

The Effects of the Last Global Economic Crisis on the Suicide Rate in Europe

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Abstract

The effect of unemployment on suicide has not been clearly demonstrated, some studies have associated the increase in the number of suicides with the increase in unemployment during the economic crisis, other studies show that there is a non-linear relationship between unemployment and suicide. In order to analyze the consequences of the last global economic crisis, which began in the summer of 2008, on mortality by suicide in the European Union countries, between 2007-2015, we extracted the data on the mortality rate according to age group, genders and the cause of the underlying death from WHO and EUROSTAT databases.

Keywords: *Economic Crises, Suicide Rate, EU Suicide.*

Introduction

The effect of unemployment on suicide has not been clearly demonstrated, probably due to the design variability of different research or statistical models. Some studies have associated the increase in the number of suicides with the increase in unemployment during the economic crisis, by applying the time indicator (Chang, 2013; Stuckler, 2011), but previous evidence supports a time lag between the development of the economy and suicide related to awareness of job insecurity. (Garcy, 2013; Fountoulakis, 2014) Some studies show that there is a non-linear relationship between unemployment and suicide, and that there is a greater effect of the increase in unemployment in countries with low levels of unemployment before the crisis on suicide. (Chang, 2013)

Suicide cases that can be attributed to the global recession represent only the tip of the iceberg of a wider range of psycho-social problems caused by the economic crisis, such as the reduction of investments, the reduction of the number of jobs, the increase in the unemployment rate, the decrease in the price of houses, major changes of value orientation of the employees, increase in the cases of spousal violence and the number of abused children, the entry of the medical system in crisis concomitantly with the deterioration of the mental health of the population. Many people who work during these economic disruptions are facing serious psychological stressors due to economic stresses, such as declining incomes, job insecurity, decline in living standards, bankruptcy, unemployment, debt and loss of housing.

In the face of economic difficulties, stress and consequent uncertainty, people may react differently. The increase in the level of violence will be expressed externally through different aggressive behaviours directed against others, by attacking partners, by homicides, or it will be directed against oneself, leading to depression, self-aggravating behaviour and even suicide.

Methodology

In order to analyze the consequences of the last global economic crisis, which began in the summer of 2008, on mortality by suicide in the European Union countries, between 2007-2015, we extracted the data on the mortality rate according to age group, genders and the cause of the underlying death from WHO and EUROSTAT databases. Unemployment trends, of GDP and purchasing power standard per capita were used to measure the impact of the financial crisis, and were extracted from the EUROSTAT database. With the help of this data we could observe the evolution of the suicide rate and of the economic indicators in the countries of the European Union according to gender and age.

Results

In the European Union there were approximately 60,000 suicides/year, of which 2/3 in the countries that joined the EU before 2004. If the level of suicide from 2007 was maintained, in the period 2008-2015 in the countries of the European Union - there would have been 22,961 fewer suicides, of which about 75% registered in the countries that joined after 2004.

Table 1. Percentage evolution of the suicide rate in the pre-2004 EU countries between 2008 and 2015 as compared to 2007

Year	UK	Austria	Belgium	Denmark	Finland	Franta	Greece	Germany	Ireland	Italy	Luxembourg	Netherlands	Portugal	Spain	Sweden
2008	7.69	-2.50	6.18	3.57	3.70	1.76	13.79	0	9.70	1.61	-47.09	5.88	1%	4.05	2.38
2009	6.15	-3.12	6.18	6.25	3.17	1.76	17.24	0.89	18.44	3.22	-41.86	10.59	-1.98%	1.35	7.93
2010	4.61	-5	5.05	-	-5.82	0	13.79	5.35	5.82	1.61	-36.62	14.11	3.96%	-8.10	-1.58
2011	3.23	-2.87	8.14	-0.80	-10.53	-0.82	44.82	6.25	17.57	5	-33.25	17.76	-5.84%	-8.90	-4.84
2012	11.07	-5	5.39	9.10	-14.60	-7.35	52.06	2.85	18.25	7.74	-37.85	25.41	-1.18%	0.40	-1.67
2013	13.23	-4.06	-2.97	0.71	-13.44	-9	64.13	5.26	8.15	7.09	-45.99	33.17	-3.16%	10	3.41
2014	8.92	-4.62	-2.92	6.34	-23.01	-16.88	71.72	6.61	7.08	1.93	-22.32	30.82	11.68%	10.40	-3.81
2015	13.07	-9.50	-5.33	-8.83	-28.78	-16.82	61.72	4.19	-6.89	-	-19.07	32.70	2.77%	1.48	-2.14

Obtained by analysing the tables (5-7 Eurostat)

The highest increases in the suicide rate were recorded in Greece (by 71.7% in 2014), the Netherlands (with 33.2% in 2013) and Ireland (with 18.4% in 2009), followed by England (with 13.2% in the year 2013), Portugal (by 11.7% in 2014) and Spain (by 10.4% in 2014).

In countries with strong social protection systems, the annual suicide rate has decreased throughout 2008-2015 or has shown increases of less than 4% in Finland and France, these data demonstrating that social protection systems play an important role in preventing suicide during economic crises.

Throughout 2008-2015 the suicide rate was higher as compared to 2007 in Cyprus and Poland. Of the post-2004 EU countries, the highest increase in the suicide rate was recorded in Cyprus (by 107.7% in 2008), Malta (by 28.8% in 2009), Poland (by 21.3% in 2009) and Slovakia (by 20.7 % in 2013).

