

# THE LINK BETWEEN SMALL AND MEDIUM ENTERPRISES DEATH RATE, UNEMPLOYMENT AND GROSS DOMESTIC PRODUCT: EVIDENCE FROM VISEGRAD COUNTRIES

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## Abstract

*This study examines the link between SMEs death rate, unemployment rate and gross domestic product per capita (GDP) in the Czech Republic, Hungary, Poland and Slovakia. Authors used a panel dataset covering 2008 – 2013 collected from OECD and Eurostat database. Descriptive statistics and Pearson correlation techniques were used to analyse the data. The result for the Visegrad group, indicate a significant positive relationship between SMEs death rate and unemployment rate. On the other hand, the results show an insignificant negative association between SMEs death rate and GDP per capita in the Visegrad Group. Authors, therefore, conclude that government of the Visegrad countries should continue to provide an enabling investment environment by addressing potential market failures and creating equal opportunities that will encourage SMEs to thrive, reduce the rate of unemployment, and enhance GDP per capita of the Visegrad countries.*

**Keywords:** SMEs; unemployment; GDP per capita; Visegrad countries

**JEL classification:** M31, L10

## 1 Introduction

The role of small and medium enterprises (SMEs) in national economies cannot be overemphasised. SMEs contribute to the economic growth of both developed and developing countries. Previous studies show that SMEs drives economic growth of many countries through their value-creating activities (Yusuf & Dansu, 2013; Walczak and Voss, 2013). Nieman *et al.* (2003) posit that SMEs create jobs, reduce poverty and increase the growth domestic product (GDP) in most developed and developing economies. Schröder and Rodermund (2006) suggest that wealth and growth of economies depend on SMEs, and Osakwe et al. (2015) argue that SMEs are driving force of global entrepreneurial development. SMEs account for over 90% and 60% of the share of total number businesses and employment in advanced economies, (OECD, 2013). There is a connection between unemployment rate, economic growth, and the growth of entrepreneurship (Thurik *et al.*, 2008; Plehn-Dujowich and Grove, 2012). Some other studies suggest a negative relationship between unemployment and business growth (Fritsch and Mueller, 2004; Bekeris, 2012). Many studies on the factors contributing and hindering the growth of SMEs across the globe; financial needs (OECD, 2013; Ardic et al., 2012), household and government spending (Muller *et al.*, 2014), government administrative bottlenecks, lending interest rate, innovation and competitiveness (OECD, 2010; Tabas et al., 2012). Very few studies have examined the relationship between in SMEs death rate and macroeconomic indicators. A death is the dissolution of a combination of production factors which is not due to mergers, take-overs, break-ups or restructuring of a set of enterprises (Eurostat, 2016). Only enterprise not reactivated within two years are included in the list of deaths enterprise. Literature shows that lack of managerial competencies Olawale (2010), lack of SMEs networking and collaboration Broughton (2011), lack of training and development Hunt (2008), and lack of employee

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motivation Williams (2012) are some of the internal factors that contribute to the death of SMEs. The role of SMEs in the Visegrad countries could be linked to a long history of economic growth and development since the 21<sup>st</sup> century. According to Hahn (2014), the V4 countries if considered as a single nation state is the 5<sup>th</sup> largest economy in Europe and 12<sup>th</sup> largest in the world. The Visegrad countries have a high income, very high human index and experienced steady economic growth over the years (Broadberry and Klein, 2011). Despite the importance of SMEs, their growth and development in these countries appear to be below expectations. While a lot of past studies have investigated SMEs growth and macroeconomic variables, no study, to the knowledge of the authors have explored the relationship between SMEs death rate, unemployment rate, and GDP in these countries. Given that the interest in the study of SMEs is globally recognized, thus, this study attempt to fill the gap in the literature by exploring the link between SMEs death rate, unemployment rate and GDP in the Czech Republic, Hungary, Poland and Slovakia. Secondly, compare the relationship between SMEs death rate, unemployment rate and GDP per capita in the four countries.

