significant level of foreign investment beneficial for entrepreneurial growth and economic development. The IFR have a mean value of 1.539, indicating that the average inflation rate is relatively low at 1.539%, which is generally favorable for entrepreneurship as it ensures price stability and reduces uncertainty in the economic environment. The BSD has a mean value of 101.549, indicating a high level of banking sector development, suggesting that the financial systems in the G7 economies are well-developed and provide adequate financial services and support to entrepreneurs. The SUB show a mean value of 61.999, indicating a moderate level of government support for businesses which can encourage entrepreneurial ventures. Finally, the PSB has a mean value of 0.706, reflecting a relatively stable political environment in the G7 economies, crucial for entrepreneurship as it reduces risks associated with sudden policy changes or political turmoil.

Some variables, such as EPU, FDI, and IFR show moderately elevated kurtosis values, suggesting the presence of occasional outliers or extreme values. These mild deviations from normality are expected, as macroeconomic indicators often experience periodic fluctuations due to external shocks, policy changes, or market volatility. However, the kurtosis levels remain within an acceptable range, indicating no serious departure from the assumption of normal distribution.

Table 4. Descriptive statistics

Variable	Mean	Median	Maximum	Minimum	Std. Dev.	Skewness	Kurtosis
NBD	5.647	2.401	18.345	0.016	6.795	1.000	2.297
EPU	153.131	126.784	669.010	37.603	95.237	1.117	4.129
FDI	2.190	1.737	12.731	-0.898	2.1864	2.211	4.303
IFR	1.539	1.550	7.664	-2.324	1.514	0.765	4.066
BSD	101.549	96.273	207.589	46.580	38.914	0.764	3.034
SUB	61.999	62.931	83.903	37.759	11.397	0.096	2.366
PSB	0.706	0.687	1.411	-0.233	0.356	-0.253	2.234

Note: NBD – New Business Density, EPU – Economic Policy Uncertainty, FDI – FDI Inflow, IFR – Inflation Rates, BSD – Banking Sector Development, SUB – Government Subsidies, PSB – Political Stability.

In Appendix Table A1, the average values of the variables across the G7 countries reveal significant variations in entrepreneurship and related economic conditions. Starting with the NBD, Canada (0.150) and Japan (0.201) have the lowest NBD, indicating fewer new businesses per 1,000 working-age people, which could point to higher barriers to entry or less dynamic entrepreneurial environments. Notably, EPU is highest in the USA (250.741) and the UK (221.467), reflecting higher levels of policy-related uncertainty which can deter business investment and planning. However, Germany (81.089) and Canada (86.710) are experiencing the lowest EPU, indicating more stable policy environments. Overall, these average values highlight how different economic and regulatory conditions across the G7 countries can significantly impact entrepreneurial activities and the broader business environment.

4.2. Estimation of correlation statistics

The correlation statistics presented in Table 5 illustrate the relationships among the key variables included in the analysis. The results show that NBD, representing entrepreneurial activity, has a significant negative correlation with EPU (-0.542), suggesting that higher policy uncertainty tends to suppress new business formation across the G7 economies. Conversely, NBD is positively correlated with FDI (0.159) and IFR (0.254), indicating that greater capital inflows and moderate inflationary conditions are associated with more active business creation. The negative association between NBD and BSD (-0.283) implies that while a more developed financial system might provide stability, it may also create structural constraints or competition that discourages new entrants. Similarly, NBD's negative correlations with SUB (-0.257) and PSB (-0.508) reflect that excessive dependency on subsidies or rigidly stable political environments may not necessarily foster entrepreneurial dynamism.

Overall, these correlations provide preliminary evidence that macroeconomic uncertainty and institutional factors significantly shape the entrepreneurial landscape within the G7 countries, justifying the use of a dynamic panel approach for further empirical analysis.

