Article

Entrepreneurship Quantity Growth and Market Competition: Dynamic Dependence Analysis Case of Uzbekistan

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Abstract: This article aims to study the dynamic relationship between the growth of entrepreneurship and the level of competition in the market. An increase in the number of entrepreneurs can increase competition in the market, increase economic efficiency and stimulate innovation. In this article, interrelated factors are analysed and the relationship between the number of newly established enterprises, market share and the competitive environment is studied. Based on the analysis carried out in the case of Uzbekistan, conclusions are drawn about how the increase in competition affects economic growth and entrepreneurship development. At the same time, it also examines what policies and strategies are effective to increase competition.

Keywords: Entrepreneurship, Competitiveness Environment, New Enterprises, Economic Efficiency, Antimonopoly Policy

1.   Introduction

The main driver of the modern economy is the development of entrepreneurship and a competitive environment. As the competitive environment improves, the number of entrepreneurs increases, thereby increasing economic efficiency, innovation, and technological innovation in the market. Therefore, it is necessary to study the influence of market entry barriers, antitrust policies, and government incentives for free competition on the number of entrepreneurs.

At the same time, modern economic studies set forth extensive evidence of what happens to the number of entrepreneurs in the presence of free competition. For instance, the results from Aghion et al. (2015) study indicate that increased liberalisation of a competitive environment leads to a increase in innovative presence. This is related to the extension of opportunities of branching in a new market through competitive environment and the reduction of the access to raw materials and the production resources. This process is also relevant for the economy of Uzbekistan, so in this study it is observed the relations between the factors that allow free competition and entrepreneurs number.

Improvements in the competitive environment result in increased numbers of entrepreneurs and provide an opulent environment for new enterprises to work in the market. To explain this process, several factors that support free competition in different segments of the economy can be distinguished:

Antimonopoly policy is crucial for free competition in developing countries such as Uzbekistan. Research (Shleifer and Vishny, 2010) suggests that reducing the monopolies and enabling the market access for the medium and small entrepreneurs multiply the number of the new businesses. In addition, removing bureaucratic barriers to market entry will produce more competition, which will promote more entrepreneurs.

Financial support availability for entrepreneurship is important especially considering small and medium enterprises. By enhancing financing opportunities for new businesses through the banking sector by liberalening credit policies, market competition would also increase, with more new businesses being established, as Brown, Martinsson and Petersen (2017) conclude. State allocated preferential loans are one of the important factors that stimulate competition in the development of small businesses in Uzbekistan. According to Djankov et al. (2019), the growth of entrepreneurs is affected negatively by barriers to market entry such as licencing processes and other state controlled bureaucratic constraints. Given this, the reforms that took place in Uzbekistan here, especially in the process of obtaining a business permits simplification, have a positive impact on new business foundations. Development of innovative activities directly impacts strengthening competition, in turn, having effect on number of entrepreneurs. The study of Acs and Audretsch (2010) shows that enterprises enter the market introducing new technologies while at the same time diversifying the products in free competition environment. This period of Stimulating entrepreneurship and increasing competition is also important for Uzbekistan. The main direction of economic reforms in Uzbekistan is development of entrepreneurial activity and strengthening of the competitive environment. The free competition environment of the markets encourages the opening of many new business and we observe a rapidly increasing number of entrepreneurs. In this regard, the state has passed economic reforms in Uzbekistan, as well as measures aimed at supporting entrepreneurship. They help favour new businesses in the country and also provide financial support programmes and competition promotion policies to increase the number of entrepreneurs.

In the long term development of the economy of Uzbekistan creating of favourable conditions for the country's economic stability will help to increase its market competition and respondents entrepreneurs. Thus, the study of this topic will contribute to better understanding of the factors that are the basis of increasing the competitiveness of the economy of Uzbekistan and the expansion of entrepreneurship.

