THE INFLUENCE OF ECONOMIC CYCLE ON SUICIDE AND HOMICIDE IN THE CZECH REPUBLIC

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Abstract

The object is to analyse the influence of the economic cycle on suicide and homicide rate in the Czech Republic. The homicide and suicide are deliberately overlooked, because it has a negative impact on the development of the economic cycle. For that reason it belongs to delicate issues in the Czech Republic and other countries.

In recent years, the Czech Republic passed through major changes in the economic situation. In 2008, the economic recession began in the United States and gradually affected many countries around the world, including the Czech Republic. The work will also analyse the impact of these changes.

GDP data, information about suicide and homicide will be used from the Czech Statistical Office.

The work presents the development of GDP, suicide and homicide rate in the Czech Republic. It will analyze the existence of a relation between GDP and suicide, GDP and homicide. Results will be compared with the economic theory of the business cycle on suicide and homicide by Henry and Short.

Key words: GDP, suicide, homicide

JEL Code: E23, J19

Introduction

Considerable changes in economic situation happened in the period of last twenty-five years. Firstly, there was a transformation of the Czech economy after the year 1989. Secondly, the split of Czechoslovakia was held in the beginning of the year 1993. A period of economic growth began after that. However, economic depression effected it in 2008. It began as a mortgage one in the U.S.A. a year earlier and it gave a cause for the world economic

depression which gradually affected most of the countries all around the world including the Czech Republic.

The goal of the paper is to find out if the changes in the framework of economic cycle influenced the rate of suicidality and homicide in the Czech Republic. The results will be compared with economic theory of economic-cycle influence on suicidality and homicide according to Henry and Short.

1   Development of GDP, suicidality and homicide

1.1   Development of GDP from 1990 - 2013

Economic revival was passing through in the period 1995 to 1996, in fact, it had already started in 1993 at the beginning of the independent Czech Republic. Nevertheless, this phase was preceded by a period of transformation recession from 1990 to 1992 in the context of economic changes in the Czech Republic. Macroeconomic disparity started to appear in the years 1997 to 1999 caused by discordance between the growth of GDP and domestic aggregate demand. It could be stated that recession influenced labour market of that time. Reanimation of economy was held in the period 2000 to 2006. The growth of the Czech economy was so remarkable that it even overcame the growth of EU-15 and of other Central European countries. Mortgage depression in the U.S.A. began to affect world economy negatively in the year 2007, but the intense drop followed in the year 2008. Depression consequences started to appear in the Czech economy in 2009 when annual fall of the economic output became evident. It can be stated that the Czech economy has been slowly recovering from 2008-economic-depression impact since 2010. (Spěváček, 1999)