## 2. Literature Review

Previous studies on the causal relationship between economic growth and entrepreneurship performance in different countries (Mukorera and Mahadea, 2014; Van Stel *et al.*, 2010; Moghimi and Ahmadpour Dariani, 2008). Ahmad *et al.* (2012) examined the factors affecting SMEs in Pakistan using a sample of 170 SMEs. The result shows that access to finance, lack of political stability, public and private partnership, lack of motivation, Lack of management, lack of training and education, stress, bureaucracy, access to public infrastructure, and inflation are positively associated with the growth of small and medium-sized enterprises. Ahmad (2012) examine the main challenges to the growth of SMEs in the Kingdom of Saudi Arabia. The results indicate that bureaucratic bottlenecks, the difficulties in accessing finance, and unfriendly business environment, are the major constraints to SMEs performance in the country. In a study conducted on SMEs growth in the Czech Republic by Osakwe *et al.* (2015), suggest that a concave relationship between unemployment and SMEs growth in the Czech Republic exist. Farrokh *et al.* (2016) investigated the factors influencing the growth of small and medium-sized businesses using a comparative approach. The result indicates that structural, behavioural and contextual factors influence SMEs growth. Hart and Hanvey (1995) suggest that SMEs are major drivers of employment creation, they also pointed out that most job losses also came from SMEs. Similarly, Jasra *et al.* (2011) find a significant positive relationship between SMEs performance and entrepreneurs' skills, money supply, and business plan in Pakistan. Mukorera and Mahadea (2014) analyze the structural connection between micro and small-scale enterprises (MSEs) growth and selected macroeconomic indicators in Zimbabwe. Using a Vector Error Correction Model (VECM), the finding shows that unemployment, real GDP, money supply and inflation have an impact on MSEs growth in the country. Plehn-Dujowich and Grove (2012) study suggest that unemployment rate, economic growth, and the growth of entrepreneurship are interrelated. Their findings suggest that unemployment rate causes entrepreneurship to grow. On the other hand, entrepreneurship influence economic growth and vice versa. Thurik *et al.* (2008) suggest that enterprises, economic growth, and unemployment are related. Thurik (1999) posits that there is an inverse relationship between enterprise growth and rate of unemployment. Evans and Leighton (1990) noted that there is a positive relationship between unemployment and the growth of new enterprises, whereas Fritsch and Mueller (2004) and Bekeris (2012) find a negative relationship between unemployment and business growth. In the Czech Republic. Mateev and Anastasov (2010) asserts that firm-specific characteristics such as current liquidity, internally generated funds, leverage, factors of production, future growth opportunities are important drivers of firm growth and performance. Studies have

proved that SMEs record high mortality rate and failure in achieving set goals arising from their incapacitation in the implementation of strategies (Akpan, 2007). Empirical research on the relationship between SMEs death rate and some critical macroeconomic indicators such as rate of unemployment and the GDP appears to be very few.

#### *Definition of Small and Medium Enterprises (SMEs)*

According to the World Bank (2013), SMEs are defined based on the size of the enterprise in terms of the total number of workers and/ or total assets. SMEs and large firms can be differentiated based on the aforementioned criteria. However, the definition of SMEs can be viewed from different perspectives, depending on the organization or country. Tab. 1 shows the current definition of SMEs, which was proposed by the European Commission (2005), adopted by the European Union Member States (Visegrad countries included) and entered into force in 2005. Micro enterprises are enterprises that employ less than ten employees and whose annual turnover does not exceed 2 million euros. Small businesses are enterprises that employ less than 50 employees and whose annual turnover does not exceed 10 million euros. Medium sized are enterprises that employ less than 250 employees and whose annual turnover does not exceed 50 million euros or whose annual total balance sheet does not exceed 43 million euros.