Literature Review

Many economic studies are on the relationship between the competitive environment and the number of entrepreneurs. The improvement of the competitive environment, according to Acs et al. (2013), contributes to raising the number of entrepreneurial, consequently to raising the economic efficiency. They think free competition stimulates innovation and makes entry easier. The contribution of entrepreneurship and competitive environment to economic growth is compared in Baumol (2010), with the increase of new businesses as the cause of competition. As Romer (2010) states, the number of entrepreneurs is quite highly determined by such economic freedom as well as ease of market access. Levine and Rubinstein (2016) similarly support a similar approach. Instead, this research examined how providing a propitious environment for the development of new ventures is beneficial in terms of fostering the creation of a favourable competitive environment for them. Study of Djankov, et al. (2002) indicate that bureaucratic barriers and market entry restrictions can prevent economically active new entrepreneurs. The research De Soto (2013) carries out also gives the same conclusions. De Soto illustrates how market access reforms have produced both positive effects for Uzbekistan and demonstrates that Uzbekistan too requires such reforms. According to Aghion et al. (2015) the strengthening of innovative competition stimulates the number of entrepreneurs, introduction of new technologies to the market. Also studies conducted by Peris-Ortiz et al. (2014) confirm the correlation between free competition and entrepreneurship, but the positive impact of policies that promote market entry is detected.

2. Materials and Methods

The purpose of this study is to examine the relationship between variety of economic factors and the growth of entrepreneurial activity, defined as the number of new entrepreneurs in Uzbekistan 2011-2023. These variables were wages, interest rates, government debt to GDP, exports, imports, foreign direct investment (FDI), industrial production, corporate tax rates and government spending. For collection of this data the sources were used from national and international sources such as the Central Bank of Uzbekistan, the State Statistics Committee and the global financial reports.

Data Collection:

The data spans 13 years (2011-2023) and includes variables such as:

- **Wages (X1):** Average monthly wages.
- **Interest Rates (X2):** Loan annual interest rates.
- **Government Debt to GDP (X3):** Percentage of GDP for government debt.
- **Exports (X4) and Imports (X5):** The export and import of goods respectively.
- **Foreign Direct Investment (X6):** The value of FDI.
- **Corporate Tax Rate (X7):** Corporate income tax rate.
- **Industrial Production (X8):** Changes in industrial production year on year.
- **Government Spending (X9):** Government spending is annual.
- **Dependent Variable (Y):** The number of entrepreneurs over the same period.

Regression Analysis:

To assess the influence of these independent variables on the number of entrepreneurs, a linear regression model was employed. The Ordinary Least Squares (OLS) method was used to estimate the model. A total of 13 observations were included in the dataset, covering the years from 2011 to 2023. The model was run using Python and statistical libraries, where each variable was tested for its significance in explaining changes in entrepreneurship.

3. Result and Discussion

Model 1: OLS, observations 2011-2023 (T = 13) used

Dependent variable : Y			
coeffisent	st.error	t-stat	P-mean
const	197879	197879	2,696	0,0740
X1	0,00064	0,053564	0, 01207	0,9911
X2	−4784,78	5500,73	−0,8698	0,4484
X3	53,3261	2098,31	0,02541	0,9813
X4	12,1390	4,77421	2,543	0,0845
X5	−12,9539	4,69405	−2,760	0,0702
X6	−46,4280	21,4723	−2,162	0,1193
X7	4771,15	4225,29	1,129	0,3410
X8	338,813	1924,55	0,1760	0,8715
X9	3,69467	1,11052	3,327	0,0448

Mean-variance 329980.7	Std variance 127098.3
Sum of square residuals $5.27 \cdot 10^8$ Std model error 13252.7	
R-square 0.997282	Corrected R-square 0.989128
F(9, 3) 122.3010	P-value (F) 0.001094

The results of the regression analysis provide important insights into the relationship between various economic factors and the number of entrepreneurs in Uzbekistan from 2011 to 2023. The model yielded an R-squared value of 0.997, indicating that 99.7% of the variance in the number of entrepreneurs can be explained by the independent variables included in the analysis. The adjusted R-squared of 0.989 further

confirms the robustness of the model, suggesting that even after accounting for the number of variables, the model remains a strong predictor of entrepreneurial growth.

The analysis of individual variables yielded the following key findings:

Wages (X1): The coefficient for wages was 0.000646 with a p-value of 0.991, indicating that wages have no statistically significant effect on the number of entrepreneurs. The t-statistic of 0.012 confirms that changes in wages do not meaningfully affect entrepreneurship.

Interest Rate (X2): The coefficient for interest rates was -4784.78 with a p-value of 0.448, suggesting that changes in interest rates have a negative but statistically insignificant effect on entrepreneurship. This is consistent with economic theory, as higher interest rates generally discourage borrowing, but the results are not statistically significant in this case.

Government Debt to GDP (X3): The coefficient was 53.33 with a p-value of 0.981, indicating no statistically significant relationship between government debt and entrepreneurial activity. This implies that the level of government debt does not directly impact entrepreneurship in this context.