In most post-2004 EU countries, the suicide rate increased to the maximum in the first 3 years after the economic crisis, except the Czech Republic, where the suicide rate reached the maximum in 2012, Lithuania in 2013 and Slovakia in 2013.

Table 2. Percentage evolution of the suicide rate in the post-2004 EU countries between 2008 and 2015 as compared to 2007

Year	Bulgaria	Czech Republic	Cyprus	Croatia	Estonia	Latvia	Lithuania	Hungary	Malta	Poland	România	Slovenia	Slovakia
2008	4.06	-0.72	107.69	2.17	-7.18	14.55	7.71	0.39	-45.45	6.38	2.50	-7.72	15
2009	-4.06	3.64	57.69	1.08	5.64	14.08	11.11	-1.17	28.78	21.27	7.50	-0.45	16
2010	-4.06	5.89	80.77	-1.63	-13.84	-2.35	1.54	0	19.69	17.73	14.66	-7.72	20
2011	-15.44	10.95	52.69	-9.94	-16.36	-0.33	3.02	-3.75	-31.97	13.76	8.33	-1.32	6
2012	-1.54	16.57	46.92	-0.92	-5.64	2.44	-5.27	-5.82	-3.03	18.51	5.58	-2.13	11.20
2013	-20.49	10.80	99.61	-12.06	-13.02	-10.56	11.48	-17.11	-23.48	15.95	1.91	-1.36	20.70
2014	-19.43	4.82	73.07	-8.47	-6.10	-10.98	-2.75	-24.14	25.15	10	-5.58	-14.23	7.60
2015	-24.14	-3.35	71.15	-5.87	-18.51	-9.20	-6.54	-25.66	15.75	0.99	-4.75	-5.82	-8.10

Obtained by analysing the tables (5-7 Eurostat)

In Cyprus the suicide rate reached a peak in 2008 (by 107.7% higher than in 2007) and peaked again in 2013 (by 100% higher than in 2007). In Romania, the suicide rate increased progressively reaching the maximum in 2010 (by 14.7%), then gradually decreased, since 2014 the suicide rate was below the value of 2007.

Throughout 2008-2015, the annual suicide rate in Slovenia was more reduced than in 2007, and in Bulgaria, Croatia, Hungary, suicide rates increased below 4%, these countries being less affected by the economic crisis.

Table 3. Percentage evolution of the suicide rate in men in the pre-2004 EU countries between 2008-2015 as compared to 2007

Year	UK	Austria	Belgium	Denmark	Finland	France	Greece	Germany	Ireland	Italy	Luxembourg	Netherlands	Portugal	Spain	Sweden
2008	8.74	-1.11	9.02	4.27	5.71	2.20	16.67	-0.55	4.91	0.96	-36.25	4.88	4.12	4.09	5.40
2009	7.77	-2.59	7.89	15.85	0	2.20	25%	1.09	19.63	3.85	-39.04	11.38	4.12	3.28	8.11
2010	4.85	-4.44	6.39	-100	-7.05	-0.37	29.17	3.82	6.13	3.85	-26.29	14.63	7.06	-5.74	0.54
2011	5.14	-3.22	7.86	3.72	-7.28	0.91	50.63	5.52	25.58	7.21	-38.56	15.61	-1.88	-9.83	-6.48
2012	14.37	-4.29	8.68	16.16	-15.13	-5.27	56.88	-0.22	26.07	7.69	-31.95	21.22	6.06	0.65	-2.32
2013	16.02	-5.18	-2.11	7.25	-14.73	-7.29	65.21	3.50	11.10	5.96	-51.51	33.98	-0.35	5.98	0.75
2014	9.12	-6.29	-3.46	12.01	-23.52	-15.68	75	5.63	12.64	1.35	-13.86	26.50	13.12	7.13	-8
2015	11.84	-10.22	-7.18	-10.85	-28.67	-14.21	63.96	1.69	-5.64	-	-17.57	30.16	-1.47	-2.21	-1.89

Obtained by analysing the tables (5-7 Eurostat)

In the period 2008-2015, the suicide rate in men in pre-2004 EU28 countries was lower than in 2007 in Austria and Luxembourg. In Belgium, Finland, France, Germany, Italy, Spain and Sweden the suicide rate in men during this period increased by less than 10% as compared to the 2007 rate, and the highest increases in the suicide rate in men were recorded in Greece, Ireland and the Netherlands.

Table 4. Percentage evolution of the suicide rate in men in the post-2004 EU countries between 2008-2015 as compared to 2007

Year	Bulgaria	Czech Republic	Cyprus	Croatia	Estonia	Latvia	Lithuania	Hungary	Malta	Poland	Romania	Slovenia	Slovakia
2008	2.94	0	95.45	7.39	-15.28	12.47	6.29	1.55	-50	7.42	3.39	-4.80	7.65
2009	-3.43	6.17	52.27	6.75	-1.81	11	12.42	-1.55	25	21.48	12.14	-2.67	16.84
2010	-2.94	6.17	86.36	-0.64	-20.47	1.95	-1.16	0.44	19.53	19.92	16.99	-3.47	13.78
2011	-11.86	11.23	60.68	-9.96	-20.16	2.27	0.94	-6.38	-30.70	16.13	11.99	4.67	4.49
2012	2.25	17.86	71.36	1.54	-11.06	1.61	-6.31	-6.41	-12.97	20.23	11.50	5.52	7.55
2013	-16.17	10.45	117.95	-9.16	-16.37	-9.56	9.78	-18.63	-24.38	17.54	5.68	-0.96	17.04
2014	-16.96	1.27	54.77	-9.16	-12.85	-13.33	-2.28	-24.77	26.64	10.51	-0.53	-10.83	3.77
2015	-22.99	-4.89	60.22	-6.72	-22.67	-13.20	-6.87	-27.76	-7.11	2.34	-0.24	-3.60	-15

Obtained by analysing the tables (5-7 Eurostat)

Of the post-2004 EU28 countries, throughout 2008-2015, in Estonia, the suicide rate in men was lower than in 2007, and in Cyprus higher suicide rates were recorded. In Bulgaria, Croatia, Hungary and Slovenia there were generally lower rates of suicide in men and only in 2-3 years an increase in the suicide rate below 10% was recorded.