**Table 1: Definition of SMEs by the European Commission**

Enterprise size	Employees	Annual turnover	Annual balance sheet total
Large $\geq 250$	$\geq \text{€}50$ million		$\geq \text{€}43$ million
Medium-sized $< 250$	$\leq \text{€}50$ million (in 1996 $\text{€}40$ million)		$\leq \text{€}43$ million (in 1996 $\text{€}27$ million)
Small $< 50$	$\leq \text{€}10$ million (in 1996 $\text{€}7$ million)		$\text{€}10$ million (in 1996 $\text{€}5$ million)
Micro $< 10$	$\leq \text{€}2$ million (previously not defined)		$\leq \text{€}2$ million (previously not defined)

Source: European Commission

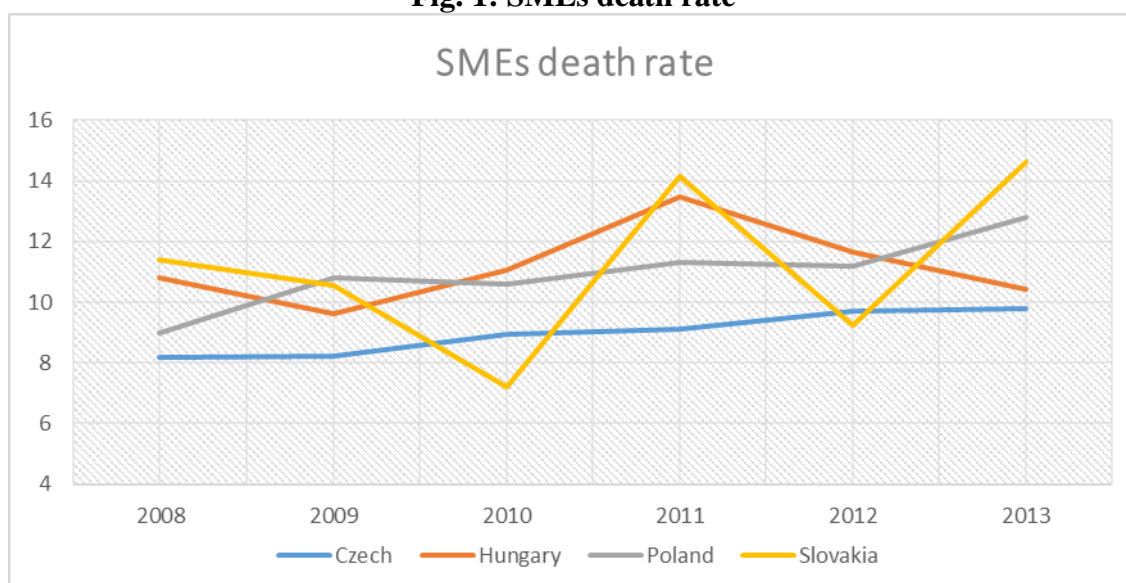
### **3. Materials and Methods**

Four the purpose of this study, SMEs in the V4 countries were selected because the Visegrad countries have high income and have a very high human development index. More importantly, is the availability of data and the steady economic growth experience by the V4 countries.

#### **3.1 Data**

A panel dataset covering 6 year period from (2008 – 2013) for Czech Republic, Hungary, Poland, and Slovakia were used for empirical analysis. Data for unemployment and the GDP per capita were collected from OECD database. The data for SMEs death rate were collected from Eurostat database. Statistical data available from the EuroStat (2016) as shown in Fig. 1, the SMEs death rate in the Czech Republic has steadily increased from 8.2% in 2008 to 9.71% in 2013. In Hungary, the death rate of SMEs was 10.81% in 2008, decline to 9.64% in 2009, 2010, 2011 experience a sharp increase of 11.08% and 13.49%, in 2013 SMEs death rate decline to 10.44%. the SMEs death rate in Poland has steadily increased from 9% in 2008 to 12.79% in 2013. In the case of Slovakia, SMEs death rate decline from 11.38% in 2008 to 10.57% and 7.19% respectively in 2009 and 2010. In 2011 there was sharp rise to 14.17%, follow by a decline to 9.25% in 2012 and a sharp rise to 14.2% in 2013.

