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Financial Sector Development, Openness, and Entrepreneurship: Panel Regression Analysis

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Abstract: Entrepreneurship plays a major role in all countries' economies through generating new jobs and innovation, and in turn making a contribution to the economic growth. Therefore, the determinants underlying entrepreneurship have become important for designing an environment that increases entrepreneurial activity. In this study, we considered it important to investigate the influence of factors such as financial sector development, foreign direct investment (FDI) inflows, and trade and financial openness on entrepreneurship, using information from 15 upper middle income and high-income countries over the 2001–2015 period. The findings reveal that the banking sector and capital market development, FDI inflows, and trade openness affect the total early-stage entrepreneurial activity positively. Furthermore, the crises had a negative impact on the entrepreneurship.

Keywords: financial sector development; trade openness; financial openness; entrepreneurship; panel regression analysis

1. Introduction

Considered to be “a critical part of economic development and growth and important for the continued dynamism of the modern economy” [1], entrepreneurship plays a major role in all of the countries' economies. The European Commission [2] considers entrepreneurship as “a process that has the potential to lead to the creation and expansion of firms”. Seen as the driver of the society [3–5] and one of the main engines of economic growth [6–10], entrepreneurship also plays an important role in increasing communities' living standards [11]. Furthermore, Dejardin [12] suggested that economic growth is faster as the share of innovative entrepreneurs in the labor force increases. Also, the Organisation for Economic Co-operation and Development OECD [13] pointed out that entrepreneurial activity allows the efficient use of resources by raising the level of competition in the product market.

Entrepreneurship research has increased considerably in the last years based on its importance in promoting growth, employment, and innovation [14]. Phan [15] and Carlsson et al. [16] suggested that entrepreneurship research is necessarily interdisciplinary, and studies need to be carried out at multiple levels (individual, industry, regional, and national); therefore, entrepreneurial activities need to be analyzed from multiple disciplinary perspectives: economic, psychological, sociological, etc. There are social, cultural, personal, political, and economic features [17,18] that are associated with different levels of entrepreneurial activity, and the identifying factors that positively influence entrepreneurial activity must be a priority for both academics and policymakers.

Considered by many authors to be a phenomenon that plays a crucial role in countries' economies [2,19,20], entrepreneurship needs to be carefully examined in order to find the factors that influence it. Knowing entrepreneurship determinants, government policies and initiatives can be focused on that support and develop entrepreneurship activity. Business regulations are necessary in order to have a well-functioning market economy, but excessive regulations can have a negative effect on the level of entrepreneurial activity. Based on research conducted in a sample of European countries, Klapper et al. (2006) [21] found that bureaucratic regulations act as entry barriers that inhibit new entries. Contrary, regulations that support expanding access to finance have a positive effect on new entries. Giannetti [22] noticed that creditor rights protection and levels of law enforcement affect entrepreneurs' abilities to get funding for start-up business.

Studies that have been conducted in countries with different level of development reveal that higher entrepreneurial intention is noticed in developing countries compared to developed countries [23]. Even in developing countries, there are some aspects that inhibit entrepreneurial activities, while others encourage and support entrepreneurial activities.

Underdeveloped financial markets, a lack of capital and new technologies, and expensive borrowing rates can constitute barriers for entrepreneurs. However, abundant and low-cost natural resources, low-cost labor, an available skilled workforce, and an attractive environment business (less regulated business environment) can be considered opportunities for entrepreneurs and stimulate them to open a new business. While some of the distinct aspects of developing countries inhibit entrepreneurship, others enable entrepreneurial activities and allow start-up businesses to be successful despite great odds.

The determinants of entrepreneurship are multiple: Rusu and Roman [24] considered "inflation rate, foreign direct investments, access to finance and total tax rate as the main macroeconomic determinants of entrepreneurship". EUROSTAT [2] lists six categories of determinants: "regulatory framework and market conditions, entrepreneurial capabilities and culture, access to finance, R&D [research and development] and technology". The key objective of this paper is to determine whether factors such as foreign direct investment (FDI) inflows, banking sector and stock market development, trade, and financial openness significantly influence entrepreneurial activity. If factors are correlated, different policies can restrain or enhance FDI inflows, banking sector and stock market development, and trade openness, and this will concomitant influence entrepreneurship activity.

