Entrepreneurship as a Predictive Factor for Employment and Investment: The Case of Selected European Countries

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Abstract: The link between entrepreneurship and economic prosperity has continuously been pointed out by researchers and government institutions. Several studies have proven that a clear relationship between entrepreneurship, economic growth and development (positive in many instances) exist. Within the broader context of growth and development, various other variables also play a significant role such as employment and investment amongst others. The objective of this study was, therefore, to determine the relationship between entrepreneurship, employment and domestic investment specifically focussing on selected European countries (Austria, Croatia, Hungary, Poland and Slovenia). The study made use of a quantitative empirical approach (econometric analysis) using secondary data from 2001 to 2019. Countries were selected based on their homogeneous traits and availability of data. Both, long and short- run relationships between various entrepreneurial variables, employment and investment were tested using a pooled panel analysis. Results indicated a long-run relationship between the variables by using the Fisher-Johansen cointegration analysis. Long-run results via the FMOLS and DOLS econometric models, confirmed the results as estimated in the Fisher-Johansen cointegration tests. It was found that both early entrepreneurial activity (TEA) and established business ownership (EBO) are significant predicators of employment and domestic investment. In the short-run via a Granger causality tests, all of the independent variables of entrepreneurial intentions (EI), TEA and EBO were found to cause changes in employment, while only EBO causes changes in domestic investment. In conclusion, the study proved that links between the mentioned variables do exist and that entrepreneurial activity should be stimulated and supported as it has a significant impact on employment and domestic investment.

Keywords: Domestic investment; employment; entrepreneurial factors, entrepreneurial intentions (EI), early entrepreneurial activity (TEA), established business ownership (EBO), European countries

1. Introduction

Entrepreneurship development has been linked to have spill-over effects on various economic factors (Wennekers & Thurik, 1999; Schachtebeck et al. 2019a). Not only does new business development, innovation and entrepreneurial levels lead to improved economic growth and development, but it also, in many cases, has an influence on micro (customers, employees, competitors, media, shareholders and suppliers) and macro (gross domestic product (GDP), employment, business cycles, money supply and investment) economic factors (Kirchhoff, 1992; Parker, 2018). From a macro-economic perspective, various factors are in play, and as mentioned, these could be influenced in some or other way by entrepreneurial levels. The two factors of interests in this research study are employment and domestic investment. Higher levels of unemployment have various negative effects on an economic and social level. For example, Turner (1995) identified that higher levels of unemployment can lead to financial strain, psychological distress, reduced life satisfaction and health problems. Gangl (2006) and Nilsen and Reiso (2011) interestingly found that unemployment has a long-term negative effect on future labour market attachment. Meyer (2014) states that high levels of unemployment leads to structural

weakness in a country's economy creating poverty, inequality and social problems. Meyer (2014) further opines that several solutions could lead to reduced unemployment of which entrepreneurship development is listed. Therefore, lower unemployment levels are not only beneficial for current economic conditions but also curtail for the future success of a country's economic state. Considering investment, De Backer and Sleuwaegen (2003) and Riddle and Nielsen (2011) opine that although foreign direct investment can be considered a driver of economic progress, it may crowd out local entrepreneurs and this highlights the importance of domestic investment. Furthermore, Tee (1987) states that local investment is mostly dominated by the private sector (entrepreneurs). Rowthorn (1995) argues that low investment has a negative impact on employment levels and that reducing unemployment would require a massive injection through large-scale investment. Improved entrepreneurial activity can thus lead to enhanced economic growth and development through increased levels of employment and domestic investment. The objective of this study was, therefore, to determine the direct relationship of entrepreneurship levels on employment and investment specifically focussing on selected European countries (Austria, Croatia, Hungary, Poland and Slovenia).