The highest increases in men suicide rate were recorded in Cyprus (by 118% in 2013), Malta (by 26.6% in 2014) and Poland (by 21.5% in 2009), and increases between 10-20 % were recorded in the Czech Republic, Latvia, Lithuania, Romania and Slovakia.

Table 5. Percentage evolution of suicide rate in women in pre-2004 EU countries between 2008-2015 as compared to 2007

Year	UK	Austria	Belgium	Denmark	Finland	Franta	Greece	Germany	Ireland	Italy	Luxembourg	Netherlands	Portugal	Spain	Sweden
2008	6.89	-5.48	1	2.98	-4.44	0	10	0	27.27	3.70	-68.80	10	-10.20	-2.86	-5.55
2009	3.45	-5.48	2	-20.89	11.11	-1.16	0	-1.85	13.63	0	-55.04	12	-20.41	-8.57	6.94
2010	6.89	-8.22	2	-100	-4.44	-1.16	-30	5.55	4.54	-3.70	-60.55	14	-6.12	-17.14	-9.72
2011	-3.45	-1.92	8.60	-15.97	-18.67	-6.97	43	2.41	-9.77	-3.70	-30.09	22.80	-20.41	-12.57	-4.44
2012	0.34	-10.82	-2.50	-11.94	-13.44	-14.18	56	6.29	-6.82	3.33	-56.97	36.20	-25.30	-5.71	-0.55
2013	2.76	-1.51	-5.30	-14.48	-10.11	-15.93	87	7.78	-2.04	6.29	-40.09	30.40	-16.33	12.57	6.80
2014	9.31	-3.83	-1.20	-12.09	-22.11	-22.32	92	6.29	-11.59	1.48	-42.93	38.60	4.08	12.57	5.83
2015	17.58	-13.97	-3.20	-8.80	-31.11	-26.97	84	9.81	-9.54	-4.81	-22.66	38.60	12.86	6.57	-4.86

Obtained by analysing the tables (5-7 Eurostat)

The highest increases in the suicide rate in women were recorded in Greece in 2013-2015 (by about 90%). In the Netherlands, the suicide rate in women was higher than in 2007 during the whole period 2008-2015, the maximum being reached in 2012-2015.

In Ireland, the suicide rate in women has increased by 27% in 2008, and after it has gradually decreased, and since 2011 the annual rates of suicide in women have been lower than in 2007.

Increases in the suicide rate in women under 10% were recorded in Belgium, Denmark, Germany, Italy and Sweden, and between 10-20% in England, Finland, Portugal and Spain.

Throughout the period 2008-2015, suicide rates in women more reduced than in 2007 were recorded in Austria, France and Luxembourg.

Table 6. Percentage evolution of suicide rate in women in post-2004 EU countries between 2008-2015 as compared to 2007

Year	Bulgaria	Czech Republic	Cyprus	Croatia	Estonia	Latvia	Lithuania	Hungary	Malta	Poland	Romania	Slovenia	Slovakia
2008	1.67	6.67	127.27	-6.97	16.13	5.13	9.90	-1.85	66.66	0	0	-14.89	23.07
2009	-11.67	-2.22	63.63	-15.11	9.67	8.97	3.96	-2.78	100	16.66	-11.63	-3.19	-15.38
2010	-11.67	6.67	63.63	-4.65	-9.67	-33.33	9.90	-5.55	50	2.38	2.32	-22.34	30.77
2011	-33.34	5.55	10.91	-8.60	-12.26	-20	15.44	-1.11	-	-7.38	-9.53	-13.19	-6.53
2012	-15	15.11	-65.45	-10.93	-0.64	-17.95	-0.39	-5.92	380	-1.19	-20.46	-20.42	1.92
2013	-37.50	17.33	2.72	-26.28	-1.61	-29.87	15.84	-14.16	-31.66	1.43	-16.28	-12.23	20
2014	-29.33	21.33	120	-6.74	4.84	-21.15	-7.13	-23.61	300	-2.38	-26.51	-37.44	15.77
2015	-33	5.78	84.54	-3.37	-18.06	-10.25	-0.09	-18.70	445	-11.90	-22.79	-11.06	14.61

Obtained by analysing the tables (5-7 Eurostat)

Eurostat statistics does not include the age-standardized suicide rate for Malta in 2011. Of the 13 post-2004 EU 28 countries in 7 countries (Bulgaria, Cyprus, Estonia, Latvia, Poland, Romania and Slovakia) the highest suicide rates increases were recorded between 2008-2010, and in 4 countries (Czech Republic, Cyprus, Lithuania and Malta) between 2013-2015.

The highest increases in suicide rates in women were recorded in Malta and Cyprus, increases between 31-20% in Slovakia and the Czech Republic, and increases by 10-20% in Estonia, Lithuania and Poland. Between 2008-2015, annual rates of suicide in women more reduced than those from 2007 in Bulgaria, Croatia, Hungary, Romania and Slovenia, or increases below 3% were recorded.