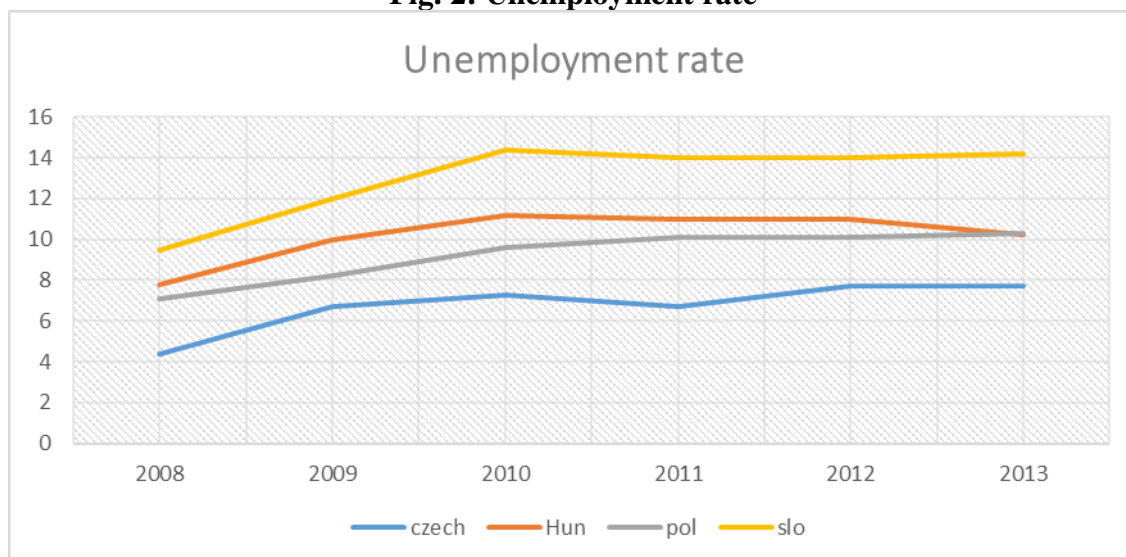
**Fig. 1: SMEs death rate**



Source: Eurostat 2016 (<http://appsso.eurostat.ec.europa.eu>) elaborated by the authors

Statistical data available from the OECD (2016) as shown in Fig. 2, the unemployment rate in the Czech Republic has steadily increased from 4.4% in 2008 to 7.3% in 2010. In 2011, it declines to 6.7%, in 2012 and 2013 it was constant at 7%. In Hungary, the unemployment rate has steadily increased from 7.8% in 2008 to 11.2% in 2010, the rate of unemployment was constant at 11% in 2011, 2012, and declines to 10.2% in 2013. The unemployment rate in Poland has steadily risen from 7.1% in 2008 to 10.3% in 2013. In the case of Slovakia, the unemployment rate steadily rises from 9.5% in 2008 to 14.4% in 2010, decline to 13.6% in 2011, increase to 14% in 2012 and 14.2% in 2013.