2. Literature Review

Entrepreneurship is a multi-faceted concept which has been a topic of interest for many years including its linkages with the economy. Authors such as Botha et al. (2007), Athayde (2012), Sivvam (2012), Ambrish (2014), Phillips et al. (2014), Baloch et al. (2018); Li et al. (2019) and Schachtebeck et al. (2019b) has dubbed is as the cornerstone of economic growth and financial independence. Bula (2012) opines that it can be viewed and even defined from various perspectives such as psychological, social, managerial, economic and sociological. Over the years, various definitions have been developed from an academic and economic perspective encapsulating the essence of entrepreneurship. One of the first documented links between entrepreneurship and the economy was by Cantillon during the 1700s. He described entrepreneurship as universal and having a crucial role in the economy. He further defined an entrepreneur as an individual responsible for exchange and movement in the economy (Brown & Thornton, 2013b). Cantillon's theory of entrepreneurship was ground-breaking in that it challenged several economic theories of that time. He stated that entrepreneurs function by bearing risk under uncertainty through purchasing goods at a known or fixed price in current times to resell it at an uncertain price in future (Brown & Thornton, 2013b). Cantillon linked his theory of entrepreneurship to five distinct economic aspects. These are briefly summarised as follow:

- Economic geography (location theory) and the entrepreneur: The size and location of a village, town, city or market is determined by the entrepreneurial production decisions of the property owners. Decisions based on location will determine the types of production factors and quantity of labour needed. Transportation costs will also play a significant role based on economic geography (Brown & Thornton, 2013b).
- Labour markets and the entrepreneur: Entrepreneurs play an imperative role as a prime mover in labour markets. Skilled labour is higher paid than unskilled labour as there is an opportunity cost of time in obtaining the skill. The amount and type of training to obtain a certain skill in the present must be offset by increased, although uncertain, wages in the future (Brown & Thornton, 2013b).
- "Intrinsic" Value (theory of value): Cantillon states that the intrinsic value of a good or service is equal to the amount and quality of the labour and land necessary to produce products and the values of these inputs are related to their alternative uses. The variance between intrinsic value-opportunity cost and prices that the market is willing to pay is equal to either economic profit or loss (Brown & Thornton, 2013b).

- The Circular-Flow model: Entrepreneurship provides the motivation for the flow of goods, thus leading to a distribution channel (Cantillon, 1931). The entrepreneur is described as an individual who uses his own judgment without being able to predict the future or which product or service will yield the best price based on supply and demand factors. This aspect links to that of Adam Smith's 'invisible hand' (Thornton, 2009; Brown & Thornton, 2013a).
- The Price-Specie flow mechanism: prices are determined based on supply and demand but are eventually determined by the activities of buyers and sellers. Mercantilists view money as wealth however, Cantillon opined that through entrepreneurs an increase in the supply of money might amend or change relative prices conditional on how and where the money was placed into the economy rather than simply causing an overall increase in prices (Brown & Thornton, 2013b).

Furthering the definition of Cantillon, various other theorists, economists and academics defined entrepreneurship over the years. For example, Schumpeter defined an entrepreneur as an individual creating novel products or services by bringing it to the market using new distribution system combinations (Schumpeter, 1942). A slightly newer concept from Kirzner (1973) defines the entrepreneur as someone who is alert and can timeously recognize an opportunity and then act on this opportunity by creating a new firm. Authors such as Bird and Brush (2002), Ambrish (2014), Bąk (2016) and Meyer (2018) summarizes several key features contained within the broader definitions of entrepreneurship which include taking calculated risk, innovation, new processes, using new combinations of resources, being opportunistic and adding value to the economy. The Global Entrepreneurship Monitor (GEM) refers to the entrepreneurial pipeline. This is the natural process that businesses go through from the initiation of the idea until the discontinuation of the business. Bosma and Kelley (2019) divide these stages into three categories: Stage 1 and 2 refer to the conception stage, Stage 3 and 4 are referred to as the early-stage entrepreneurial activity (TEA) or firm birth stage and Stage 5 is referred to as the persistence or established business stage. Stage 6 involves business discontinuance which would be the final stage when the business seizes to exist.

