The Impact of Economic Conditions on Traditional and new Categories of Property Crimes – An Exploratory Research in European Countries –

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Abstract The goal of this paper is to evaluate at a macro level the link that exists between different types of property crimes (theft, burglary, fraud, offences against the computer) and economic indicators in the 27 countries of the European Union. Crimes selected belong to 'old' and 'new' categories of property crimes. They are collected from the 'the European Sourcebook of crime and criminal Justice statistics' while the economic indicators are collected from two European surveys, EU-SILC and LFS. Variables related to the population structure ('age' and 'gender') are added in the analysis. Statistical techniques (correlation and multiple regression analysis) will be useful to build a framework of indicators which contributes to a better understanding of the interactions between criminality and economic indicators. A parameterized model, function of the main factors of crime, will help to understand old and new categories of property crime and their potential directions in Europe.

1. Background

Several theories (social disorganization, opportunity, strain etc.) have examined the impact that poverty may have on crime; in particular, the link between 'unemployment' and 'crime' has been the object of several scholarly works and discarding results: some studies have found significant results of unemployment rates on crime, some others weak or less consistent outcomes.

Gottfredson and Hirschi (1990) have doubts about the association between unemployment and crime, while Becker (1968) and Ehrlich (1973) believe that unemployment is deeply associated with crime because utility from legitimate work decreases the opportunity costs of illegitimate work.

Cantor and Land (1985) analyse the relationship between annual unemployment rates and crime rates in the United States. They observe that unemployment may have a double contrasting role: it may reduce the opportunities to violate the law, (e.g. unemployed persons usually spend much time at home, so it is more difficult for offenders to commit burglary), but at the same time, it may increase the motivation to commit crime (e.g. the increase of the unemployment rate may increase the proportion of people that, to get money, commit criminal activities).

Greenberg (2002) criticizes the use of the indicator 'unemployment rate', observing that the method used to collect it, may generate systematic bias in the analysis. In fact, unemployment rate as it is collected nowadays, reveals some gaps; firstly, it leaves out workers that have dropped out of the labour force; secondly, it leaves out part time workers that desire full-time jobs.

Some studies add structural components to the economic aspects. In particular, South and Messner (2000) observe that 'the primary demographic characteristics of age and gender are among the most powerful and robust individual-level risk factors for criminal offending and victimization'(South & Messner 2000 p. 84)

The demographic features have been the purpose of many studies (Greenberg, 1985; Hirschi & Gottfredson, 1983; Steffensmeier, Allan, Harer M.D. & Streifel, 1989). Sometimes they have been crossed with economic conditions (Imrohoroglu, Merlo & Rupert, 2004).

For example, Britt (1997) analyses the relationship 'crime-unemployment' introducing the component 'age'. He takes into account arrest data for the United States from 1958 to 1995 and its correlation with age. Results show that unemployment has a broad motivational effect on property crime, in particular among young people.

2. The current study

The goal of this explorative work is to evaluate at a macro level the relationship between four types of property crimes (theft, burglary, fraud, offences against the computer) and economic indicators in the 27 countries of the European Union. Types of crimes selected belong to 'traditional' and 'new' categories of property crimes. In particular, this work wants to examine the impact that economic conditions may have on old and new types of property crimes in Europe.

In this work, the dimension of population structure is examined including some demographic indicators related to 'age' and 'gender'.

This aim is supported by some considerations:
- most studies use micro level data (e.g. longitudinal analysis) and focus on the United States or a few European countries. Studies that apply a macro approach in the 27 countries of the European Union are seldom used;
- publications generally focus on the relationship between 'economic conditions' and 'traditional property crimes' like 'theft' or 'burglary', while crimes like 'fraud' or 'offences against the computer' are less investigated. However, currently, these crimes are collected at European level and can be explored.

This objective permits to propose a table 'property crime - economic indicators' that identifies for each type of crime selected the indicators that are relevant for it in Europe, the sign (positive or negative) and the type (linear or non linear) of this link. After that, it contributes to a better understanding of the interactions between criminality and economic indicators.

This can help to build a framework of indicators which can be relevant for today and for the future to be monitored in order to understand traditional and new categories of property crime and their potential directions.