Table 5. Correlation analysis

Variables	NBD	EPU	FDI	IFR	BSD	SUB	PSB
NBD	1.000						
EPU	−0.542***	1.000					
FDI	0.159**	0.034**	1.000				
IFR	0.254***	0.030***	0.251***	1.000			
BSD	−0.283*	−0.126*	0.174**	0.006*	1.000		
SUB	−0.257**	−0.301**	−0.029**	−0.119**	0.095***	1.000	
PSB	−0.508***	−0.288***	0.050*	−0.312**	0.270**	0.304***	1.000

Notes: NBD – New Business Density EPU – Economic Policy Uncertainty, FDI – FDI Inflow, IFR – Inflation Rates, BSD – Banking Sector Development, SUB – Government Subsidies, PSB – Political Stability. ***p < 0.01, **p < 0.05, *p < 0.1.

4.3. Estimation of regression

The long-run equation results from the CS-ARDL model analysis reveal the impact of EPU and other control variables on various aspects of entrepreneurial activity. In the case of ease of New Business Density (NBD) as reported in Table 6, EPU also exerts a significant negative influence (−0.029), indicating that uncertainty discourages new business formation. FDI again shows a positive impact (0.514) while IFR has a marginally negative effect, though not statistically significant in this context. BSD contributes positively to NBD (0.030), and PSB has a strong positive effect (6.031), emphasizing that political stability greatly enhances entrepreneurial activity.

4.4. Stability analysis

The results in Appendix Table A2 provide a comprehensive assessment of the stability and validity of the CS-ARDL models used in the analysis. The VAR Lag Order Selection Criteria indicate the optimal lag length for the models. The criteria evaluated include the Akaike Information Criterion (AIC), Schwarz Criterion (SC), and Hannan-Quinn Criterion (HQ). The table shows that the lag lengths tested ranged from 0 to 2. The lowest AIC, SC, and HQ values are found at lag 2, suggesting that this is the most suitable lag length for the models to capture the dynamic relationships among the variables. The normality analysis results, based on the Jarque-Bera Normality Test, are reported for five different models. The p-values for all models (ranging from 0.128 to 0.419) are above the typical significance level of 0.05. This indicates that the residuals of the models are normally distributed, which is a key assumption for the validity of the regression results.

The Variance Inflation Factor (VIF) test for multicollinearity shows VIF values for the variables used in the models. All VIF values are below the threshold of 10, with the highest VIF being 1.380 for PSB (political stability) and the lowest being 1.120 for both FDI and BSD. These low VIF values suggest that multicollinearity is not a concern in the models, indicating

Table 6. Effect of EPU on New Business Density (NBD)

Variables	NBD as a dependent variable			
	CS-ARDL model			
	Coefficient	Std. Error	t-Statistic	Prob.*
Long run equation				
EPU	−0.029	0.004	−7.194	0.000
FDI	0.514	0.177	2.898	0.004
IFR	−0.458	0.267	1.716	0.087
BSD	0.030	0.009	−3.049	0.002
SUB	−0.0005	0.034	−0.015	0.987
PSB	6.031	1.208	−4.991	0.000
Short run equation				
COINTE Q01	−2.341	0.547	−4.512	0.000
D (NBD (−1))	0.0005	0.001	0.449	0.653
D (NBD (−2))	−0.078	0.045	−1.713	0.088
D (EPU)	0.058	0.066	0.876	0.382
D (EPU (−1))	−0.014	0.003	−3.71	0.000
D (FDI)	0.073	0.024	2.993	0.003
D (FDI (−1))	0.270	0.358	0.755	0.451
D (IFR)	−0.062	0.047	−1.317	0.189
D (IFR (−1))	−0.122	0.072	−1.683	0.094
D (BSD)	−0.011	0.003	−3.504	0.000
D (BSD (−1))	−0.083	0.031	−2.600	0.010
D (SUB)	1.598	0.482	3.310	0.001
D (SUB (−1))	−0.124	0.061	−2.080	0.030
D (PSB)	0.197	0.062	3.321	0.000
D (PSB (−1))	0.104	0.059	2.086	0.025
C	2.521	1.018	2.283	0.025

