

MACRO-LEVEL DRIVERS OF BUSINESS CREATION: INSIGHTS FROM WORLD BANK PANEL DATA

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ABSTRACT

This study analyses how macroeconomic conditions influence the growth of registered entrepreneurial activity, quantified by the number of newly established firms per country. The research relies on World Bank datasets spanning 145 nations over a 17-year period (2006–2022). Using panel data regression, the findings indicate that higher GDP per capita and increased tax revenue positively correlate with the formation of limited liability companies (LLCs). On the other hand, the unemployment rate proves to have a negative correlation, indicating that higher unemployment levels hinder the development of formal entrepreneurial activity. These results highlight the importance of economic stability and institutional transparency in promoting the creation of formal entrepreneurship. By leveraging World Bank data, this study provides robust empirical insights for policymakers aiming to enhance entrepreneurial ecosystems through targeted economic policies.

Keywords: formal entrepreneurship, GDP per capita, unemployment, tax revenue

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INTRODUCTION

According to economic theory, entrepreneurship is a process that generates economic growth and represents one of the driving forces of economic development [1], [2]. As a result, entrepreneurship has become a major focus for academics and government leaders due to its vital contribution to economic expansion, job creation, and technological progress. Experts widely acknowledge that levels of business formation differ substantially between nations and across different periods, leading to increased interest in identifying the key drivers behind these variations [3].

Financial and market conditions significantly impact entrepreneurial behaviour. Research by [4] suggests that in wealthier nations with greater income disparities, entrepreneurship is often motivated by market opportunities, whereas in lower-income economies people frequently start businesses out of necessity due to scarce employment options. However, economic conditions alone do not fully explain differences in entrepreneurial activity, as countries with similar economic structures can exhibit varying rates of entrepreneurship [5].

Institutional factors are increasingly recognised as critical drivers. Institutions reduce uncertainty and shape individual choices, influencing both the rate and sustainability of entrepreneurial activity. Institutional factors correspond to formal structures and norms derived from the regulatory framework, government agencies, and prevailing cultural and social practices. These factors have proven to be fundamental in promoting entrepreneurial activity [6], [7].

This research contributes to the literature by analysing how different macro-level determinants collectively influence formal entrepreneurship across diverse environments. Using a large sample of 145 countries, the research aims to identify macroeconomic and institutional factors and explore how these conditions affect the creation of limited liability companies. The paper is structured as follows: Section 2 examines the theoretical background of different economic and institutional determinants of entrepreneurship relevant to this research; Section 3 provides information on the methodology and variables used; Section 4 presents the results and discussion in relation to existing research; finally, Section 5 provides conclusions, implications for future research, and limitations.

THEORETICAL BACKGROUND

Scholarly investigations have consistently observed higher frequencies of business formation in regions and national economies characterised by underdeveloped or emerging market conditions [8]. This situation is associated with difficulties in finding quality paid employment in developing countries, with individuals tending to engage in entrepreneurship to avoid unemployment [4]. Although less developed countries and markets provide more opportunities for necessity-driven entrepreneurs [9], opportunity-driven and formal entrepreneurship is more strongly associated with the macro-determinants of developed economies [10].

In advanced economies, robust social welfare systems and plentiful employment options raise the potential costs associated with starting a business [11]. Nevertheless, research by [12] indicates that the relationship between unemployment and business creation is complex. Although rising unemployment may stimulate entrepreneurial ventures, weaker business formation rates often correlate with sluggish economic expansion, unfavourable commercial environments, and persistent job scarcity [13].

Institutions shape entrepreneurial endeavours through both direct and indirect channels, with their impact varying depending on factors such as economic development, unemployment levels, and the nature of entrepreneurship [14]. For example, excessive taxation can diminish potential profits for entrepreneurs, discouraging business creation. Conversely, higher tax revenue enables governments to offer enhanced support systems for startups.

Because institutional frameworks shape economic behaviour, they help explain cross-national variations in entrepreneurial activity. As noted by [15], institutions can be divided into formal and informal types. Formal institutions include laws, judicial precedents, and government regulations, whereas informal institutions encompass societal norms and shared cognitive frameworks that guide behaviour.