Table 13. Percentage evolution of the unemployment rate of the active population in the pre-2004 EU 28 countries between 2008-2017 as compared to 2007

Year	Belgium	Denmark	Germany	Ireland	Greece	Spain	Franta	Italy	Luxembourg	Netherlands	Austria	Portugal	Finland	Sweden	UK
2008	-6.67	-10.52	-12.94	36.00	-7.14	37.80	-7.50	9.83	16.67	-11.90	-16.33	-3.29	-7.24	1.64	5.66
2009	5.33	57.89	-10.59	154.00	14.28	118.29	13.75	26.23	21.43	4.76	8.16	17.58	18.84	36.06	43.39
2010	10.67	97.37	-17.65	192.00	51.19	142.68	16.25	37.70	9.52%	19.04	-2.04	31.87	21.74	40.98	47.17
2011	-4.00	100	-31.76	208.00	113.09	160.97	15	37.70	14.28%	19.04	-6.12	41.76	13.04	27.87	52.83
2012	1.34	97.37	-36.47	210.00	191.67	202.44	22.50	75.41	21.43%	38.09	0	73.62	11.59	31.14	49.05
2013	12	84.21	-38.82	176.00	227.38	218.29	28.75	98.36	40.47%	73.81	10.20	80.22	18.84	31.14	41.51
2014	13.33	73.68	-41.17	138.00	215.47	198.78	28.75	108.19	42.85%	76.19	14.28	54.95	26.08	29.51	15.09
2015	13.33	63.16	-45.88	100.00	196.43	169.51	30.00	95.08	54.76%	64.28	16.32	38.46	36.23	21.31	0.00
2016	4	63.13	-51.76	68.00	180.95	139.02	26.25	91.80	50.00%	42.86	22.45	23.07	27.53	13.11	-9.43
2017	-5	50	-55.29	34.00	155.95	109.75	17.50		33.33%	16.67	12.24	-1.09	24.64	9.83	-16.98

Obtained by analysing the tables (7,8 Eurostat)

In 2008, in 9 of the 15 pre-2004 EU 28 countries, a decrease in the unemployment rate among the working population was recorded, except for the countries: Ireland, Spain, Italy, Luxembourg, Sweden and England. In the period 2008-2017, in all pre-2004 EU 28 countries there was an increase in the unemployment rate, except for Germany, where a continuous decrease in the unemployment rate was recorded.

The highest increases in the unemployment rate, by 100-210%, were observed in Greece, Ireland and Spain, by about 100% in Denmark and Italy, by 70-80% in Portugal and the Netherlands, by 50 % in Luxembourg and England, by 40% in Sweden, by 30% in Finland and France, and lower in Austria and Belgium.

Between 2016-2017, in all pre-2004 EU 28 countries a lower unemployment rate was observed compared to the previous years, and in 2017 in 4 countries the unemployment rate was lower as compared to 2007.

Table 14. Evolution of the unemployment rate from the active population in the post-2004 EU 28 countries

Year	Bulgaria	Czech Republic	Estonia	Cyprus	Croatia	Latvia	Lithuania	Poland	Romania	Slovenia	Slovakia	Malta	Hungary
2008	-18.84	-16.98	19.56	-5.13	-13.13	26.23	34.88	-26.04	-12.50	-10.20	-14.28	-7.69	5.40
2009	-1.45	26.41	193.48	38.46	-6.06	186.88	220.93	-15.62	1.56	20.41	8.03	6.15	35.13
2010	49.27	37.73	263.04	61.54	19.19	219.67	313.95	1.04	9.37	48.98	29.46	6.15	51.35
2011	63.77	26.41	167.39	102.56	38.38	165.57	258.14	1.04	12.50	67.34	22.32	-1.54	48.65
2012	78.26	32.07	117.39	205.13	59.59	145.90	211.63	5.21	6.25	81.63	25	-3.07	48.65
2013	88.40	32.07	86.95	307.69	75.76	95.08	174.42	7.29	10.94	106.12	26.78	-1.54	37.84
2014	65.22	15.09	60.87	312.82	73.73	77.05	148.84	-6.25	6.25	97.96	17.86	-10.77	4.05
2015	33.33	-3.77	34.78	284.61	62.62	62.29	111.63	-21.87	6.25	83.67	2.68	-16.92	-8.11
2016	10.14	-24.53	47.82	233.33	35.35	57.38	83.72	-35.41	-7.81	63.26	-13.39	-27.69	-31.08
2017	-10.14	-45.28	26.08	184.61	12.12	42.62	65.11	-48.96	-23.44	34.69	-27.68	-38.46	-43.24

Obtained by analysing the tables (7,8 Eurostat)

In the period 2008-2017, in the post-2004 EU28 countries, the largest increases in the unemployment rate were recorded in Lithuania by 211.6%, Estonia by 263% and Latvia by 220% and Cyprus by 284-312%. More moderate increases in the unemployment rate by 50-100% were recorded in Bulgaria, Croatia, Slovenia and Hungary, and increases between 30-40% were recorded in the Czech Republic and Slovakia. The smallest increases in the unemployment rate, below 13%, were registered in Poland, Malta and Romania.

In 2017 only in 7 countries (Bulgaria, Czech Republic, Malta, Poland, Romania, Slovakia and Hungary) the unemployment rate fell below the value of 2007.