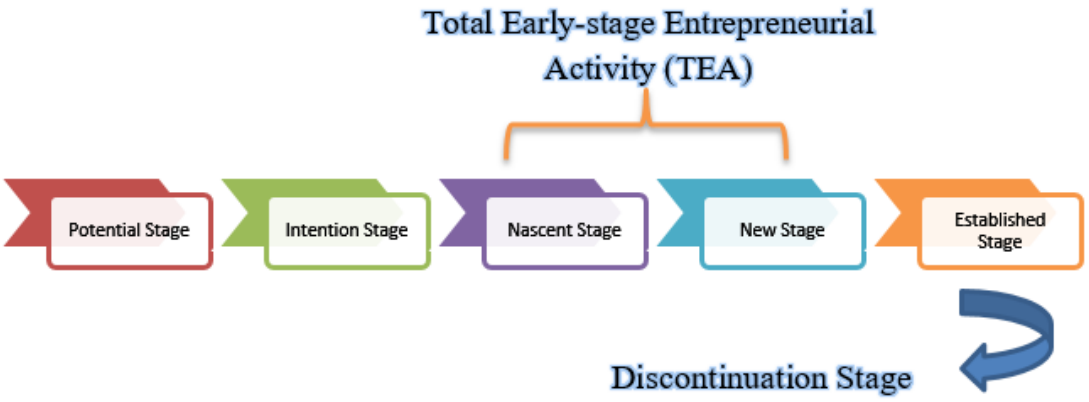

Figure 1: Entrepreneurial stages

Source: Turton and Herrington (2012); Herrington and Kew (2013).

It is well-known that entrepreneurial development has a positive effect on a country's economy to various extents (Toma et al., 2014; Ahlstrom et al., 2019; Folorunsho et al., 2019; Meyer & Meyer, 2019). More specifically, several authors such as Singh and Maurya (2020), Meyer and Meyer (2017), Ács et al. (2013), Naudé (2011), Braunerhjelm (2010), Carree and Thurik (2010), Wennekers et al.

(2009), Audretsch et al. (2006) and Van Stel et al. (2005) have pointed out the relevance of studying the link between entrepreneurship and various economic factors. Of these links, probably the one most studied is that of entrepreneurship and economic growth. Economic growth is generally measured through a country's Gross Domestic Product (GDP). From a neo-classical perspective, it can be defined as an aggregate increase of output, or the accumulation of production factors reflecting a quantitative measurement of a country's progress (Masoud, 2014). Economic growth can be defined based on models by traditional economists such as Rostow, Myrdal and Solow as tracking the progress of a country's GDP (Meyer, 2018). The OECD (2005) mentioned that one of the biggest critiques on using pure GDP as a measure of growth or prosperity is that it lacks incorporating human development, equality and social cohesion. This opened the door for a new multi-dimensional measuring concept referred to as economic development (Todaro & Smith, 2011). This measurement provides a more comprehensive outline of an economy's improvement considering and including various social aspects (Iyer et al., 2005). Authors such as Audretsch and Keilbach (2005), Audretsch (2007), Audretsch et al. (2008), Naudé (2010), Ács et al. (2013), Aparicio et al. (2016) and Meyer and Meyer (2019) all found some form of positive link between entrepreneurship and economic growth or development. Audretsch (2007) states that understanding the link between economic growth and entrepreneurship could assist to better encourage the dynamic in both the entrepreneurship and economic fields at a micro and macro level. Furthermore, understanding the multifaceted associations between various economic and entrepreneurial factors from a more zoomed in or focused perspective could be valuable for planning strategies and public policies.

From an economic perspective, various macro-economic variables are in play, and these could be influenced in some or other way by entrepreneurial levels. Two of these variables are employment and investment. These two variables can be linked to Cantillon's entrepreneurship theory, more specifically the concept of labour markets and the entrepreneur and the Price-Specie flow mechanism. Firstly, as Cantillon observed (Cited by Brown & Thornton, 2013b), entrepreneurs play an imperative role as a prime mover in labour markets, they could be considered as having a direct link to employment. It is well-known that entrepreneurs create employment and this phenomenon has sparked much research over time. Authors such as Birch (1979;1987), Davis et al., (1996), Audretsch (2007), Neumark et al., (2011) and Meyer and Meyer (2017) all found that entrepreneurship, and especially small businesses, substantially contribute to employment. Although large businesses also contribute to employment, a study by Haltiwanger et al. (2013) found that young (start-up businesses) accounted for most new job creation in the USA. This essentially highlights the importance of the entrepreneurial pipeline (Figure 1) and especially that of nascent and new entrepreneurs (those younger than 3.5 years). However, another study by Meyer and Meyer (2017) using a pooled panel econometric analysis (2001 – 2015) for the BRICS group of countries found that only established businesses (those older than 3.5 years) were a significant predictor of employment. Another study by Baptista and Preto (2007) examined the interrelationship between entrepreneurship and unemployment for the period 1983 to 2000 using data from 30 Portuguese regions. Findings confirmed that a relationship between unemployment and entrepreneurship exists, Firstly, higher unemployment levels led to higher entrepreneurial activity. This could be underwritten to higher necessity or survival needs. What was surprising though, and contradicting to many other studies, was that, in this sample, higher levels of entrepreneurial activity led to higher levels of unemployment. A reason for this could be that when new businesses are created out of necessity (such as in the Portuguese sample) the quality and opportunity drive lacks. Furthermore, unemployed samples tend to have less human capital and entrepreneurial drive to sustain new businesses thus decreasing the potential future benefit to employment (Baptista & Preto, 2007). Using data from 23 OECD countries between 1974 and 2002, Audretsch et al. (2005) found that entrepreneurial activity does reduce unemployment but with a lag of