**Fig. 2: Unemployment rate**

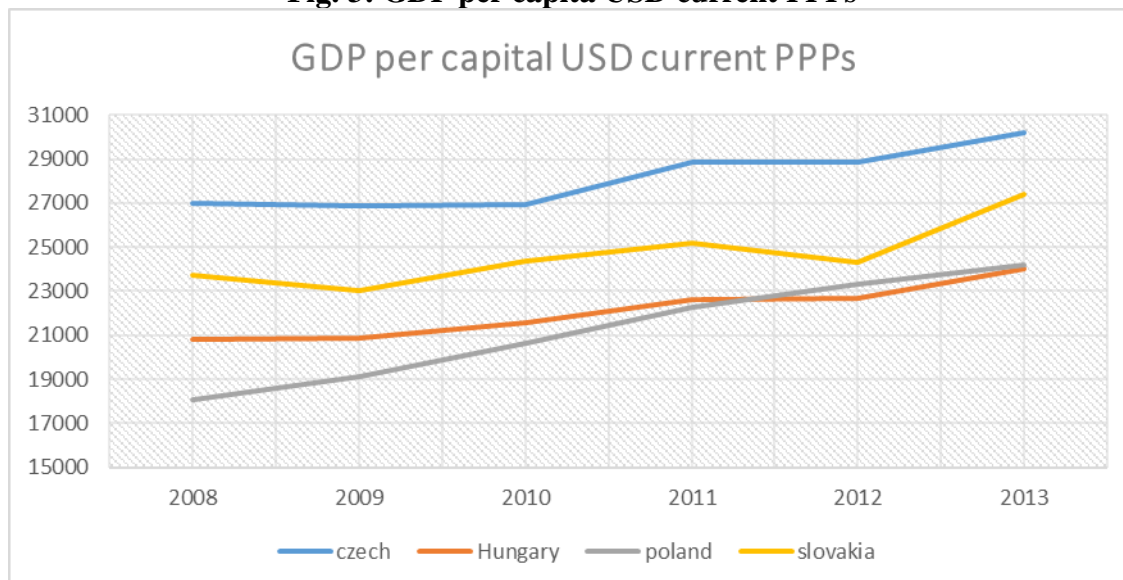


Source: OECD data 2016 (data.oecd.org) elaborated by the authors

Statistical data available from the OECD (2016) as shown in Fig. 3, the GDP per capita for the Czech Republic has steadily increased from \$26,994 in 2008 to \$30,209 in 2013. In Hungary, the GDP per capita has steadily increased from \$20,811 in 2008 to \$24,037 in 2013. The GDP per capita for Poland has steadily increased from \$18,051 in 2008 to \$24,200 in

2013. In the case of Slovakia, the GDP per capita steadily rises from \$23,728 in 2008 to \$27,416 in 2013. From the data, the Visegrad countries experience GDP per capita growth over the years (2008-2013). However, the Czech Republic appears to be the best performer among the countries on the selected macroeconomic indicators.

**Fig. 3: GDP per capita USD current PPPs**



Source: OECD data 2016 (data.oecd.org) elaborated by the authors

The main variables used are SMEs death rate, unemployment, and the GDP per capita. GDP per capita, which is taken from OECD National Accounts and measured in millions of US dollars at constant prices of 2000, using Purchasing Power Parity (PPP) of the same year (GDP). The unemployment variable measures the number of people without work but available for and seeking employment. SMEs death rate occurs when the firm windup or closes down its operations. The SMEs death rate is measured by the number of enterprise deaths in the reference period (t) divided by the number of enterprises active in the same period.

### 3.2 Statistical analysis

Both descriptive and Pearson correlation analysis were used in this study. Correlation matrix could reveal the strength of association and relationship between the variables. Authors used SPSS 24 statistical software for different analyses conducted.

### 3.3 Hypotheses

Below are formulated hypotheses for this study:

H1: unemployment rate is positively associated with SMEs death rate in the Visegrad countries

H2: GDP per capita is positively associated with SMEs death rate in the Visegrad countries

## 4. Results

### 4.1 Descriptive Statistics

Tab. 2 shows the overall mean and standard deviation of the four countries. On the average, SMEs death rate and the unemployment rate over the entire period from 2008 to 2013 among the Visegrad countries is 10.56% and 9.70% respectively. While the mean of GDP per capita is \$24106.25. The standard deviation of SMEs death rate is 1.824, the unemployment rate is 2.694 while GDP per capita is 3175.787. Tab. 3 presents the mean and standard deviation of the individual countries. In the Czech Republic, on average SMEs death rate is 9%, while the unemployment rate is 6.52% and GDP per capita is \$28098.8333 over