Table 15. Percentage evolution of the gross domestic product in euro/inhabitant in the pre-2004 EU 28 countries between 2008-2016 as compared to 2007

Year	Belgium	Denmark	Germany	Ireland	Greece	Spain	France	Italy	Luxembourg	Netherlands	Austria	Portugal	Finland	Sweden	UK
2008	2.16	3.04	2.26	-6.69	3.31	1.67	1.97	0.72	0.77	4.01	3.21	1.81	3.39	-2.05	-12.84
2009	-0.31	-1.87	-1.29	-16.29	1.42	-2.51	-1.31	-3.65	-4.01	0	0.87	0	-3.96	-14.61	-24.59
2010	3.39	2.57	3.55	-17.86	-3.79	-2.93	1.31	-2.19	2.46	1.60	3.51	2.41	-1.13	1.02	-19.94
2011	6.48	4.21	8.71	-16.07	-11.85	-4.18	3.62	-0.36	7.50	2.94	8.18	0.60	3.39	10	-18.58
2012	8.02	6.56	10.64	-14.73	-18.00	-7.11	4.60	-2.55	7.37	2.94	10.52	-3.61	4.53	14.10	-10.93
2013	8.95	7.96	12.90	-12.50	-21.80	-7.95	5.59	-3.28	10.35	4.01	11.69	-1.81	5.95	16.41	-12.02
2014	10.49	10.30	16.77	-5.80	-22.27	-6.69	6.57	-2.55	15.78	5.08	14.03	0	6.51	14.36	-3.55
2015	12.65	11.94	20.32	25.89	-22.75	-2.51	8.55	-0.73	18.37	8.02	16.66	4.82	8.21	17.43	9.29
2016	15.74	13.35	23.22	31.25	-23.22	0.83	9.54	1.09	17.33	10.43	18.13	7.83	11.05	20.25	-0.27

Obtained by analysing the tables (9,10 Eurostat)

GDP per capita decreased in 2009 in Finland, Belgium, Denmark, Germany, France and Luxembourg, in Sweden between 2008-2009, in Portugal between 2012-2013, and in Austria and the Netherlands did not decrease.

The largest decreases in GDP per inhabitant were recorded in England (by 24.6% in 2009), Greece (by 11-24% between 2011-2016), Ireland (by 12-18% between 2009- 2013), Sweden (between 14.6% in 2009), and GDP decreases per inhabitant of less than 5% were recorded in Belgium, Denmark, Germany, Finland, France and Portugal.

In Ireland, GDP per capita has decreased since 2008, reaching the minimum in 2010 (by 17.8% lower than in 2007), and between 2015-2016 the highest GDP growths in pre-2004 EU28 countries were recorded.

Table 16. Percentage evolution of the gross domestic product in euro per inhabitant in the post-2004 EU 28 countries between 2008-2016 as compared to 2007

Year	Bulgaria	Czech Republic	Estonia	Cyprus	Croatia	Latvia	Lithuania	Poland	Romania	Slovenia	Slovakia	Malta	Hungary
2008	16.28	15.67	1.65	5.67	9.80	8.73	13.33	17.07	14.51	8.04	17.31	5.63	5.88
2009	16.28	5.97	-12.39	0.87	2.94	-14.56	-5.55	1.22	-1.61	1.72	13.46	4.93	-7.84
2010	20.93	11.19	-9.09	1.74	2.94	-17.47	0	14.63	0	1.72	19.23	11.97	-2.94
2011	30.23	16.41	3.30	1.31	2.94	-4.85	14.44	20.73	6.45	3.45	25.96	15.49	0
2012	32.56	14.92	11.57	-1.31	0.98	4.85	24.44	23.17	8.06	0.57	28.84	20.42	-1.96
2013	34.88	11.94	18.18	-8.29	0.98	10.68	31.11	25.61	16.13	1.15	31.73	26.76	0.98
2014	37.21	11.19	23.96	-9.61	0	15.53	38.89	30.48	20.96	4.59	34.61	39.43	4.90
2015	46.51	19.40	28.09	-8.73	3.92	19.41	43.33	36.58	30.64	8.04	40.38	51.41	10.78
2016	58.14	24.62	32.23	-6.98	8.82	23.30	50	35.36	38.71	12.64	43.27	59.86	13.72

Obtained by analysing the tables (9,10 Eurostat)

Between 2008-2016, in 8 of the 13 post-2004 EU 28 countries, GDP per inhabitant did not decrease, namely in Bulgaria, Czech Republic, Croatia, Malta, Poland, Slovenia and Slovakia, or decreased by less than 2% in Romania.

The largest decreases in GDP per inhabitant were registered in Latvia (in 2010 by 17.5%), Estonia (in 2009 by 12.4%), Cyprus (in 2014 by 9.6%), Hungary (in 2009 by 7.8%), Lithuania (in 2009 by 5.6%).

In all pre-2004 EU28 countries, PPS/inhabitant reached the minimum in 2009, except for Greece, Portugal and Spain, and the highest PPS growth was observed between 2015-2016 in most countries, except Greece and Spain.