about 8 years. Although it may be arguable whether new or established businesses create the most employment, it is clear that entrepreneurship and business development in general (young and established) do create jobs (Birch, 1979;1987; Davis et al., 1996; Audretsch, 2007; Neumark et al. 2011; Meyer & Meyer, 2017).

Secondly, entrepreneurs have an influence on investment and spending. Cantillon opined that an increase in the supply of money could amend or change prices based on how and where the money was placed into the economy (Brown & Thornton, 2013a). This includes various types of investment. In addition, if there is more money in circulation, more is spent on aspects such as plant, machinery, and equipment (during growth phases of businesses); the improvement of infrastructure through construction of roads, railways, investment on institutional expansions such as schools, offices, hospitals and finally expenditure on private residential dwellings, commercial and industrial buildings. This is generally referred to as Gross Fixed Capital Formation or gross domestic fixed investment (World Bank, 2019a). Cantillon opined that if entrepreneurs had money they would spend it and that the products of services they spent it on would increase in price. With increases in prices, local entrepreneurs would act and start altering the structure of production within the economy to address the new configuration of demand (Brown & Thornton, 2013b). This is known as the "Cantillon effects." The concept of investment and wealth is widely researched. For example, Shukla (2020) in a time-series analysis using Indian small and medium sized enterprises (MSMEs) for the period 1992 to 2016, found that investments per MSME had a positive impact on financial development in the long-run. In the short term, foreign investment and economic development had a positive impact on MSME's fixed investment. Furthermore, production per MSME was positively affected by economic development and financial development in the long-run, while in the short-run none of the selected independent variables affected MSME production. Herrera-Echeverri et al. (2014) using a sample of 87 countries (mix of high-income, low-income and emerging countries) for the period 2004 to 2009, found that there is a direct and significant relationship between FDI and business development in emerging countries. Quadrini (1999), in a study of 4,800 families U.S. families between 1984 to 1989 (entrepreneurs and non-business owners) using a panel study of income dynamics, found that entrepreneurs showed a higher concentration of wealth. They also reported higher saving rates compared to non-entrepreneurs. These results clearly show that investment and wealth has a relationship to entrepreneurship albeit on various levels. Cantillon (cited by Brown & Thornton, 2013b) opine that entrepreneurs adjust and coordinate their strategies and actions in relation to changes in the amount of money and investment and without entrepreneurs the flow of money and investment in especially fixed capital would be significantly reduced.

3. Profile of Selected European countries

The sample included the five selected European countries of Austria, Croatia, Hungary, Poland and Slovenia. The countries were selected based on three criteria: 1) they had to be part of the European Union (European Union, 2020), 2) they had to be in close proximity to each other thus easing trade between them and 3) the variables selected for this study had to have data available for the selected timeframe. Initially the research concept considered including Czechia (Czech Republic) and Slovakia but due to limited entrepreneurial data from the Global Entrepreneurship Monitor for these countries they were excluded from this study. According to the World Bank (2019a) all selected countries presented stable employment 2018 figures ranging from 3.7 to 8.4 percent. As can be seen from Table 1, Austria had the highest GDP per capita (Constant 2010 US$) of $50 019 and the highest employment to population ratio (57.27%), while Poland had the highest levels of domestic investment. Concerning the entrepreneurial variables, Croatia reflected the highest intention (20.57%) and established

ownership (11.47%) rates and Poland had an impressive TEA rate of 12.76 percent. In general, all five countries reveal a positive entrepreneurial environment.