Formal institutions often govern legal standards, political and economic liberties, and anti-corruption measures [16]. Governments leverage these structures to foster entrepreneurship by lowering operational costs,

streamlining business setup processes, and reducing bureaucracy [5]. Research also indicates that nations with robust formal institutions exhibit higher levels of opportunity-driven entrepreneurship and innovation [17].

Studies such as [18] reveal that regulatory frameworks have a more favourable impact on early-stage entrepreneurship in advanced economies compared to developing ones. Meanwhile, [19] highlights that stable inflation, investment-friendly policies, and reasonable taxation are key drivers of economic expansion and entrepreneurial growth. Additionally, [3] suggests that while strong social safety nets raise the costs of starting a business, they also provide financial security in the event of failure, ultimately benefiting entrepreneurs.

Further research by [20] and [21] demonstrates that easing tax compliance and reducing administrative hurdles encourage formal business registration without significantly affecting state revenues. Taxes, government size, and corruption are interconnected factors that must be analysed jointly. Governments rely on tax revenue to fund operations and public services, but corruption can undermine this process [22], [23].

Research by [24] and [25] states that corruption harms entrepreneurship, but its negative effects are weaker when business environments are not conducive to growth. Existing research presents mixed findings on how taxation influences small business growth. While some studies report a favourable relationship between tax policies and entrepreneurial activity [26], others indicate an adverse effect [27] or no significant correlation [28]. According to [29], excessive taxation and widespread corruption hinder both necessity-driven and opportunity-driven entrepreneurs.

Education is widely recognised as a key factor in economic progress, with multiple studies linking higher education levels to improved startup success [30]. A well-educated workforce is better equipped to recognise market opportunities [31], [32], [33]. As highlighted by [32], education shapes students' mindsets and behaviours, fostering an entrepreneurial culture. Individuals with advanced education tend to have greater confidence in their skills, making them more likely to pursue business ventures [31].

The contribution of this paper is to test selected findings from the literature using several examined variables, such as GDP per capita, unemployment, education, and corruption, based on the largest available dataset in terms of the number of countries and time frame. An additional contribution is the inclusion of the tax revenue variable, which is intended to capture the fiscal capacity of governments and its potential impact on formal entrepreneurship.

METHODOLOGY

This paper explores key factors influencing startup formation rates, measured by the number of newly established limited liability companies (LLCs) per 1,000 individuals in the workforce. This metric was selected as the primary outcome measure because it effectively captures both the vitality of the business environment and the rate of officially documented venture creation. By focusing exclusively on enterprises that complete formal registration procedures, the analysis specifically targets institutionalised entrepreneurial activity—the type most susceptible to broader economic and policy influences [21, 22].

Based on the literature review, the following indicators were selected as independent variables: GDP per capita, unemployment (% of the total labour force), tax revenue (% of GDP), control of corruption (estimate), and government expenditure on education (% of GDP). To construct the largest available dataset, the World Bank database was used as a single data source. The final sample included 145 countries, comprising 37 low-income, 66 lower-middle-income, 50 upper-middle-income, and 46 high-income countries, observed over a 17-year period (2006–2022). The dataset included all available observations for the selected variables, resulting in a final sample size of 1,926 observations.

Prior to the main analysis, the data were pre-processed and integrated into a single dataset. Data preprocessing and the main statistical analysis were performed using Stata software. Descriptive statistics for all examined variables are presented in Table 1, and based on the overall standard deviation, it can be concluded that the data vary significantly across countries for all variables. Although data availability differed by variable, all available World Bank data were utilised.