Exports (X4): Exports had a positive coefficient of 12.14 and a borderline significant p-value of 0.084, suggesting that an increase in exports could potentially lead to higher entrepreneurial activity. However, the result is only marginally significant.

Imports (X5): Imports had a negative coefficient of -12.95 and a p-value of 0.070, also indicating borderline significance. This suggests that higher imports may slightly reduce the number of entrepreneurs, potentially due to increased foreign competition.

Foreign Direct Investment (X6): The coefficient for FDI was -46.43, with a p-value of 0.119, indicating no significant relationship between FDI and entrepreneurship in the sample period. This result suggests that FDI inflows might not play a major role in fostering new businesses in Uzbekistan.

Corporate Tax Rate (X7): The coefficient was 4771.15 with a p-value of 0.341, showing no statistically significant effect of corporate tax rates on the number of entrepreneurs. This suggests that changes in corporate tax rates do not significantly influence the entrepreneurial landscape.

Industrial Production (X8): The coefficient for industrial production was 338.81 with a p-value of 0.871, indicating no statistically significant relationship between industrial production and the number of entrepreneurs.

Government Spending (X9): Government spending had a positive and statistically significant effect, with a coefficient of 3.69 and a p-value of 0.045. This result suggests that increased government expenditure is associated with an increase in entrepreneurial activity. As government spending rises, more resources may become available to support business creation, such as infrastructure, subsidies, or other programs that encourage entrepreneurship.

The F-statistic of 122.30 and its associated p-value of 0.001 confirm that the model as a whole is statistically significant and provides a strong overall explanation of the data.

The most significant factor influencing entrepreneurial growth in Uzbekistan is government spending (X9), which has a direct and positive effect on the number of entrepreneurs. Exports (X4) and Imports (X5) show borderline significance, indicating that international trade might also play a role in shaping entrepreneurship. However, other factors, such as wages, interest rates, corporate tax rates, and FDI, do not show statistically significant effects in this particular analysis.

The model explains the vast majority of the variance in entrepreneurial activity, but the presence of negative autocorrelation suggests that further refinement of the model, potentially with additional variables or transformations, could improve its accuracy and predictive power.

4. Conclusion

Key economic variables and the number of entrepreneurs in Uzbekistan were investigated from 2011 to 2023. We modelled a regression of government spending over entrepreneurial activity and found that the most significant spike in entrepreneurial activity was due to government spending. Fattening of business creation is activated by government expenditure on infrastructure, services and entrepreneurial support programmes. Exports and imports reached borderline significance suggesting a possible influence on entrepreneurship but need further investigation to validate their relationship. Within this dataset, we find that wage, interest rate, foreign direct investment (FDI) and corporate tax rate exert no statistically significant effects on entrepreneur quantity.

While the explanatory power of the model (R-squared of 99.7%) was high, the small sample size (13 years) resulted in some limits of the model. As seen from the Durbin Watson statistic, the residuals have negative autocorrelation, implying that the model might not have captured all the relevant patterns or factors that could influence entrepreneurship. What this shows is that even though the results provide a great deal of insight, it is important to take them with a grain of salt, and more work is needed with a larger dataset and more variables.

One of the biggest pitfalls of this study is that it only uses 13 rather than 20 years of data. If this limited dataset reduces the model's robustness, then it may lose the ability to make unbiased / less reliable relationship estimates. Furthermore, with a larger dataset we can effectively test more complex interactions and nonlinearities that may impact entrepreneurship. Further research should be conducted on longer data or take into account wider range of variables, such as the technological progress, regional difference or social factors to give a fuller understanding.

Results from this study highlight the importance of government spending in boosting entrepreneurial effort in Uzbekistan and discuss the possible effects of exports and imports for entrepreneurial effort in Uzbekistan. Although the resulting findings should be taken with a grain of salt, due to the small dataset, there was evidence of negative autocorrelation in the residuals. Results suggest that government spending is a powerful lever to promote entrepreneurship, but more work is needed to apprehend dynamics that link trade, financial access and entrepreneurship creation.

Future studies should also use more data over a longer time span and include more factors in order to improve and better explain the factors that drive entrepreneurial growth. This study presents useful insights, however, expanding the data and improving the model would result in a more reliable answer and will better advise policy decisions that promote the development of entrepreneurship in Uzbekistan.

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