Fig. 1: Gross domestic product – production method on one inhabitant in CZK (current prices) from 1990 to 2013 in the Czech Republic.
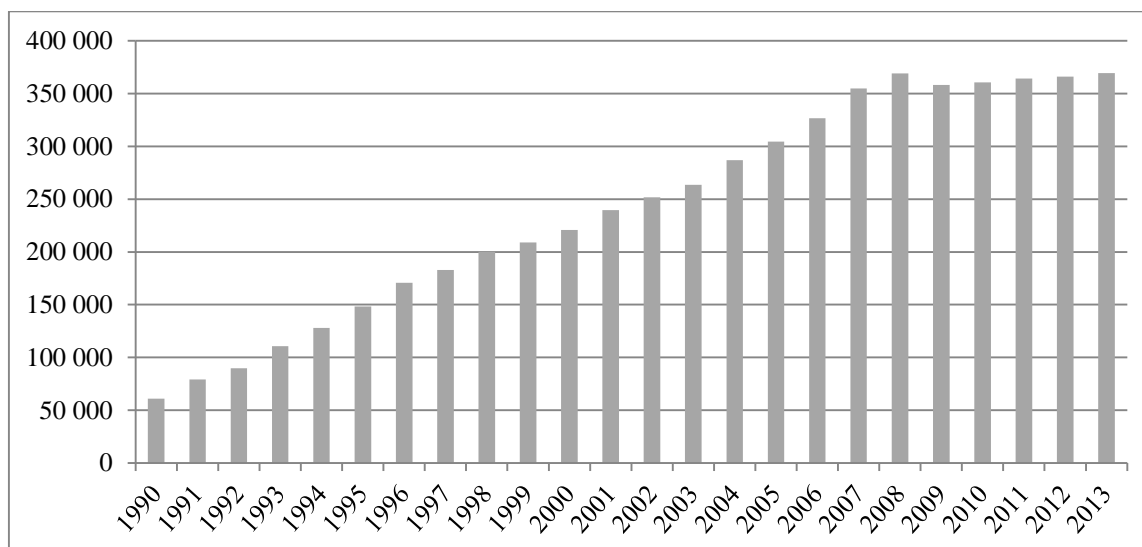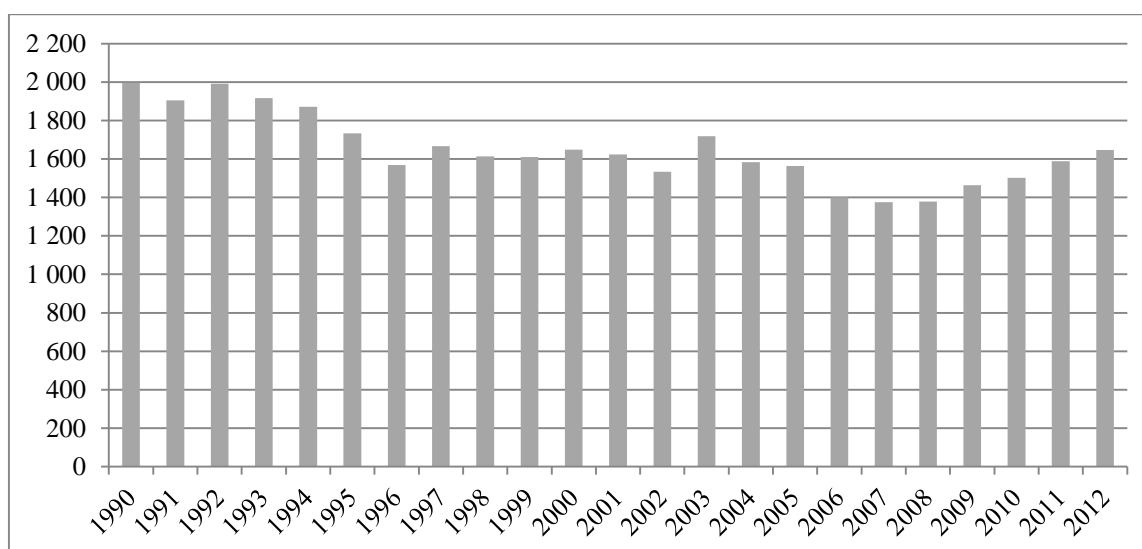

Source: ČSÚ

1.2   Number of suicides and murders from 1990 – 2012

The number of suicides reached the top figures in the years 1990 and 1992. The first year has a connection to social changes passing at that time and making some individuals anxious about future. High figure of committed suicides in 1992 might cohere with planned split of Czechoslovakia which conveyed a certain level of social insecurity. The number of suicides was more or less constant or decreased in the following years. The growth could be noticed again in 2009 as the result of coming economic depression the consequences of which affected the development of suicidality in the following years.

Fig. 2: Number of suicides in the Czech Republic from 1990 to 2012

Source: ČSÚ

Data concerning suicides are available for ome-year-shorter period that means from 1990 to 2012. The whole number of murder criminal acts proceeds in relatively low figures. The least murders were committed in 1991, then there proceeded increase up to 1998 when the number of murders overcame 300 criminal acts. The number of murders has been decreasing since that time which means highly positive phenomenon. It is really difficult to evaluate the development itself as murders in the Czech Republic are not much committed in relation with social phenomenons. It is possible to say that murder motives are more of pesonal character and in that case the reasons of these acts are appraised not easily.

Fig. 3: Number of murders in the Czech Republic from 1990 to 2012
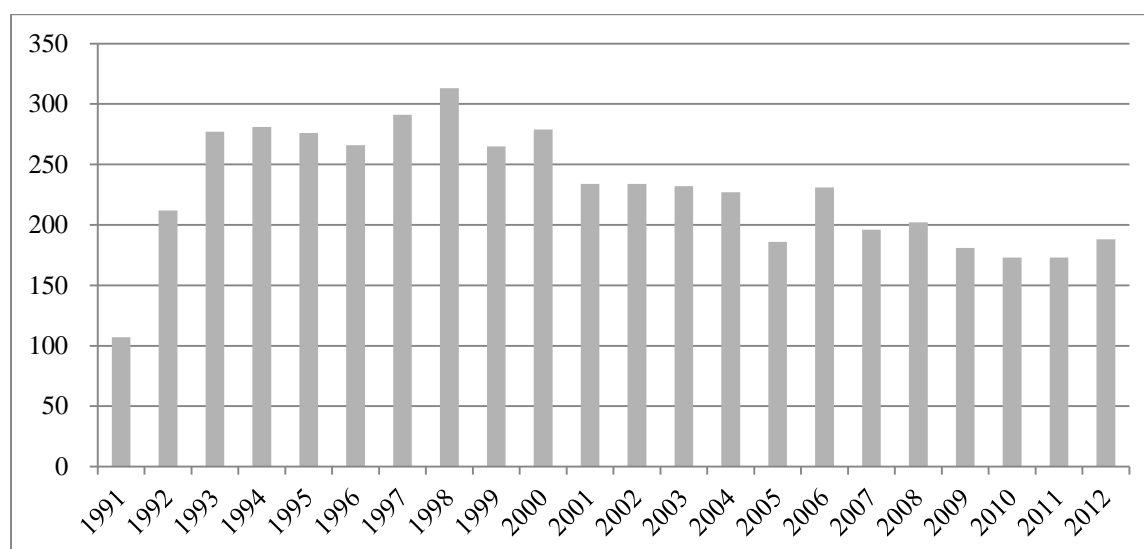
Source: ČSÚ