The relevant literature is summed up in the next Section. Section 3 describes the data set and analysis method, Section 4 conducts an empirical analysis and discusses the findings of the empirical findings, and the last section presents the main conclusions.

2. Literature Review

Foreign direct investments are seen as a positive aspect [25–28] since they increase revenues to the host country, improve social conditions, improve working conditions by transferring new technologies, eliminate monopoly of the local companies, etc.

Markusen and Venables [25] suggested that FDI positively affects the host economy and local firms. Even competitive pressure tends to reduce local firms profits; the development of supplier industries can reduce input costs and increase profits. They also pointed out that in certain circumstances, "FDI may lead to the establishment of local industrial sectors".

Positive spillovers effects of FDI were also reported by Javorcik [27], who considered foreign firms a source of new of technologies and knowledges for local firms. Fosfuri et al. [26] considered workers' mobility to be a mechanism that could help entrepreneurial activity by transferring skilled workers from foreign to local firms or using these skills through entrepreneurship [29]. Also, export-oriented FDI can help entrepreneurs identify new export market opportunities, stimulating entrepreneurial activity in this way [30]. New foreign entrants will increase competition and pressure on local firms, which can push some entrepreneurs out of the market; as a result, entrepreneurship can be negative affected [31,32].

Based on a study across Belgian manufacturing industries, De Backer and Sleuwaegen [33] also indicated that FDI influences negatively new entries and also “stimulate[s] [the] exit of domestic entrepreneurs”.

Meyer and Sinani [34] concluded that FDI can generate both positive and negative spillover effects on new companies. Skilled workers can migrate from local to foreign companies for higher wages opportunities [35], and foreign companies can also raise entry barriers for domestic entrepreneurship [35,36].

Fahed [37] found that entrepreneurship is also “an important determinant of FDI” and suggests that FDI inflows can be achieved “by promoting and encouraging entrepreneurship”; therefore, a reciprocal relationship between FDI and entrepreneurship exists.

If financial development generates economic growth [38–40], what is its role in entrepreneurship activity? Researchers and economists have not paid much attention to this relationship; therefore, a brief literature exists related to this issue [41,42].

A well-functioning financial system provides new economic opportunities for entrepreneurs, but does it play a major role in increasing entrepreneur activity? The empirical studies exploring the interaction emphasized that financial development has a positive impact on entrepreneurial activity [43–48].

King and Levine [43] investigated the relation between finance and innovative activities and found that entrepreneurial activity is positively affected by financial systems. Financial resources are mostly allocated to entrepreneurs who present innovative projects that promote new products, new production methods, etc.

Llussá [44] examined the effect of financial sector development on entrepreneurial activity in 41 developing and developed countries, and discovered that financial development positively affects the entrepreneurial activity.

Abubakar [45] studied the impact of financial literacy and financial inclusion on entrepreneurship in Africa, and pointed out that problems in financial inclusion and financial literacy are the major obstacles regarding the development of entrepreneurship.

Kar and Ozsahin [46] analyzed the interaction between financial development and entrepreneurship in 17 emerging market economies over the period 2004–2009, and revealed that financial development proxied by credit to the private sector positively affected the entrepreneurship.

On the other hand, Wujung and Fonchamnyo [47] explored the impact of financial sector development on entrepreneurship in Cameroon over the period 1980–2013, and found that financial development proxied both domestic credit and savings mobilization, and affected the entrepreneurship positively.

Fan and Zhan [48] explored the interaction between financial inclusion and entrepreneurship using data from 31 provinces and 19 industries in China over the period 2005–2014, and revealed that financial inclusion positively affected the entrepreneurship.

Referring to the impact that financial openness has on entrepreneurship, we found that no previous studies have focused on this relation; therefore, our research will be the first to examine this relation. Also, only a few studies have analyzed the relationship between trade openness and entrepreneurship [49,50]; therefore, we found it appropriate to study and offer new information related to this relation. In this respect, the openness model has been included in terms of both making a gap in the literature and leading to further work.

Audretsch and Sanders [49] referred to the countries that are joining the global economy and suggested that new opportunities are rising based on this globalization process, which will facilitate the transition from “an industrial to an entrepreneurial model of production”. Furthermore, they considered globalization and technology two driving forces of entrepreneurial activity, since they created new opportunities associated with cheap labor cost (China, India) and new markets for their products and services. Based on an empirical study conducted in Georgia, Sekreter and Dilanchev [50] also revealed the importance of trade openness on entrepreneurship development.