Table 1: Selected European countries' indicators 2019 (unless otherwise stated)

Country	GDP per Capita (Constant US$)	Employment to population ratio (%)	Domestic investment (US$ billions)	(EI) (%)	TEA (%)	EBO (%)
Austria	**50019****	**57,27**	107.7	12.3	5.9	11.4
Croatia	15889**	47,47	13.9	**20.57**	3.57	**11.47**
Hungary	16647**	54,13	42.8	15.11*	5.5*	7.94*
Slovenia	26768**	54,27	**128.5**	14.98	8.45	7.8
Poland	16659**	54,70	10.9	6	**12.76**	5.39

*2016 figures; **2018 figures
Bold figures represents best performing country
Source: GEM Consortium (2019b); World Bank (2019b)

4. Methodology

In order to achieve the objectives of the study, a quantitative research methodology approach was followed. Secondary time series data were collected for the econometric models included in the study used to determine the relationships between the economic and entrepreneurial variables included in the study. Data as utilized in the study were either sourced from the World Bank data set or the Global Entrepreneurship Monitor (GEM) reports (refer to Table 2 for details regarding the variables included in the study). A number of econometric methods are included in the analysis and include econometric time series panel data models such as (1) correlation coefficients to determine the short-run relationships between variables; (2) unit root tests to determine the level of stationarity of the variables and model selection, (3) lag length criteria selection; (4) Granger causality test to assessment causality between all the variables; (5) long-run relationships between the variables using either an ARDL of Fisher-Johansen test leading to regression analysis using FMOLS and DOLS equations; (6) and model stability diagnostic tests. Five similar central and eastern European countries were included in the study based on data availability. The time frame used for the study is from 2001 to 2019. A pooled panel data set was created including the five selected countries and included 95 observations. This research article has the primary objective to test the relationships between two different economic models with model 1 as employment to population ratio (EPR) as the dependent variable and domestic investment as the dependent variable of model 2 with independent and predictive variables namely Entrepreneurial Intention (EI); Early-stage Entrepreneurial Activity (TEA); and Established Business Ownership (EBO).

Table 2: Summary of variables used in the econometric model

Variable	Definition
Employment to population ratio (EPR). Dependent variable (Model 1)	The total number of employed in a country divided by the total population above the age of 15 years as percentage (World Bank data as derived from ILO, 2019)
Domestic Investment (DINV). Dependent variable (Model 2)	Also known as Gross Capital Formation and is the total domestic capital investment in the country in US$ (World Bank data, 2019).
Entrepreneurial Intention (EI)	Percentage of population (between 18-64 years) who are latent entrepreneurs and who intend to start a business within three years (individuals involved in any stage of entrepreneurial activity are excluded). (GEM, 2019)
Early-stage entrepreneurial activity (TEA)	Percentage of population (between 18-64 years) who are either a nascent entrepreneur (busy setting up a business) or owner-manager of a new business (<3.5 years old). (GEM, 2019)
Established business ownership (EBO)	Percentage of population (between 18-64 years) who are currently an owner-manager of an established business that has paid salaries, wages, or any other payments to the

	owners for longer than a period of 42 months. (GEM, 2019)

Source: GEM Consortium, 2019a; World Bank, 2019a, 2019b

According to Brooks (2014) the basic equation for panel data can be defined as:

$y_{it} = \alpha + \beta x_{it} + u_{it}$ …… (1)

Where y_{it} is the dependent variable, α is the intercept term, β is a $k \times 1$ vector of parameters to be estimated on the explanatory variables, and x_{it} is a $1 \times k$ vector of observations on the explanatory variables, $t = 1, \ldots, T$; $i = 1$. The model from the function described in equation (1) can be listed as follow:

$$Model\ 1: EPR_t = \propto_1 + \sum_{j=1}^{k} \beta_{1j}\ EPR_{t-j} + \sum_{j=1}^{k} \lambda_{1j}\ EI_{t-j} + TEA_{t-j} + EBO_{t-j} u_{1t} \ldots\ldots\ldots (2)$$

$$Model\ 2: DINV_t = \propto_2 + \sum_{j=1}^{k} \beta_{2j}\ DINV_{t-j} + \sum_{j=1}^{k} \lambda_{2j}\ EI_{t-j} + TEA_{t-j} + EBO_{t-j} u_{2t} \ldots\ldots\ldots (3)$$

Where α_n is the constant, β_n, λ_n are the coefficients, K is the number of lags and $\boldsymbol{u_{1t}}$ and $\boldsymbol{u_{2t}}$ are the stochastic error terms which are also known as shocks in the model. The unit root tests for level of stationarity was conducted using three tests namely the Levin, Lin and Chu test; Im, Pesaran and Shin W-stat; and the ADF - Fisher Chi-square. If the variables are stationary at I(0) a normal panel VAR analysis is conducted whereas if variables are stationary at I(1), the Fisher Johansen panel co-integration test for long run relationship is conducted. If a mixture of variable were determined the only option is a panel ARDL method as estimation.