Table 17. Percentage evolution of the purchasing power standard in euro per inhabitant, pre-2004 UE 28 countries between 2008-2013 as compared to 2007

Year	Belgium	Denmark	Germany	Ireland	Greece	Spain	France	Italy	Luxembourg	Netherlands	Austria	Portugal	Finland	Sweden	UK
2008	-0.99	1.56	0.33	-9.35	1.24	-1.86	-1.42	-0.36	-1.01	1.12	0.31	-0.94	1.61	-0.90	-1.72
2009	-4.93	-4.36	-5.90	-17.92	-4.15	-8.55	-6.38	-6.81	-9.55	-6.42	-4.31	-5.19	-7.40	-9.58	-9.62
2010	0.66	2.49	0	-14.03	-10.79	-9.29	-2.48	-5.02	-5.35	-4.75	-0.92	-1.42	-4.82	-4.79	-5.84
2011	2.96	4.36	5.57	-11.43	-18.26	-	0.35	-2.87	0.29	-3.07	3.08	-4.72	-1.29	-1.20	-5.15
2012	5.92	5.61	7.87	-8.83	-20.75	-	1.06	-3.23	0.14	-1.40	8.00	-5.66	-1.29	1.20	-2.06
2013	5.59	6.85	8.85	-7.79	-20.33	-	2.84	-5.38	1.30	0	8.31	-3.30	-2.57	0.30	-0.69
2014	8.55	9.97	13.77	-1.56	-17.84	-7.43	4.96	-4.66	7.96	0	10.77	0	-1.61	2.69	3.09
2015	13.16	14.64	18.36	36.10	-16.18	-2.23	8.51	-0.72	12.01	4.47	16.00	5.19	2.25	8.38	7.90
2016	12.83	12.46	18.03	38.44	-18.26	-0.74	7.80	1.08	8.68	3.91	14.46	6.13	2.57	7.78	7.90

Obtained by analysing the tables (11 Eurostat)

The biggest decreases in the PPS were recorded in Greece (between 2012-2013 by 20%) and Ireland (in 2009 by 18%), where there was the highest increase of the PPS after the economic crisis (by 36-38%). Between 2008 and 2010, the PPS fell by less than 6% in Germany, Austria, Denmark and Belgium, as the countries least affected by the economic crisis.

Table 18. Percentage evolution of the purchasing power standard in euro per inhabitant in the post-2004 EU 28 countries between 2008-2013 as compared to 2007

Year	Bulgaria	Czech Republic	Estonia	Cyprus	Croatia	Latvia	Lithuania	Poland	Romania	Slovenia	Slovakia	Malta	Hungary
2008	6.60	1.86	-1.10	1.48	3.77	3.36	4.46	5.07	15.79	3.08	6.90	0.98	3.82
2009	1.89	-2.79	-13.81	-4.80	-4.40	-14.09	-12.10	5.80	9.65	-7.93	0	-2.93	0
2010	7.55	-1.86	-8.84	-6.27	-5.03	-10.07	-1.91	15.22	14.04	-6.61	9.20	3.90	5.10
2011	11.32	0.93	2.21	-7.75	-1.89	0	9.55	23.19	19.30	-4.41	12.07	5.37	9.55
2012	15.09	2.33	8.29	-11.07	0.63	8.05	18.47	28.99	25.44	-3.96	15.52	8.78	11.46
2013	15.09	4.19	11.60	-16.97	0.63	12.08	24.84	29.71	28.07	-3.52	17.82	11.71	14.65
2014	21.70	10.70	16.02	-17.34	2.52	18.12	32.48	34.78	33.33	0	22.41	20.98	19.75
2015	29.25	17.67	19.89	-12.18	8.18	24.16	38.22	43.48	42.98	4.85	28.16	32.20	26.11
2016	33.96	19.07	20.99	-11.07	10.06	26.17	40.13	44.20	49.12	6.17	28.74	36.10	25.48

Obtained by analysing the tables (11 Eurostat)

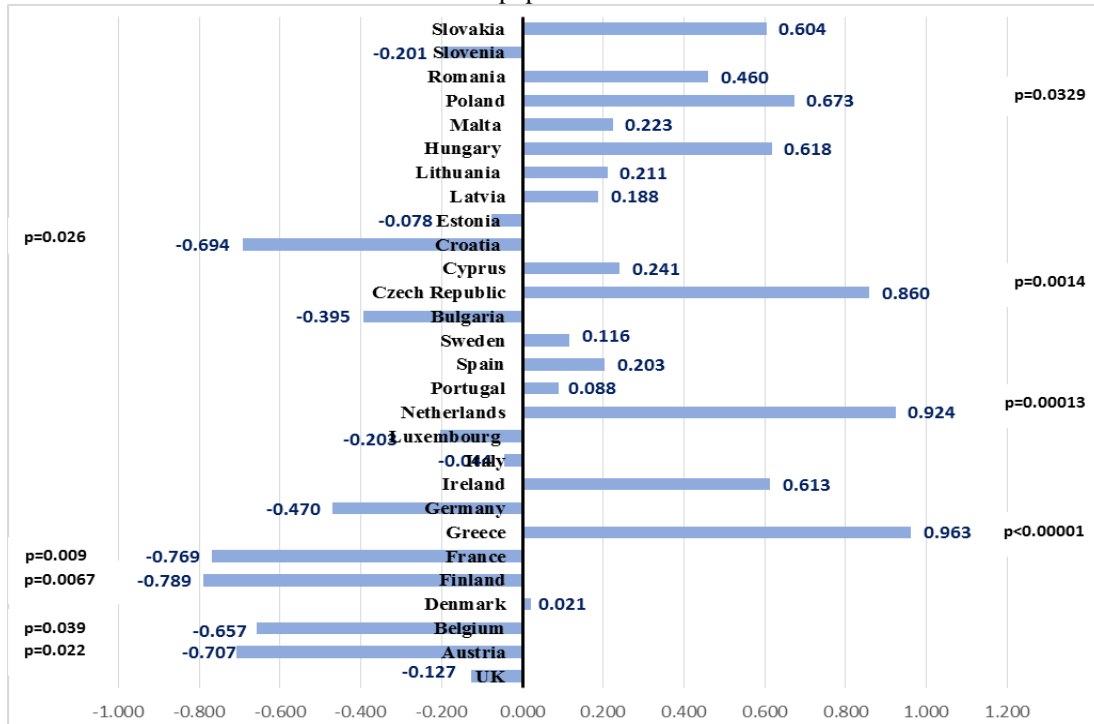
Of the post-2004 EU 28 countries, the largest decrease in purchasing power standard per inhabitant was recorded in Cyprus, Latvia, Estonia and Lithuania. Cyprus was the only country where the PPS did not return to the value of 2007. Between 2008 and 2016, in Bulgaria, Poland, Romania, Slovakia and Hungary PPS did not fall below the value recorded in 2007.