2   Analysis of timeline relations

Relation among suicidality, homicide and GDP per inhabitant (in CZK) was examined with the assistance of timelines using statistic software EViews. It was verified with the help of Dickey-Fuller test first if the timelines and their residues are stationary or not. If timelines are nonstationary and residues are stationary, it is the case of contingent regression which means there might be short-term or long-term relation among the timelines. If the timelines and residues showed unstationarity, it mentioned apparent regression and there was no relation among the timelines.

2.1   Dependence of suicidality on GDP

It was confirmed the case of contingent regression after verifying the timelines and residues. Autocorrelation was identified. The model must have been dynamized (adding of delayed variables) till the autocorrelation disappeared. The statistically marginal variables were then removed and there was checked absence of autocorrelation. The diagnostic examination of model where autocorrelation was not noticed, determined heteroscedasticity, and normality was proved. The test confirmed the correctness of the model.

Tab. 1: Model of a short-term relation between suicidality and GDP

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Dependent Variable: SEBEVRAZEDNOST
Method: Least Squares
Date: 04/02/14   Time: 20:11
Sample (adjusted): 1991 2012
Included observations: 22 after adjustments
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Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	8.028955	3.758682	2.136109	0.0467
SEBEVRAZEDNOST(-1)	0.629937	0.190594	3.305118	0.0039
HDP	-6.38E-05	1.86E-05	-3.419587	0.0031
HDP(-1)	5.77E-05	1.86E-05	3.099369	0.0062

R-squared	0.861651	Mean dependent var		15.80611
Adjusted R-squared	0.838593	S.D. dependent var		1.683669
S.E. of regression	0.676422	Akaike info criterion		2.218966
Sum squared resid	8.235837	Schwarz criterion		2.417337
Log likelihood	-20.40863	Hannan-Quinn criter.		2.265696
F-statistic	37.36868	Durbin-Watson stat		2.352526
Prob(F-statistic)	0.000000			

Source: EViews 8

Above mentioned chart shows the model of a short-term relation. It could be put down in the following way: $\text{SUICIDALITY}_C = 8{,}029 + 0{,}629\ \text{SUICIDALITY}_{t-1} -6{,}38E-05\ \text{GDP}_{t-1} +5{,}77E-05\ \text{GDP}_{t-1} + a_t$. The equation shows indirect dependence between suicidality and GDP, i. e. if GDP decreases, the rate of suicidality will increase. Analysis of residues could be understood as the test of cointegration. Residues were stationary and proved the existence of a long-term relation. The relation was put down through a model of error correlation: $\Delta\text{SUICIDALITY}_t = 8{,}029 -6{,}38E-05\ \Delta\text{GDP}_t -0{,}370(\text{SUICIDALITY}_{t-1}-3{,}28E-04\ \text{GDP}_{t-1}) + at$. Number -0.370 means encumbrance. The higher the figure is, the stronger is the long-term relation which is put down in brackets. There is again perceptible indirect dependence of a suicidality rate and GDP.

2.2 Dependence of homicide on GDP

Timelines and residues showed nonstationarity. It is the case of apparent regression. There was not confirmed a short-term relation between homicide and GDP after differentiation of the model.