Note: NBD – New Business Density, EPU – Economic Policy Uncertainty, FDI – FDI Inflow, IFR – Inflation Rates, BSD – Banking Sector Development, SUB – Government Subsidies, PSB – Political Stability.

that the independent variables do not exhibit high intercorrelations that could distort the regression results. The Ramsey RESET Test assesses model specification. The reported probabilities for the t-statistic and F-statistic across the five models range from 0.126 to 0.333, all above the 0.05 significance level. This indicates no evidence of model misspecification, meaning the functional form of the models is appropriate. Finally, Figures 1–2 likely illustrate the Cumulative Sum (CUSUM) and CUSUM of Squares tests, which assess the stability of the model coefficients over time. These graphs are used to determine whether the estimated coefficients remain stable throughout the sample period. As the plots remain within the critical bounds, it indicates stability in the model coefficients, thereby supporting the reliability of the regression results. Overall, the stability tests and diagnostic checks confirm that the CS-ARDL models are robust, well-specified, and free from significant multicollinearity, with normally distributed residuals and stable coefficients over time.

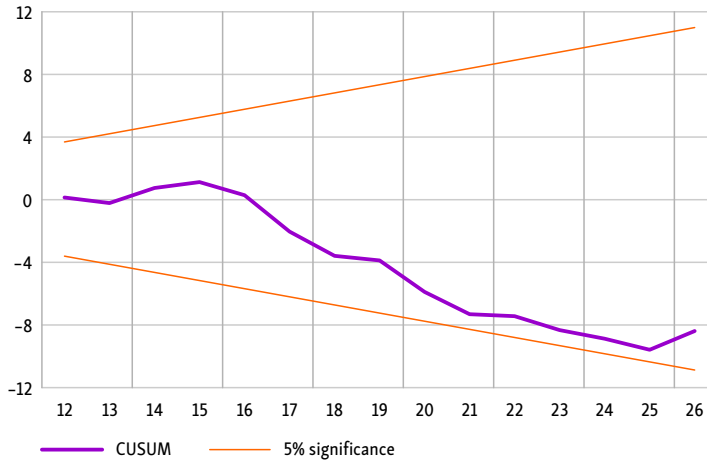


Figure 1. Graphs of CUSUM

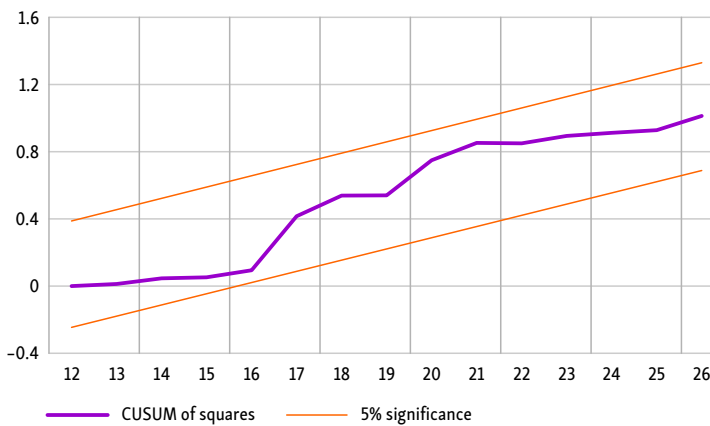


Figure 2. Graphs of CUSUM squares

5. Discussion

In the current study, we aim to explore the impact of EPU on entrepreneurship in G7 economies. The analysis was conducted by employing the CS-ARDL model and found that EPU has a detrimental impact on entrepreneurship. Specifically, the analysis revealed a negative impact EPU has a negative impact on New Business Density (NBD). High EPU can lead to fluctuating costs and revenues. For instance, unexpected changes in tax policies, tariffs, or regulations can increase operational costs or reduce market opportunities (Yujia et al., 2024). Entrepreneurs may delay starting new businesses until they have a clearer understanding of the economic policy. In addition, consumers and businesses alike may reduce spending during times of high EPU. This low confidence of consumer confidence and reduced demand can negatively impact the expected revenues of new businesses and thus makes it less attractive