the entire period from 2008 to 2013. The standard deviation of SMEs death rate is .69570, the unemployment rate is 1.06097 while GDP per capita is 1368.74533. In Poland, on average SMEs death rate is 10.95%, while the unemployment rate is 9.15% and GDP per capita is \$21262.6667 over the entire period from 2008 to 2013. The standard deviation of SMEs death rate is 1.22923, unemployment rate is 1.24378 while GDP per capita is 2409.3333. In Slovakia, on average SMEs death rate is 11.15%, while the unemployment rate is 12.95% and GDP per capita is \$24965.1667 over the entire period from 2008 to 2013. The standard deviation of SMEs death rate is 2.75663, the unemployment rate is 1.89710 while GDP per capita is 1610.23805. In Hungary, on average SMEs death rate is 11.16%, while the unemployment rate is 10.20% and GDP per capita is \$22098.3333 over the entire period from 2008 to 2013. The standard deviation for SMEs death rate is 1.32765, unemployment rate is 1.27122 and GDP per capita is 1251.90521

**Table: 2 Descriptive Statistics for the four countries**

	Mean	Std. Deviation	N
SME_Death_Rate	10.56	1.824	24
GDP	24106.25	3175.787	24
Unemployment	9.70	2.694	24

Source: authors 2017

**Table: 3 Descriptive Statistics for individual countries**

Country		Mean	Std. Deviation	N
Czech Republic	SME_Death_Rate	9.0000	.69570	6
	GDP	28098.8333	1368.74533	6
	Unemployment	6.5167	1.06097	6
Poland	SME_Death_Rate	10.9500	1.22923	6
	GDP	21262.6667	2409.3333	6
	Unemployment	9.1500	1.24378	6
Slovakia	SME_Death_Rate	11.1500	2.75663	6
	GDP	24965.1667	1610.23805	6
	Unemployment	12.9500	1.89710	6
Hungary	SME_Death_Rate	11.1667	1.32765	6
	GDP	22098.3333	1251.90521	6
	Unemployment	10.2000	1.27122	6

Source: authors 2017

### Correlation Matrix

Correlation matrix for the four countries is presented in Tab. 4 to measure the degree of association between the variables. Correlation between SMEs death rate an independent variable and GDP per capita is -.146 which means a weak negative relationship exist between the variables. This indicates that the two variable moves in opposite direction, an increase in SMEs death rate may lead to a decrease in the GDP per capita. The relationship between SMEs death rate and GDP per capita is not statistically significant because the p-value of .496 is greater than the significance level of 0.05, there is inconclusive evidence about the significance of the association between the variables. This result negates the findings of (Mukorera and Mahadea, 2014; Osakwe et al., 2015). On the other hand, the result shows that the correlation between SMEs death rate and unemployment rate is .458 which means a moderate positive association exists between the variables. This suggests that the two variables move in the same direction, which means that an increase in the SMEs death rate may lead to an increase in unemployment

rate. The relationship is statistically significant because the p-value of .025 is less than the significance level of 0.05. This result is in consonance with the findings of (Evans and Leighton, 1990; Osakwe et al., 2015; Plehn-Dujowich and Grove, 2012). From these results, the authors conclude that the first hypothesis, unemployment rate is positively associated with SMEs death rate in the Visegrad countries is supported, whereas the second hypothesis GDP per capita is positively associated with SMEs death rate in the Visegrad countries is not supported. Correlation matrix for the individual countries is presented in Tab. 5 to measure the degree of association between the variables. In the Czech Republic, the correlation between SMEs death rate and GDP per capita is .868, which means a strong positive association exists between the variables. The relationship between SMEs death rate and GDP per capita is statistically significant because the p-value of .024 is less than the significance level of 0.05. The correlation between SMEs death rate and unemployment rate is .620 which means a strong positive association exists between the variables. This suggests that the two variables move in the same direction, which means that an increase in the SMEs death rate may lead to an increase in unemployment rate. The relationship is not statistically significant because the p-value of .188 is greater than the significance level of 0.05, there is inconclusive evidence about the significance of the association between the variables. In Poland, the result shows a strong positive association between SMEs death rate, GDP per capita (.884), and unemployment rate (.851). The p-values for the correlation between SMEs death rate and GDP per capita (.019) and between SMEs death rate and Unemployment (.031) are both less than the significance level of 0.05, which indicates that the correlation coefficients are significant. In Slovakia, the correlation between SMEs death rate and GDP per capita is .415 which means a weak positive relationship exist between the variables. The correlation between SMEs death rate and unemployment rate is -.085 which means a weak negative relationship exist between the variables. The p-values for the correlation between SMEs death rate and GDP per capita (.413) and between SMEs death rate and Unemployment (.873) are both greater than the significance level of 0.05, which indicates that the correlation coefficients are not statistically significant. In Hungary, the correlation between SMEs death rate and GDP per capita (.289) and SMEs death rate and Unemployment (.396) both indicates a positive weak association between the variables. Similarly, the relationship is not statistically significant because the p-values for the correlation between SMEs death rate and GDP per capita (.579) and between SMEs death rate and Unemployment (.437) are both greater than the significance level of 0.05, there is inconclusive evidence about the significance of the association between the variables.