5. Results and discussion

In this section, the results of all the econometric methods are indicated and discussed. Table 3 reflects a summary of the correlation coefficients used in study including all variables. Firstly, a positive and statistically significant relationship exists between employment and domestic investment. Domestic or local investment is an important driver of any economy and in this case also causes employment (Tee, 1987; Rowthorn, 1995; De Backer & Sleuwaegen, 2003; Riddle & Nielsen, 2011). Regarding Model 1 with EPR as the dependent variable, only EBO has a significant relationship with EPR while the other two variables EI and TEA has positive relations to EPR but they are not significant. In terms of Model 2 with DINV as the dependent variable, it is interesting that both TEA and EBO have positive and significant relationships with DINV. Also of importance is that the inter-relationships between the three entrepreneurial variables (independent variables) namely EI, TEA and OBE are all positive and significant.

Table 3: Correlation coefficient analysis

Variable	EPR	DINV	EI	TEA	EBO
EPR	1.0000 ----- -----				
DINV	0.3230 [3.2914] (0.0014*)	1.0000 ----- -----			
EI	0.1505 [1.4683] (0.1454)	0.0126 [0.1221] (0.9031)	1.0000 ----- -----		
TEA	0.1174 [1.1401] (0.2571)	0.3137 [3.1863] (0.0020*)	0.6871 [9.1220] (0.0000*)	1.0000 ----- -----	
EBO	0.4081 [4.3112]	0.3936 [4.1299]	0.3912 [4.0995]	0.4542 [4.9171]	1.0000 -----

	(0.0000*)	(0.0001*)	(0.0001*)	(0.0000*)	-----

Notes: () indicates the p-value and [] the t-statistic; while * indicates 5% statistically significant.

Before an econometric model could be selected, there is a requirement to determine the level of stationarity of all the variables included in the study. Unit root tests have been conducted for the panel data to decide on the final long-run estimation model. Table 4 report the results from all of the unit root tests. The results indicate that all variables are non-stationary at levels I(0), while all variables become stationary at 1st difference; they are therefore stationary at I(1). Based on the unit root test results it could be concluded that the Fisher/Johansen panel cointegration test should be utilised to assess the long-run relationships between the variables for both models.

Table 4: Panel unit root test:

Variable	Type of test	At levels I(0)	At 1st difference I(1)	Final result
EPR	Levin, Lin & Chu test	0.3167	0.0013*	I(1)
	Im, Pesaran and Shin W-stat	0.4604	0.0090*	I(1)
	ADF - Fisher Chi-square	0.6053	0.0019*	I(1)
DINV	Levin, Lin & Chu test	0.0717	0.0001*	I(1)
	Im, Pesaran and Shin W-stat	0.7439	0.0089*	I(1)
	ADF - Fisher Chi-square	0.7873	0.0167**	I(1)
EI	Levin, Lin & Chu test	0.3271	0.0001*	I(1)
	Im, Pesaran and Shin W-stat	0.5136	0.0013*	I(1)
	ADF - Fisher Chi-square	0.2390	0.0003*	I(1)
TEA	Levin, Lin & Chu test	0.0578	0.0006*	I(1)
	Im, Pesaran and Shin W-stat	0.0741	0.0001*	I(1)
	ADF - Fisher Chi-square	0.0895	0.0004*	I(1)
EBO	Levin, Lin & Chu test	0.2590	0.0029*	I(1)
	Im, Pesaran and Shin W-stat	0.3665	0.0001*	I(1)
	ADF - Fisher Chi-square	0.2190	0.0004*	I(1)

Notes: Null hypothesis: Unit root. * indicates 1% statistically significant, ** indicates 5% statistically significant.

Table 5 is a summary of the Fisher-Johansen panel cointegration test for Model 1 for confirmation of long-run relationships between the variables. For this specific test, the null hypothesis states that no long-run relationships exists. In this case the null hypothesis could be rejected, meaning there is a long-run relationship between variables. The results show that for both Trace test and the Max-Eigen test, a long-run cointegration relationship exists between the variables at a 1 percent significance level. It could therefore be stated a long-run equilibrium relationship exists amongst the variables. For Model 2, a long-run cointegration relationship was also confirmed (see Table 6).