3. Methods

The main objective of this study was to determine, based on a panel regression analysis, whether financial sector development (including the banking sector and stock market), FDI inflows, and trade and financial openness significantly influence entrepreneurial activity.

3.1. Data

The analysis was conducted based on data from a panel of 15 upper middle income and high-income countries (Argentina, Belgium, Brazil, Chile, France, Germany, Greece, Hungary, Ireland, Netherlands, Norway, Slovenia, South Africa, Spain, and United States) from different continents, using WinRATS Pro. 8.0, Gauss 11.0, and Stata 14.0 statistical programs. The period of the study was 2001–2015, and the variables used in our research are presented in Table 1.

Table 1. Data description.

Variables	Definition	Source
TEA	Total Early-Stage Entrepreneurial Activity	[51]
DCRD	Domestic credit to private sector (% of GDP)	[52]
SMC	Market capitalization of listed domestic companies (% of GDP)	[53]
FDI	Foreign direct investment, net inflows (% of GDP)	[54]
FO	Financial openness (Chinn-Ito index financial openness index)	[55]
TO	Trade openness (Trade (% of GDP))	[56]
D	Dummy variable representing the crises	

Source: own processing. GDP: gross domestic product.

The entrepreneurship was represented by the total early-stage entrepreneurial activity (the percentage of the population aged 18–64 who are either a nascent entrepreneur or owner–manager of a new business). On the other side, financial sector development stood proxy by banking sector development (domestic credit to private sector as a % of GDP) and stock market development (stock market capitalization as a % of GDP). Openness was characterized by trade openness (total trade as a % of GDP) and financial openness (Chinn-Ito index; see Chinn and Ito (2006) for detailed information about the index). Finally, foreign direct investment inflows were stood proxy by foreign direct investment net inflows as a % of GDP.

The main characteristics and correlation matrix of the data set are displayed in Table 2.

Table 2. Data set summary.

Characteristic	TEA	DCRD	SMC	FDI	FO	TO
Mean	8.388933	93.34840	69.97510	6.382523	1.616894	84.11761
Median	6.770000	95.13352	58.81022	2.576394	2.374419	66.31629
Maximum	26.83000	206.3028	276.6007	87.44259	2.374419	216.2429
Minimum	1.630000	0.185870	6.273966	−16.07110	−1.903586	21.85242
Std. Dev.	4.621466	46.10478	52.94172	11.45792	1.278312	48.54897
Skewness	1.510713	0.242092	1.728033	3.624660	−1.479025	0.685576
Kurtosis	5.365537	2.549943	6.624498	20.20130	3.663690	2.277618
Observations	225	225	225	225	225	225
Characteristic	DCRD	SMC	FDI	FO	TO	
DCRD	1.000000	0.124157	0.042167	0.004659	0.154395	
SMC	0.124157	1.000000	0.029043	0.036836	0.195945	
FDI	0.042167	0.029043	1.000000	0.005370	0.270953	
FO	0.004659	0.036836	0.005370	1.000000	0.025243	
TO	0.154395	0.195945	0.270953	0.025243	1.000000	

Source: own processing.

As we can notice, there were no multicollinearity problems among the independent variables.

3.2. Econometric Methodology

Using the panel regression analysis, we investigated the influence of financial sector development and openness on the entrepreneurial activity. In this context, the following model was estimated:

$$TEA_{it} = \alpha_i + \beta_1 DCRD_{it} + \beta_2 SMC_{it} + \beta_3 FDI_{it} + \beta_4 FO_{it} + \beta_5 TO_{it} + \beta_6 D_{it} + \varepsilon_{it} \quad (1)$$

Only one model was estimated in the analysis, because we could not find another common variable representing entrepreneurship for all of the countries. Furthermore, the total early-stage entrepreneurial activity of the Global Entrepreneurship Monitor has been used by many empirical studies investigating the determinants and effects of entrepreneurship in the related literature [24,57,58]. On the other hand, financial sector development has been proxied by many variables such as domestic credit to the private sector, M1 (narrow money), M2 (broad money), and the financial development index of the IMF (International Monetary Fund). In this study, we used domestic credit to the private sector and stock market capitalization in one model, and the financial development index of the IMF in another model. We did not give the estimations of the model with IMF's financial development index, because we acquired similar results. Lastly, we did not change both openness indicators, because extensive studies have used the aforementioned variables to represent the openness [59,60]. The results of econometric analysis will be useful for the policy-makers to design an environment in terms of the financial sector and liberalization enhancing the entrepreneurial activity.