**Table: 4 Correlations for the four countries**

		SME_Death_Rate	GDP	Unemployment
SME_Death_Rate	Pearson Correlation	1	-.146	.458*
	Sig. (2-tailed)		.496	.025
	N	24	24	24

\* Correlation is significant at the 0.05 level (2-tailed).

Source: authors 2017

**Table: 5 Correlations for the individual country**

Country		SME_Death_Rate	GDP	Unemployment
Czech Republic	Pearson Correlation	1	.868*	.620
	Sig. (2-tailed)		.024	.188
	N	6	6	6
Poland	Pearson Correlation	1	.884*	.851*
	Sig. (2-tailed)		.019	.031
	N	6	6	6

Country		SME_Death_Rate	GDP	Unemployment
Slovakia	Pearson	1	.415	-.085
	Correlation		.413	.873
	Sig. (2-tailed)	6	6	6
Hungary	Pearson	1	.289	.396
	Correlation		.579	.437
	Sig. (2-tailed)	6	6	6

\*. Correlation is significant at the 0.05 level (2-tailed).

Source: authors 2017

## 5. Conclusions and Limitations

Small and medium enterprises (SMEs) contribute to the economic growth of both developed and developing countries. This study explores the link between SMEs death rate, GDP per capita and unemployment rate in the Czech Republic, Poland, Slovakia, and Hungary. We use mean, standard deviation and Pearson correlation to assess the variables. On average, 10.56% SMEs close their business and the average unemployment rate is 9.70% over the entire period from 2008 to 2013 among the Visegrad countries. For the Visegrad countries, our results indicate a significant positive relationship between SMEs death rate and unemployment rate. The result suggests that as more SMEs close their business, it may lead to more people losing their jobs in the Visegrad countries. However, our empirical results show an insignificant negative association between SMEs death rate and GDP per capita in the Visegrad Group. This indicates that as SMEs death rate increases it may lead to fall in the standard of living due to a fall in GDP per capita income in the Visegrad countries. We have also not completely ruled out the possibility of a spurious outcome given the limited time series of the study. Despite the limitation described above, the applicability of this study adds to the literature as it relates to the SMEs and entrepreneurship research from both theoretical and practical point of view. More importantly, further study should be done by adding other important macroeconomic variables such as taxation, interest rate spread, the inflation rate, and economic freedom indicators that were not included in our present study. These variables are likely to have an impact on SMEs death rate in the Visegrad countries. This study only demonstrates associations between the selected variables of interest, but not causality. Also, empirical studies can be done to investigate causal effect of SMEs death rate on unemployment. The government of the Visegrad countries should continue to provide an enabling investment environment by addressing potential market failures and creating equal opportunities that will encourage SMEs to thrive, reduce the rate of unemployment, and enhance GDP per capita of the Visegrad countries. This paper gives insight into the relationship between SMEs death rate, GDP per capita and unemployment rate in the Visegrad countries after the accession to European union in 2004. The knowledge of the relationship between SMEs death rate, GDP per capita and unemployment rate will enable managers and policymakers take decisions on how to manage these macroeconomic variables better.

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