Table 5: Fisher Johansen panel cointegration test: Model 1 (EPR)

Hypothesized No. of CE(s)	Fisher Stat.** (from trace test)	Prob.	Fisher Stat.** (from max-Eigen test)	Prob.
None	85.74	0.0004*	77.54	0.0008*
At most 1	25.24	0.0049*	19.68	0.0324
At most 2	12.48	0.2540	12.69	0.2414

Note: *indicates that the test statistics are significant at the 1% level. * Probabilities are computed using asymptotic Chi-square distribution.

Table 6: Fisher Johansen panel cointegration test: Model 2 (DINV)

Hypothesized No. of CE(s)	Fisher Stat.** (from trace test)	Prob.	Fisher Stat.** (from max-Eigen test)	Prob.
None	106.60	0.0002*	87.97	0.0005*
At most 1	33.83	0.0005*	27.30	0.0023*
At most 2	14.86	0.1372	11.12	0.3485

Note: *indicates that the test statistics are significant at the 1% level. * Probabilities are computed using asymptotic Chi-square distribution.

Within a panel analysis where all the variables are stationary at 1st difference, the confirmation of the long-run relationships between the variables are required and this were confirmed for both model included in the study. In order to do this, two additional models are estimated via a regression analysis to determine specific coefficients. The two types of estimation methods utilized are the Fully Modified Ordinary Least Squares (FMOLS) and the Dynamic Ordinary Least Squares (DOLS) models. A consideration of various forms of residual-based panel method results indicates that these models generally outperform single-equation estimation techniques (Pedroni, 2000). The results of both methods need to be compared when deciding on the final results (Tintin, 2009).

The estimations for Model 1 with employment to population ratio (EPR) as the dependent variable is indicated in Table 7. In terms of the FMOLS method, TEA and EBO are significant predicators at a 1% significance level of EPR with coefficients of 1.19 and 0.82 respectively. EI is not a significant predictor as indicated in Table 7. It can be stated that a 1 percent increase in EBO could for example lead to an increase of 0.82% in EPR. The comparative DOLS method resulted in relatively different outcomes. Only EBO was found to be a significant and positive predicator of EPR. With regards to Model 2 (see Table 8) with DINV as dependent variable, again TEA and EBO are positive and significant predicators of DINV while for the DOLS method, only EBO is a significant predictor but only at the 10% level of significance. Further, interesting results from the cross-section short-run coefficients for individual countries also indicated that EBO is the one independent variable that significantly impacts on both EPR and DINV in all of the countries in this study.

Table 7: Model 1: FMOLS and DOLS results

Dependent variable: EPR

Independent variables: EI, TEA, EBO.

Method	Variables	Coefficient	t-statistic	P-value (prob)	Adjusted R-squared
FMOLS	EI	0.0899	0.3232	0.7473	60.59
	TEA	1.1979	3.0364	0.0032***	
	EBO	0.8229	2.9415	0.0042***	
DOLS	EI	0.2896	0.5823	0.5644	41.85
	TEA	0.5888	0.8374	0.4085	
	EBO	1.1484	2.5367	0.0163**	

Note: * indicates that the test statistics are significant at the 10% level; **indicates that the test statistics are significant at the 5% level and ***indicates that the test statistics are significant at the 1% level.

Table 8: Model 2: FMOLS and DOLS results

Dependent variable: DINV

Independent variables: EI, TEA, EBO.

Method	Variables	Coefficient	t-statistic	P-value (prob)	Adjusted R-squared
FMOLS	EI	1.0392	3.1670	0.0021	17.35
	TEA	2.0614	4.4316	0.0009***	
	EBO	1.2049	3.6533	0.0004***	
DOLS	EI	0.4838	0.6594	0.5143	30.15
	TEA	0.6105	0.9141	0.3675	
	EBO	1.8016	1.7367	0.0920*	

Note: * indicates that the test statistics are significant at the 10% level; **indicates that the test statistics are significant at the 5% level and ***indicates that the test statistics are significant at the 1% level.