for entrepreneurs to enter the market. Ali et al. (2022) conjectured that EPU is a significant risk factor that derives the low return on investment. In addition, they found that local uncertainty plays a more dominant role in driving returns compared to global policy uncertainty. In the literature, most studies suggest the positive impact of EPU on entrepreneurship (Nguyen et al., 2021a; Khurana et al., 2023; Wang et al., 2023; Paule-Vianez et al., 2024). However, the current analysis departs from the literature as it produces contrasting evidence in terms of the EPU-entrepreneurship nexus. This negative effect of EPU on entrepreneurship in G7 countries which is contrary to the positive impact observed in other economies can be attributed to several factors. In highly developed economies like the G7, established businesses and regulatory frameworks are more sensitive to policy changes, creating an environment where uncertainty can stifle innovation and risk-taking. Entrepreneurs in these countries may face higher stakes and greater competition, leading to caution in the face of uncertain policies. Conversely, in emerging economies, EPU can sometimes spur entrepreneurial activity as individuals seek to capitalize on potential market gaps and opportunities that arise from unstable policy environments. This divergence underscores the complex and context-dependent nature of EPU's impact on entrepreneurial dynamics.

For control variables, FDI inflow positively impacts entrepreneurship activities by providing essential capital and resources. When foreign investors bring in significant funding, local entrepreneurs gain access to the financial means necessary to start and grow their businesses. Additionally, FDI often introduces new technologies and practices that enhance productivity and innovation within the local entrepreneurial ecosystem. Furthermore, integration into global value chains through foreign investment opens new markets and offered the local entrepreneurs greater opportunities for expansion and internationalization. This positive effect of FDI inflow on entrepreneurship is in line with empirical findings of Chen and Zhou (2023).

Similarly, Banking Sector Development (BSD) also fosters entrepreneurship by improving access to financial services. A well-developed banking sector offers entrepreneurs better access to loans, credit and other financial products which facilitate the financing of their ventures. Moreover, financial innovation within a developed banking system introduces specialized products and services tailored to the needs of startups and small businesses, such as venture capital and microfinancing. These advancements along with various risk management tools provided by a sophisticated banking system, make entrepreneurial activities more feasible and sustainable. Omri (2020) asserted the positive effect of financial development on entrepreneurship.

Government Subsidies (SUB) play a crucial role in supporting entrepreneurship by alleviating financial burdens. The subsidies provide essential funds that help cover startup costs and operational expenses, reducing the financial strain on new businesses. They also incentivize innovation by directing funds towards research and development and encouraged the creation of new products and services. Additionally, subsidies lower market entry barriers and enabled new businesses to compete more effectively with established firms, thereby promoting a more dynamic and competitive business environment (Alkahtani et al., 2020).

A stable political situation (PSB) is another key factor that positively influences entrepreneurship by creating a predictable and secure environment for business operations. Such a stability reduces the risks associated with political turmoil or policy changes and allowed

entrepreneurs to plan and invest with confidence. It also attracts both domestic and foreign investors and increased the availability of capital and resources for entrepreneurial ventures. Moreover, stable political conditions often lead to consistent and favorable business policies, which support long-term planning and investment in new businesses (Omri, 2020).