Table 1. Descriptive statistics of variables

Variable	Mean	Std. Dev.	Min	Max	Observations
new_business_density					
overall	3.114984	4.290489	.01	38.2	N = 1926
between		3.794943	.0183333	20.182	n = 145
within		1.480928	-7.276444	21.13299	T-bar = 13.2828
gdp_per_capita					
overall	15295.2	20770.88	303.495	133711.8	N = 1913
between		19701.33	444.9325	115948.9	n = 144
within		3499.47	-5420.232	53603.09	T-bar = 13.2847
unemployment					
overall	7.489431	5.475818	.11	32.944	N = 1819
between		4.833437	.8423077	24.6558	n = 143
within		2.482491	-14.89137	27.9912	T-bar = 12.7203
education_gdp					
overall	4.558105	1.730685	.3485	15.377	N = 1584
between		1.802375	.4392615	13.39916	n = 137
within		.5881373	.2810359	8.724205	T-bar = 11.562
tax_revenue_gdp					
overall	18.01575	7.269368	.042	93.865	N = 1439
between		6.599378	.325	34.58173	n = 117
within		3.17718	-1.898852	79.32315	T-bar = 12.2991
corruption					
overall	.0341184	.9878094	-1.724	2.459	N = 1926
between		.9581956	-14.966	2.312588	n = 145
within		.1606283	-.8774699	1.026618	T-bar = 13.2828

GDP per capita, calculated by dividing total domestic production by the average population, serves as an important indicator of economic development. Increases in this measure typically signal several advantages for potential business founders, including improved access to capital, stronger consumer purchasing power, and enhanced public infrastructure. These factors collectively create a more favourable environment for launching new ventures. Higher GDP per capita is often associated with greater resource availability and more developed markets, which can foster entrepreneurial activity.

Labour market conditions are assessed using unemployment statistics, defined as the percentage of the labour force that is without employment but actively seeking work. This indicator reflects workforce utilisation and highlights the share of employable individuals who remain involuntarily idle. The unemployment variable allows for controlling cross-country differences in labour market conditions and assessing their impact on entrepreneurship. High unemployment may push individuals toward self-employment, while low unemployment often reflects favourable economic conditions for business creation.

Government expenditure on education, encompassing operational costs, infrastructure investments, and subsidy allocations, is measured relative to overall economic output. This indicator, calculated as a percentage of gross domestic product, facilitates cross-country comparisons of investments in human capital development. Higher education spending is expected to support entrepreneurship by improving the skills and knowledge base of the population.

The tax revenue (% of GDP) variable refers to the total amount of taxes collected by the central government. Taxes represent compulsory transfers of resources from individuals, households, or businesses to the government. Tax revenue is included to capture the fiscal capacity of governments and its potential influence on the business environment. Higher tax revenue may signal a more robust public sector capable of providing better infrastructure and services, although it may also imply a higher tax burden on businesses.

Control of Corruption measures the extent to which public power is exercised for private gain, ranging from petty corruption to large-scale misuse of public funds. This composite index assigns countries values on a scale from -2.5 to +2.5. Improved control of corruption enhances regulatory predictability and reduces transaction costs for businesses, thereby encouraging entrepreneurial activity and new venture creation.

Conversely, higher levels of corruption (lower index scores) may deter entrepreneurs by increasing uncertainty, costs, and market distortions, whereas higher scores are associated with more transparent and predictable business environments.

RESULTS AND DISCUSSION

A fixed-effects GLS regression was performed to measure the impact of independent variables (macroeconomic and institutional indicators) on the dependent variable (new business density). The main analysis was preceded by the correlation analysis (Table 2) and the Hausman test (Table 3), which confirmed a better fit for the fixed-effects model compared to the random-effects model. The results of the fixed-effects GLS regression are presented in Table 4.

Table 2. Correlation analysis

Variable	gdp_per_capita	unemployment	Education	tax_revenue_gdp	corruption
gdp_per_capita	1				
unemployment	-0.1051	1			
education_gdp	0.3715	0.0821	1		
tax_revenue_gdp	0.4026	0.1753	0.5355	1	
corruption	0.8188	0.0009	0.5315	0.5063	1

The strongest correlation is observed between GDP per capita and corruption (0.8188). The analysis reveals several noteworthy associations between national development indicators. First, countries with higher levels of economic prosperity typically demonstrate stronger integrity in public institutions. The data show only a negligible relationship between unemployment and institutional integrity ($r = 0.0009$), suggesting that these factors operate largely independently.

More substantial correlations emerge when examining the relationship between education and other variables. The association between educational attainment and tax revenue ($r = 0.5355$) is similar in magnitude to the relationship between education and institutional transparency ($r = 0.5315$). These moderate positive correlations suggest that societies investing more in education tend to maintain higher tax revenue levels and experience lower levels of misuse of public power.