Firstly, the existence of cross-sectional dependence among the cross-section units was examined with Pesaran et al. LM_{adj} . Test [61]; secondly, the integration levels of the variables were examined with the Pesaran CIPS (cross-sectional augmented Im-Pesaran-Shin) unit root test [62] to abstain from probable spurious relations amongst the variables [63]. In the panel regression analysis, Chow (F) and BP (χ^2) tests were used for selection between random and fixed effects estimation methods. Lastly, robustness checks were conducted by the Wooldridge autocorrelation test [64] Greene heteroscedasticity test [65].

4. Results

4.1. Results of Cross-Sectional Dependence and Homogeneity Tests Econometric Methodology

In the context of empirical analysis, the first pretest of cross-sectional dependence was conducted. The existence of cross-sectional dependence was investigated with the test by Pesaran et al. [LM(Lagrange Multiplier) $_{adj}$.], and the results are presented in Table 3. The null hypothesis (there is cross-sectional independence) was rejected at the 5% significance level in the light of test results, and the existence of cross-sectional dependency was revealed among the cross-section units.

Table 3. Results of cross-sectional dependence tests.

Variables	Test Statistics	Pesaran (2004) [66] CD_{LM} Test	Breusch and Pagan (1980) [67] LM Test	Pesaran et al. (2008) [61] LM_{adj} . Test
TEA	t statistic p value	7.921 0.001 *	9.523 0.000 *	9.316 0.001 *
DCRD	t statistic p value	8.445 0.000 *	7.361 0.013 *	8.054 0.000 *
SMC	t statistic p value	8.936 0.014 *	8.035 0.005 *	9.112 0.019 *
FDI	t statistic p value	9.661 0.000 *	6.337 0.000 *	8.634 0.005 *
FO	t statistic p value	11.073 0.018 *	12.108 0.002 *	12.271 0.003 *
TO	t statistic p value	7.623 0.000 *	7.266 0.000 *	9.563 0.000 *

* It is significant at 5% significance level. Source: own processing.

4.2. Results of Panel CIPS Unit Root Test

The existence of a unit root in the variables was investigated with the Pesaran panel unit root test [62], and the results are presented in Table 4. The findings revealed that all of the series had a unit root, but became stationary after first-differencing.

Table 4. Panel CIPS test results.

Variables	Test Statistics (Constant + Trend Model)
D(TEA)	−4.982 *
D(DCRD)	−4.375 *
D(SMC)	−3.922 *
D(FDI)	−5.748 *
D(FO)	−4.701 *
D(TO)	−5.603 *

* it is stationary at 5%. Source: own processing.

4.3. Panel Regression Analysis

Chow and Breusch–Pagan (BP) tests were implemented to make a decision between pooled regression and fixed and random effects models, and the results are displayed in Table 5.

Table 5. Selection of panel regression estimation method. OLS: ordinary least squares.

Test	p Value	Decision
Chow(F test)	0.003 *	Reject null hypothesis (pooled OLS is effective model)
BP(χ^2 test)	0.000 *	Reject null hypothesis (pooled OLS is effective model)

* It is significant at 5% significance level. Source: own processing.

The Chow test result dictated us to use the fixed effects model, while the BP test dictated us to use the random effects model. Therefore, the Hausman test was conducted to make a choice between the random effect model and the fixed effects model, and the results are displayed in Table 6.

Table 6. Hausman test results.

Test Summary	p Value	Decision
Cross-section random	0.153	Accept null hypothesis (use random effects models)
Period random	0.109	Accept null hypothesis (use random effects models)
Cross-section and period random	0.162	Accept null hypothesis (use random effects models)

Source: own processing.

Consequently, the random effects model will be used to analyze the effects of financial sector development, openness, and FDI inflows on the total entrepreneurial activity.

The different algorithms were tried, and the estimations of the model with the least sum error sum of squares are displayed in Table 7.