In contrast, Inflation Rates (IFR) negatively affect entrepreneurship by increasing costs and creating economic uncertainty. High inflation leads to higher prices for goods and services, eroding profit margins and making it difficult for new businesses to sustain operations. This economic uncertainty makes financial planning more complicated. Furthermore, rising prices can diminish consumers' purchasing power which leads to lower demand for the products and services offered by new businesses. Additionally, to control inflation, central banks often raise interest rates, increasing the cost of borrowing and making it harder for entrepreneurs to finance their ventures (Lin et al., 2023). In summary, FDI, BSD, SUB, and PSB create a supportive environment for entrepreneurship by providing capital, financial services, incentives, and stability, which are crucial for the growth and success of new businesses. On the other hand, high inflation rates hinder entrepreneurial activities by increasing costs, creating uncertainty, reducing consumer demand, and raising borrowing costs, all of which pose significant challenges to the success and sustainability of new businesses.

6. Implications and limitations

6.1. Theoretical implications

This study makes several theoretical contributions. First, it extends the literature on institutional and macroeconomic determinants of entrepreneurship by integrating EPU as a central explanatory variable, emphasizing its multidimensional influence on both the quantity and quality of entrepreneurial activity. Second, it contributes to the literature by distinguishing between structural (e.g., FDI, BSD, SUB, PSB) and cyclical (e.g., IFR, EPU) drivers of entrepreneurship, offering a nuanced understanding of how uncertainty interacts with institutional frameworks in G7 economies. Lastly, the findings highlight the need to incorporate uncertainty-related variables in entrepreneurship models to reflect real-world dynamics more accurately, thereby pushing the boundaries of existing empirical frameworks in entrepreneurship and policy research.

The novelty of this study lies in its exclusive focus on G7 economies, which represent mature, highly regulated markets where the dynamics of EPU may differ significantly from those in developing or mixed-country samples. Additionally, the study employs a longitudinal approach over 26 years, using multiple operational dimensions of entrepreneurship such as procedural and cost-based indicators, rather than relying solely on start-up counts or intention measures commonly found in prior research. This comprehensive framework offers new insights into how institutional and macroeconomic uncertainty shapes entrepreneurial ecosystems in advanced economies.

6.2. Practical implications

The findings of this study have important policy implications for fostering a more robust entrepreneurial environment within the G7 economies. Given the negative impact of EPU on the new business density, policymakers should prioritize creating a more predictable and stable economic environment. This can be achieved through transparent and consistent policy-making processes, clear communication of economic policies and efforts to reduce regulatory burdens that contribute to uncertainty. Such measures would help build confidence among entrepreneurs and investors, encouraging the establishment and growth of new businesses. Furthermore, the positive effects of control variables including FDI, BSD, government subsidies (SUB), and PSB on entrepreneurship highlight the need for targeted policies that enhance these areas. Governments should implement policies that attract and retain FDI by ensuring a favorable investment climate including tax incentives and streamlined investment procedures. Similarly, strengthening the banking sector to provide better access to credit and financial services is crucial for supporting entrepreneurial ventures. Additionally, offering government subsidies and incentives can lower the barriers to entry for new businesses, facilitating innovation and growth. In the same vein, maintaining political stability is also essential as it creates a secure environment for businesses to operate and plan for the future.

On the other hand, the negative impact of high inflation rates on entrepreneurship suggests the need for vigilant monetary policies to keep inflation under control. Policymakers should focus on maintaining price stability through appropriate fiscal and monetary measures to ensure that inflation does not erode purchasing power or create economic uncertainty. This includes careful monitoring of inflation trends and implementing counter-inflationary policies when necessary. In conclusion, the policy implications of this study emphasize the importance of creating a stable and supportive economic environment for entrepreneurship. By addressing the negative impacts of EPU and inflation while enhancing factors such as FDI, BSD, government subsidies, and political stability, policymakers can create a more favorable landscape for business creation and growth. These efforts will not only support existing entrepreneurs but also encourage new entrants, driving innovation and economic development within the G7 economies.