The strong correlation between GDP per capita and corruption raises concerns regarding potential multicollinearity in the regression model. Therefore, corruption was excluded from further analysis, while GDP per capita was retained due to its stronger theoretical relevance and interpretability. Additionally, the panel regression results indicated that the education variable was statistically insignificant, which led to the exclusion of the remaining institutional variable from the final model.

The model examines the determinants of new business density, which measures the rate of new firm creation relative to the working-age population. This indicator captures key aspects of entrepreneurial activity and economic dynamism. The dataset is unbalanced, as some countries have fewer observations than others. However, an average of 11.8 observations per country provides a sufficient panel structure for reliable estimation.

The independent variables explain approximately 35.11% of the variation in new business density between countries, indicating that additional unobserved factors (e.g., cultural, institutional, or policy-related) may also play a significant role in shaping entrepreneurial activity. An F-test was conducted to assess the joint significance of all independent variables, and a p-value below 0.05 indicates that the model is statistically significant. As shown in Table 4, all independent variables are significant at the 1% level ($p = 0.000$).

Table 3. Results of the Hausman test

	---- Coefficients ----			
	(b) fe	(B) re	(b-B) Difference	$\sqrt{\text{diag}(V_b - V_B)}$ S.E.
gdp_per_capita	.0790735	.0877465	-.0086731	.0077905
unemployment	-.0719904	-.0589649	-.0130254	.0051341
tax_revenue_gdp	.072978	.0877827	-.0148047	.0041222

b = consistent under H_0 and H_a ; obtained from xtreg

B = inconsistent under H_a , efficient under H_0 ; obtained from xtreg

Test: H_0 : difference in coefficients not systematic

$\chi^2(3) = (b-B)'[(V_b - V_B)^{-1}](b-B) = 14.41$

Prob> $\chi^2 = 0.0024$

The results reveal significant relationships between macroeconomic conditions and entrepreneurial activity. For every USD 1,000 increase in GDP per capita, the data indicate a corresponding increase of 0.0791 in registered startups per working-age population. This positive association suggests that countries with higher income levels tend to experience stronger formal business creation, likely driven by greater resource availability, stronger market demand, and more supportive institutional environments.

Conversely, each percentage point increase in the unemployment rate is associated with a decrease of 0.0719 in new business density. This negative relationship implies that deteriorating labour market conditions create an unfavourable environment for formal venture creation, potentially due to reduced purchasing power, heightened economic uncertainty, and more constrained access to finance.

A similar interpretation applies to the tax revenue variable. A one-unit increase in tax revenue (% of GDP) is associated with a 0.0729 increase in new business density, holding other variables constant. This finding suggests that higher tax revenue may support entrepreneurship by financing public goods such as infrastructure and education, which facilitate business creation. Nevertheless, this result should be interpreted cautiously, as excessive taxation may also discourage entrepreneurial activity by increasing the cost of doing business.

Table 4. Fixed-effects GLS regression

Number of obs = 1373	Number of groups = 116	Obs per group = min 1, avg 11.8, max 17			
R-sq: within = 0.0745	between = 0.3511	overall = 0.3184			
new_business_density	Coef.	Std. Err.	z	P>z	[95% Conf. Interval]
gdp_capit_thous	.07907	.01194	6.62	0.000	.05564 .10250
unemployment	-.07199	.01734	-4.15	0.000	-.10602 -.03795
tax_revenue_gdp	.07297	.01362	5.36	0.000	.04624 .09970
_cons	1.5544	.38366	4.05	0.000	.80172 2.3071
F (3,1254) = 33.64	Prob > F = 0.0000			corr(u_i, Xb) = 0.1552	
sigma_u = 3.3387711	sigma_e = 1.6137395			rho = .8106282	
F test that all u_i=0:	F(115, 1254) = 52.94			Prob > F = 0.0000	

The findings of this study contribute to the ongoing debate on the macroeconomic determinants of entrepreneurship, particularly with respect to GDP per capita, tax revenue, and unemployment. The observed positive relationship between income levels and business formation supports existing research suggesting that developed economies provide more favourable conditions for formal venture creation. Countries with higher economic output typically offer stronger institutional support, improved access to capital, and more developed markets—key factors enabling new business formation [5], [10].