There was a statistically significant positive Pearson correlation in Greece, the Netherlands and the Czech Republic and moderate in Poland, between the suicide rate and the unemployment rate in the working population.

In Austria, Belgium, Finland, France and Croatia there was a statistically significant negative Pearson correlation between the suicide rate and the unemployment rate among the working population, of which the first 4 joined the EU28 before 2004.

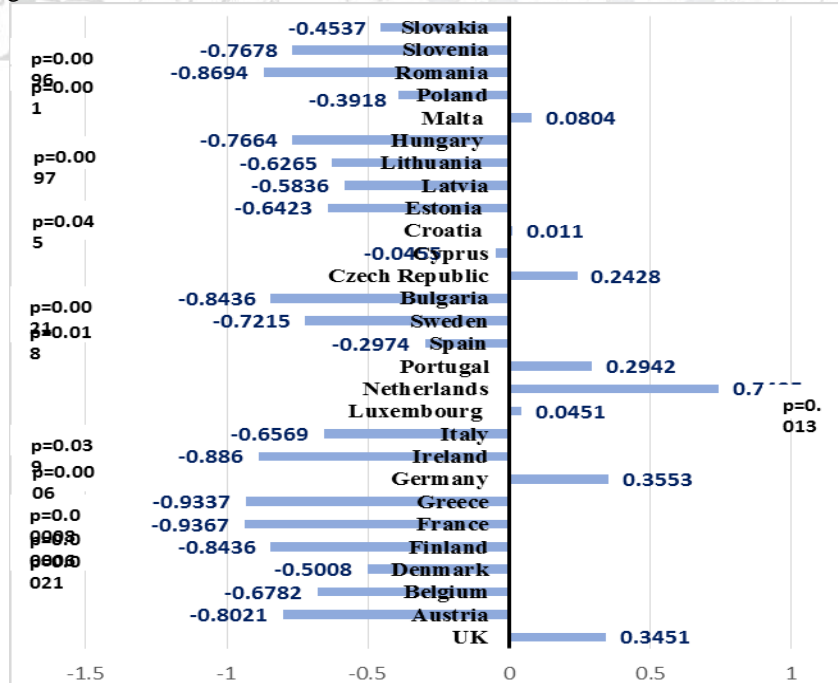
The fact that in 8 of the 15 countries that joined the European Union before 2004 there was a negative Pearson correlation between the suicide rate and the unemployment rate of the working population, and in 9 of the 13 countries that joined the European Union after 2004 there was a positive Pearson correlation between the suicide rate and the unemployment rate in the working population suggests that the population in the post-2004 EU 28 countries are more vulnerable to suicide in the event of an economic crisis, but other factors are also involved, apart from the increase in unemployment.

Figure 10. Pearson correlation coefficient between suicide rate and unemployment rate in the working population



Obtained by analysing the tables (5,8,12,13 Eurostat)

Figure 11. Pearson correlation coefficient between suicide rate and GDP/inhabitant