3   Economic theory of Short and Henry

Henry and Short's work which is given up to the influence of the economic cycle on suicidality and homicide is exceptional in its connection of sociological and psychological aspects of the problem. Authors proceed from social regulation and integration of Durkheim, and from psychological analysis of Freud. (Henry, Short, 1968; Lester, Yang, 1997)

Sociological integration is according to Durkheim a posibility of an individual to join the society. Society limits behaviour of a person, so it is a social regulation. Durkheim differentiated four types of suicides. (Lester, 2001; Symonds, 1991)

Tab. 2: Types of suicides according to social integration and regulation

	Social integration		Social regulation	
	Weak	Strong	Weak	Strong
Typ sebevraždy	Egoistic	Altruistic	Anomic	Fatalistic

Source: Lester, 2001

According to Freud, natural reaction to frustration is an aggression against the person who frustrates the child. If the aggression is suppressed artificially it is really unlikely the child will grow up into a depressive person with a suicide inclination. (Henry, Short, 1968; Lester, Yang, 1997)

3.1   Influence of economic cycle on suicidality and homicide

Henry and Short analyzed relation among economic cycle, suicidality and homicide. The results confirmed indirect dependence. Economic growth leads to decrease of suicidality and homicide. They set several presumptions. (Henry, Short, 1968; Lester, Yang, 1997)

Three basic presumptions concern frustration and aggression. Aggression is often a consequence   of frustration, economic cycle causes differences in social position of inhabitants, frustration rises from disability of a person to keep or increase his/her position in the society. Position of high ranked people relatively decreases in comparison with low-ranked people in the period of economic depression. However, in the period of economic growth their position relatively gets better. Suicides are typical for higher strata, while

murders occur mainly in lower strata of the society. It can be deduced that the economic cycle influences high-ranked person more. In the period of recession that person loses more than a lower-ranked onen. Frustration could be followed by aggression against himself/herself. Apparently, economic depression leads to increase the number of suicides. (Henry, Short, 1968; Lester, Yang, 1997)

Fig. 4: Dependence of the rate of suicidality on economic cycle according to Henry and Short
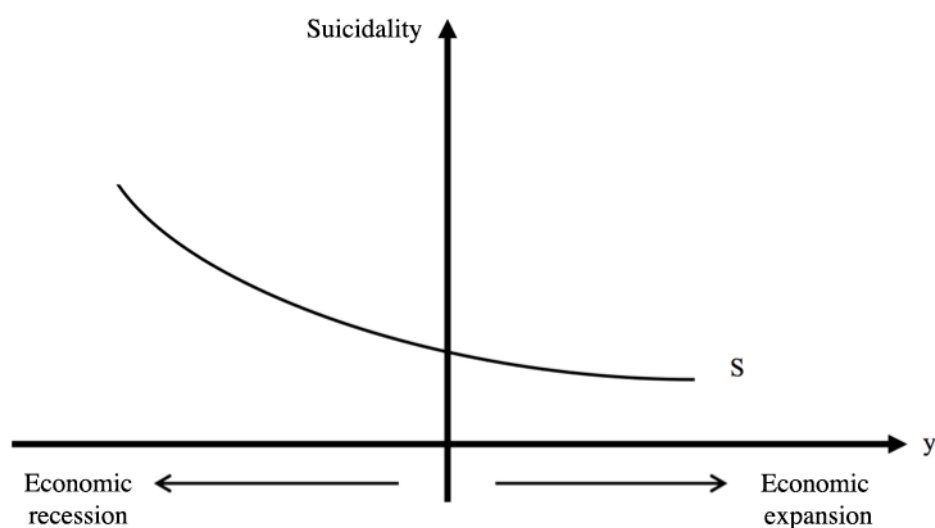
Source: (Lester, Yang, 1997)

The results of Henry and Short's research proved the existence of relation between economic cycle and suicidality. As to homicide correlation was not confirmed. Their analysis indicates connection of aggressive behaviour with economic development. It refers not only to suicides, but also to neglected murders. (Henry, Short, 1968; Lester, Yang, 1997)

It could be possible to trace the influence of other economic and social factors on suicidality and homicide. For example, dependence of suicidality and homicide on the rate of unemployment which was proved according to research organized in the U.S.A. The result was that in case the rate of unemployment increases by one per cent, the number of suicides increases by 3.6 per cent and number of murders by 6.7 per cent. (Průša, 1997) It can be also interesting to analyze dependence of suicidality and homicide on avarage wage, which grows regardless of the economic crisis. (Marek, 2013)

Conlusion

The goal of the paper was to analyze the influence of economic cycle on suicidality and homicide in the Czech Republic. The results of the analysis were compared with economic theory of the influence of economic cycle on suicidality and homicide by Henry and Short.

Indirect relation between timelines of GDP and suicidality in the Czech Republic was proved. It means in practise if GDP decreases, general rate of suicidality increases in Czech society. Relation between GDP and homicide rate was indicated as apparent so it could appear that GDP has an influence on general rate of homicide but it is not in that way. The results conform to Henry and Short theory which proved only correlation between economic cycle and suicidality. Belgium, Bulgaria, Estonia, Lithuania, Latvia, Hungary, Slovakia and Slovenia have similar development of GDP with Czech republic. It can be supposed that suicidality in these countries will behave like in the Czech republic. (Loster, Pavelka, 2013)

Acknowledgement

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