Table 8 is a presentation of the pairwise Granger-Causality test results for the short-run including all variables included in both models. The main results from the Granger causality analysis include that regarding the two dependent variables, DINV does cause changes in EPR. When looking at the causality of Model 1, a bi-directional causality is presented between EI and EPR, while TEA and EBO do cause changes in EPR. For Model 2, it was found that only EBO does cause changes in DINV.

Table 9: Pairwise Granger causality test

Null Hypothesis:	Obs	F-Statistic	Prob.
LOG_DINV does not Granger Cause LOG_EPR	80	2.40583	0.0742**
LOG_EPR does not Granger Cause LOG_DINV		0.65444	0.5827
LOG_EI does not Granger Cause LOG_EPR	80	3.14640	0.0301*
LOG_EPR does not Granger Cause LOG_EI		3.25287	0.0265
LOG_TEA does not Granger Cause LOG_EPR	80	3.44688	0.0209*
LOG_EPR does not Granger Cause LOG_TEA		0.35941	0.7825
LOG_EBO does not Granger Cause LOG_EPR	80	6.16643	0.0009*
LOG_EPR does not Granger Cause LOG_EBO		0.72405	0.5409
LOG_EI does not Granger Cause LOG_DINV	80	0.42354	0.7367
LOG_DINV does not Granger Cause LOG_EI		0.55869	0.6440
LOG_TEA does not Granger Cause LOG_DINV	80	0.58947	0.6238
LOG_DINV does not Granger Cause LOG_TEA		0.33028	0.8035
LOG_EBO does not Granger Cause LOG_DINV	80	2.57167	0.0554**
LOG_DINV does not Granger Cause LOG_EBO		2.09666	0.1080
LOG_TEA does not Granger Cause LOG_EI	80	0.05695	0.9820
LOG_EI does not Granger Cause LOG_TEA		1.32708	0.2722
LOG_EBO does not Granger Cause LOG_EI	80	1.80452	0.1539
LOG_EI does not Granger Cause LOG_EBO		0.18522	0.9061
LOG_EBO does not Granger Cause LOG_TEA	80	0.86784	0.4618
LOG_TEA does not Granger Cause LOG_EBO		0.36393	0.7792

Note: * indicates 5% statistical significance; ** indicates 10% statistical significance

In terms of residual diagnostics, the model pasted the Jarque-Bera normality test and a serial correlation test.

6. Conclusions and Recommendations

The creation of an enabling environment for entrepreneurship development usually results in an increase in the establishment of more small and medium businesses, which is vital for economic growth. The primary objective of the research was to determine the relationship between employment and domestic investment as dependent variables in two separate econometric models with three entrepreneurial variables namely entrepreneurial intentions (EI), early entrepreneurial activity (TEA), established business ownership (EBO), as the independent variables for a selection of European countries. Results indicated a long-run relationship between the variables by using the Fisher-Johansen cointegration analysis. Long-run results via the FMOLS and DOLS econometric models, confirmed the results as estimated in the Fisher-Johansen cointegration tests. It was found that both early entrepreneurial activity (TEA) and established business ownership (EBO) are significant predicators of employment and domestic investment. In the short-run via a Granger causality tests, all of the independent variables of entrepreneurial intentions (EI), TEA and EBO were found to cause changes in employment, while only EBO causes changes in domestic investment. An interesting finding from the short-run analysis is that all three the entrepreneurship variables presented causality from EI to TEA and from TEA to EBO. Findings from the econometric analysis provide scientific direction for policy development with a focus on promoting entrepreneurship development with the aim to create employment and to attract investment.

Although the research contributed to the existing body of knowledge in the research field of entrepreneurship, any study has some limitations such as the availability of entrepreneurship data for all countries and the limited time frame of data. The use of a panel analysis however, addressed this issue. This analysis clearly show-cased the inter-relationship between employment, investment and entrepreneurship. Local businesses are responsible for investment and employment creation and government policy should allow for an enabling environment for business to prosper. Entrepreneurship is critical for economic growth and provide the wheels for the economy to show dynamic growth. Entrepreneurs take business risks and drive innovation and new product development. Entrepreneurs are also responsible to create business ideas which could lead to start-up businesses and eventual established businesses. This process from idea to an established business includes many stumbling blocks and those should be removed by means of effective government policy. Entrepreneurship and businesses development should be prioritized for accelerated economic growth. Entrepreneurship development should be the focus of most development programmes through training initiatives and sustainable employment creation.

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