6.3. Limitations and future research

In parallel to policy implications, this study has several limitations that need to be acknowledged. Firstly, the analysis is confined to the G7 economies which limits the generalizability of the findings to other countries particularly those with different economic structures or levels of development. Future research could expand the scope to include a broader range of countries, both developed and developing, to provide a more global perspective on the impact of EPU on entrepreneurship. Secondly, the study primarily relies on the CS-ARDL model for regression analysis. While this model is robust and suitable for addressing certain econometric issues, it may not fully capture the dynamic and potentially nonlinear relationships between the variables. Future research could employ alternative econometric techniques or models, such as dynamic panel data models to explore these relationships more deeply and uncover

potential nonlinearities or interaction effects. Future studies could benefit from more up-to-date data and longer time horizons to better capture these dynamics. In addition, there are other potential factors influencing entrepreneurship that were not considered. These could include technological advancements, education and skill levels, cultural attitudes towards entrepreneurship and availability of venture capital. Future research could incorporate these additional variables to provide a more comprehensive understanding of the determinants of entrepreneurship. Future research may also benefit from incorporating entrepreneur-level survey data such as those provided by the Global Entrepreneurship Monitor (GEM) to capture micro-level insights beyond the macroeconomic indicators used in this study.

7. Conclusions

This study examined the influence of Economic Policy Uncertainty (EPU) on entrepreneurship across G7 countries over the period 1997–2024 using the CS-ARDL model. The empirical findings consistently indicate that EPU exerts a significant negative effect on new business density, suggesting that policy uncertainty discourages new firm creation in advanced economies. The results further demonstrate that entrepreneurship is highly sensitive to macroeconomic and institutional conditions. Specifically, factors such as foreign direct investment, banking sector development, government subsidies, and political stability positively support entrepreneurial activity, while inflation negatively affects business formation. These findings highlight that a stable and predictable economic environment is crucial for fostering entrepreneurship. Overall, the study confirms that in the context of G7 economies, economic policy uncertainty acts as a constraint rather than a catalyst for entrepreneurship. By situating these findings within advanced institutional settings, the study provides a clearer understanding of how policy instability translates into reduced entrepreneurial activity. These insights underscore the importance of maintaining policy consistency and macroeconomic stability to support sustainable entrepreneurial development.

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APPENDIX

Table A1. Average values of variables across samples countries

Variables	Canada	France	Germany	Italy	Japan	UK	USA
NBD	0.150	3.738	1.170	2.552	0.201	13.503	18.219
EPU	86.710	109.168	81.089	153.552	169.195	221.467	250.741
FDI	3.174	2.180	2.489	1.114	0.349	4.217	1.813
IFR	2.318	1.401	1.434	1.823	−0.396	2.036	2.161
BSD	143.105	90.114	94.958	74.868	115.325	140.626	51.854
SUB	65.495	61.768	81.311	44.666	66.120	51.641	62.993
PSB	1.040	0.452	0.882	0.567	1.058	0.510	0.438

Note: NBD – New Business Density, EPU – Economic Policy Uncertainty, FDI – FDI Inflow, IFR – Inflation Rates, BSD – Banking Sector Development, SUB – Government Subsidies, PSB – Political Stability.

Table A2. Stability tests for CS-ARDL models (source: authors' own calculation)

VAR lag order selection criteria					
Lag		AIC	SC	HQ	
0		43.260	43.390	43.313	
1		28.702	29.743	29.125	
2		28.482	30.434	29.274	
Normality analysis					
	Model 1	Model 2	Model 3	Model 4	Model 5
P-Value- Jarque-Bera Normality test	0.128	0.222	0.419	0.187	0.188
VIF test for multicollinearity for all models					
Variables	VIF	I/VIF			
PSB	1.380	0.724			
IFR	1.220	0.821			
SUB	1.170	0.855			
EPU	1.170	0.855			
FDI	1.120	0.892			
BSD	1.120	0.892			
Ramsey RESET test					
	Model 1	Model 2	Model 3	Model 4	Model 5
Test	Probability	Probability	Probability	Probability	Probability
t-statistic	0.312	0.333	0.182	0.126	0.222
F-statistic	0.312	0.331	0.189	0.127	0.217

Note: Acronyms see the Table 1 or list of abbreviation.