The results revealed that financial openness (DFO) did not have significant effects on entrepreneurial activity. However, banking sector development (DDCR), stock market development (DSMC), foreign direct investment inflows (FDI), and trade openness (TO) were found to affect the entrepreneurship positively. Finally, the dummy variable representing financial crises revealed that the crises affected the entrepreneurial activity negatively.

Our findings indicate that financial sector development can contribute to the entrepreneurship activities, providing alternative financing instruments that are suited to the entrepreneurs and decreasing the problems from asymmetric information. On other hand, FDI inflows can contribute to the development of entrepreneurial activities when they are considered an alternative financing instrument, and trade openness may also positively affect the entrepreneurship by easing the

movements of transnational capital, goods, and services. The empirical findings also support finance-led growth theory, openness-led growth theory, and FDI-led growth theory, and reveal that financial development, trade openness, and FDI foster economic growth through the entrepreneurship channel, considering the positive interaction between entrepreneurship and economic growth.

The robustness checks for autocorrelation and heteroscedasticity problems were made with the Wooldridge autocorrelation test [64] and the Greene test [65], and no autocorrelation and heteroscedasticity problems were revealed.

Table 7. Panel Regression Estimation Results.

Variables	Coefficient	Std. Error	t-Statistic	Prob.
DDCRD	0.010525	0.007913	1.330152	0.0849 *
DSMC	0.029378	0.022028	1.333685	0.0741 *
DFDI	0.077823	0.022637	3.437840	0.0007 ***
DFO	0.058216	0.564878	0.103060	0.9180
DTO	0.021859	0.006422	3.403851	0.0008 ***
D	−0.444332	0.079714	−5.574107	0.0000 ***
C	0.053658	0.007602	−7.057991	0.0000 ***
R-squared	0.685423	Mean dependent variable		8.388933
Adjusted R-squared	0.673105	S.D. dependent variable		4.621466
S.E. of regression	3.309740	Akaike information criterion		5.270794
Sum squared residuals	2366.145	Schwarz criterion		5.407438
Log likelihood	−583.9643	Hannan–Quinn criterion		5.325944
F-statistic	27.59210	Durbin–Watson statistic		0.475684
Prob (F-statistic)	0.000000			
Diagnostic tests				
Wooldridge autocorrelation test <i>p</i> value = 0.124				
Greene heteroscedasticity test <i>p</i> value = 0.169				

***, * is respectively significant at 1% and 10% significance level Source: own processing.

5. Conclusions

Entrepreneurship is an important factor for long-term economic growth, job creation, and unemployment alleviation; therefore, government policies that support entrepreneurship need to be adopted in each country.

This study examined the relationship between financial sector development, FDI inflows, and (trade and financial) openness and entrepreneurship in 15 upper middle income and high-income countries over the 2001–2015 period. The panel regression analysis indicated that banking sector and stock market development, foreign direct investment inflows, and trade openness affect the entrepreneurship positively. Furthermore, the dummy variable representing financial crises revealed that the crises affected the entrepreneurial activity negatively. However, financial openness did not have significant effects on entrepreneurial activity.

The relevant literature shows that financing is one of the important obstacles behind entrepreneurship. Similarly, our research reached the same conclusion and found that basic improvements in the financial sector have a significant contribution to entrepreneurial development. Therefore, developing instruments to provide traditional financing opportunities for early stages of company development will encourage entrepreneurship, and in turn positively affect economic activity overall. Furthermore, increasing trade openness and FDI inflows will positively affect entrepreneurship through spillover effects such as the transfer of know-how, technology, and the provision of alternative financing.

Our results can have significant implications for policy-makers. Policy measures that encourage and sustain trade openness and FDI inflows need to be adopted in order to stimulate entrepreneurial activity. Appropriate actions will be taken only if those involved in these actions understand the factors that influence entrepreneurship.

Financial sector development can boost entrepreneurship, but strong and efficient regulatory systems and adequate supervisory rules need to be adopted in order to protect creditors' rights. Innovative financial instruments need to be developed in order to stimulate entrepreneurial activity, and specialists from financial industry need to be ready to offer these solutions in order to stimulate the new businesses.

Entrepreneurship as a single developmental force will not generate economic development; more factors need to be trained in order to achieve this goal. An adequate environment needs to be created in order to boost entrepreneurship development.

Since our study was limited to 15 upper middle income and high-income countries, future research can include in their analyses countries at all levels of economic development.

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