This result contrasts with studies emphasizing necessity-driven entrepreneurship in less developed economies. Research focusing on necessity-based ventures often finds higher startup rates in weaker economies, as individuals create businesses in response to limited formal employment opportunities [4], [9]. This divergence likely reflects the present study's focus on formal business creation, whereas earlier research frequently includes informal ventures, which are more prevalent in developing countries.

The negative association between unemployment and new business density reinforces the view that economic instability and reduced purchasing power discourage entrepreneurial activity [13]. Although some studies suggest that high unemployment may push individuals into necessity-driven entrepreneurship [12], the findings of this study indicate that, at the aggregate level, labour market distress suppresses formal business creation—possibly due to tighter credit conditions and weaker consumer demand.

The positive relationship between tax revenue and entrepreneurship provides an alternative perspective to literature arguing that high taxation discourages business formation by reducing profitability [28], [29]. Instead, the results indicate that tax-funded public goods—such as infrastructure and education—may facilitate entrepreneurial activity, supporting the argument that the impact of taxation depends on how revenues are allocated [20], [22].

Overall, the results highlight the dual role of taxation in entrepreneurship. While higher tax revenue can enable governments to provide public goods that support business creation, the associated tax burden may deter potential entrepreneurs. Policymakers should therefore prioritise improving the efficiency of tax systems and ensuring that tax revenue is used effectively to foster a supportive business environment.

Although corruption and education were excluded from the final model due to multicollinearity and statistical insignificance, their potential interactions with the retained variables remain relevant. Corruption may weaken the positive effects of tax revenue if public funds are misallocated, while education can amplify the benefits of economic development by strengthening entrepreneurial skills and capabilities [24], [32]. Future research should investigate these relationships using alternative model specifications.

Overall, this study demonstrates that economic development, labour market conditions, and fiscal policy jointly shape entrepreneurial activity, although their effects depend on institutional efficiency and broader macroeconomic stability. Policymakers, particularly in developing economies, should focus on improving these conditions to create a more favourable environment for formal business creation.

CONCLUSION

This study examined the macroeconomic determinants of new business density, focusing on GDP per capita, tax revenue, and unemployment, while acknowledging the potential influence of corruption and education, which were excluded from the final model due to multicollinearity. The results indicate that higher GDP per capita is associated with increased formal entrepreneurial activity, supporting the argument that wealthier economies provide more favourable conditions for business creation through improved infrastructure, better access to finance, and stronger consumer demand.

Conversely, higher unemployment discourages entrepreneurial activity, likely due to economic instability, reduced purchasing power, and tighter credit conditions. The positive relationship between tax revenue and new business density suggests that government fiscal capacity, when efficiently utilised, may foster entrepreneurship by financing public goods that support business development. However, this finding contrasts with literature emphasising that excessive taxation can stifle entrepreneurial incentives, highlighting the importance of balanced fiscal policies that minimise administrative burdens while maintaining adequate public investment.

Although corruption and education were not included in the final regression model, their theoretical role in shaping entrepreneurial activity remains important. Corruption may undermine the benefits of tax revenue through the misallocation of resources, while education can enhance the positive effects of economic development by improving entrepreneurial skills and opportunity recognition. Future research should explore these interactions using alternative methodologies or expanded datasets.

Overall, the findings emphasise that economic development, labour market conditions, and fiscal policy collectively influence entrepreneurship, although their effects depend on institutional efficiency and broader macroeconomic stability. Policymakers seeking to promote entrepreneurship should therefore focus on fostering sustainable economic growth, maintaining labour market stability, and implementing tax policies that balance revenue generation with business-friendly incentives.

The exclusion of informal businesses and the focus on the quantity rather than the quality of new firms highlight the need for further research on the broader entrepreneurial ecosystem. Future studies could build on these insights by differentiating between necessity-driven and opportunity-driven entrepreneurship across varying economic contexts.

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