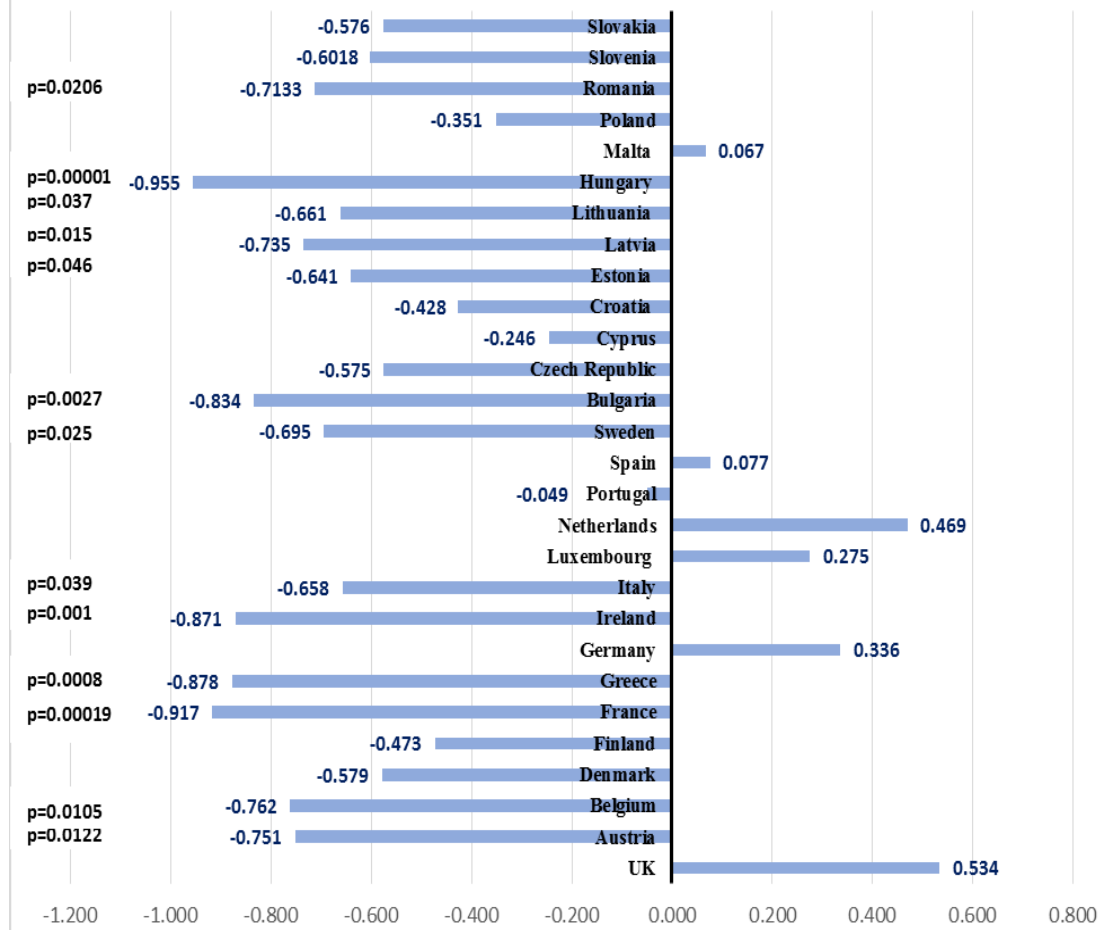


Obtained by analysing the tables (9,12,13 Eurostat)

In most EU28 countries (20) there was a negative Pearson correlation between the suicide rate and the value of the gross domestic product/inhabitant, statistically significant in 9 countries, of which 6 countries pre-2004 EU28 and 3 countries post-2004 EU28.

Only in the Netherlands there was a statistically significant positive Pearson correlation between the suicide rate and the value of the gross domestic product/inhabitant.

Figure 12. Pearson correlation coefficient between suicide rate and purchasing power standard/inhabitant



Obtained by analysing the tables (11-13 Eurostat)

In most EU28 countries (22) there was a negative Pearson correlation between suicide rate and purchasing power standard /inhabitant, but statistically significant only in 13 countries, and in 6 countries there was a positive but statistically insignificant Pearson correlation. In the 13 EU28 countries where there was a statistically significant negative Pearson correlation between suicide rate and purchasing power standard/inhabitant, 7 countries joined the European Union before 2004, and 6 countries after 2004.

Discussions and Conclusions

As a result of the economic crisis, in the European Union 22,961 people have committed suicide, most from countries that joined after 2004. Between 2008-2016, there were stable countries in terms of suicide, where there were increases below 1% or the rate of suicide decreased (Austria, Luxembourg, Hungary and

Slovenia), countries in which the rate of suicide increased by no more than 10% (Belgium, Denmark, Finland, France, Germany, Italy, Sweden, Bulgaria, Croatia, Estonia), but also countries where the suicide rate has increased massively (Greece, the Netherlands, Ireland, Cyprus, Poland and Latvia).

The small increase in the number of suicides in France, Finland and its decrease in Luxembourg and Austria can be explained by the fact that in these countries there are networks of social assistance, activities are carried out to prevent suicide, and in the last years national suicide prevention programs have been developed.

In the countries of the European Union, the suicide rate increased both before the crisis and during the periods when unemployment increased, along with "the emergence of problems in the banking sector, which later precipitated the increase in the unemployment rate, in a period of significant economic insecurity", (Perlman, 2009) the increase in suicide rate being one of the "adverse effects of anticipating job loss and job insecurity" (Stuckler, 2011).

In Greece and the Netherlands, the pre-2004 EU28 countries with the highest suicide rates, there was a statistically significant positive correlation between the suicide rate and the unemployment rate, and in the Netherlands there was a statistically significant positive correlation between the suicide rate and GDP, while in Greece and Ireland there was a statistically significant negative correlation between suicide rate and GDP, and PPS.

In Cyprus, post-2004 EU28 country in which the suicide rate showed the highest increases, there were no statistically significant correlations between suicide rate and unemployment rate, GDP and PPS. In Poland, the second country in terms of increase in the suicide rate between the post-2004 EU28 countries, there was a statistically significant positive correlation only between the suicide rate and the unemployment rate, and in Slovenia the suicide rate was positively correlated with the GDP per inhabitant.

The lack of a constant correlation between suicide rate and economic indicators suggests that the suicide rate is also influenced by a number of national factors. However, we found that the countries that joined the European Union after 2004 are more vulnerable in times of economic crisis. The countries with the highest increase in unemployment rate, the largest decrease in GDP and in purchasing power per inhabitant between 2008-2016 were, in general, the countries with the highest rate of suicide. Social protection, such as active labour market policies and strong social assistance networks, could mitigate the increase in the number of suicides in times of economic crisis.

Little is known about how individual and area unemployment could interact in order to influence suicide risk. Further research is needed to find out if psychological problems and the risk of suicide are higher in unemployed people living in high unemployment areas, or if the effect of unemployment is more pronounced for those living in areas where unemployment is less frequent. This information could have important political implications.

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