3. Data and methods

Crime data used in this work have been picked up from 'the European Sourcebook of crime and criminal Justice statistics'. It collects data on crime and criminal justice trying to offer comparative crime data on many European countries on a variety of subjects bypassing some of the problems caused by differences in counting rules used to report crimes (Aebi, 2008, 2010), offences legal definition (CEPEJ, 2010), the degree of influence on underreporting crimes.

Property crimes selected are: 'burglary', 'theft', 'fraud', 'offences against the computer'. Crimes have been collected as 'offences per 100.000 population'. Standard definitions are reported in Appendix A1.

In this paper, 'burglary' and 'theft' are named ' traditional' or 'old property crimes' because, in the past years, they have been the object of several scholarly works and they have been collected at European level from 1998. 'Fraud' and 'offences against the computer' are named 'new property crimes'. The latter is a new property crime because it has been criminalized just recently, while fraud is inserted in the category 'new property crimes' because it has not been often included in scholarly works and just recently it has been collected at European level obtaining comparable data.

The social indicators[1] that belong to the economic area have been collected from two European surveys, the Labour Force Survey (LFS)[2] and the European Union Statistics on Income and Living Conditions (EU-SILC) [3].

EU-SILC collects data on income, poverty, social exclusion and living conditions while LFS is a sample survey among private households, which provides detailed data on employment, unemployment, inactivity.

The economic indicators selected are: 'unemployment rate'; 'number of persons employed part time'; 'employment female aged 15-64'; 'people at risk-of-poverty threshold'; 'Gini coefficient'; 'income quintile share ratio'; 'material deprivation' (Appendix A2). 'Unemployment rate', 'employment female aged 15-64', 'the number of persons employed part time', are indicators related to labour market, while others are related to the poverty theme.

Poverty may be measured like 'absolute' or 'relative'. There are theories that say that the second one is more relevant to explain crime because it gives information on economic inequality (Allen 1996). Economic indicators chosen in this paper represent both dimensions.

Population composition is included in this work. Data is collected from Eurostat database[4]. The demographic indicators selected are: 'women per 100 men'; 'proportion population aged 65 and over of total population'; 'proportion population aged 15-24 of total population;' 'old age dependency ratio' (Appendix A2).

The analysis units are the 27 countries that belong to the European Union: Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxemburg, Malta, Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden and the United Kingdom.

The period selected is 2004-2007. This study wants to privilege the spatial dimension respect to the temporal dimension because it wants to test the relationship between 'economic conditions' and 'property crimes' at a macro level

[1] Social indicators collect information on many aspects of everyday life and cover several thematic areas. In this paper, for brevity , social indicators that belong to economic area are called 'economic indicators', social indicators that belong to demographic area are called 'demographic indicators'. The definition 'social indicators' include 'economic indicators' and 'demographic indicators'.
[2] Data available at: http://epp.eurostat.ec.europa.eu/portal/page/portal/employment_unemployment_lfs/publications/results
[3] Data available at: http://epp.eurostat.ec.europa.eu/portal/page/portal/microdata/eu_silc
[4] Data available at: http://epp.eurostat.ec.europa.eu/portal/page/portal/statistics/themes

in the 27 countries of European Union. Comparable data for property crimes and indicators selected are available from 2004 at European level.

Pearson coefficient (r) will be used to measure the degree of association between variables. This can help to build a framework of indicators which can be relevant for today and for the future to be monitored in order to understand property crime and its potential directions.

The correlation analysis highlights partial correlations between variables but in general, social phenomena are complex and many factors interact at the same time. Multiple regression analysis will be used because it permits to examine the relationship between one dependent variable (crime) and one or more independent variables X_i (social indicators), it will test which set of social indicators are influencing criminal behaviour (Rizzi, 1992).

It can help to contribute to a better understanding of the interactions between property crimes and social indicators and analyse the link that exists between dependent variable (crime) and explicative variables (social indicators), the sign (positive or negative) of this link, the type (linear or non linear).
Just to theorise, the equation is:

equation (1) $$Y = \beta_0 + \beta_1 X_1 + \ldots + \beta_m X_m + \varepsilon$$

where Y represents the value of crime rate; β_0 represents constant; X_1 through X_m represent the social factors influencing the criminality; β_1 through β_m represent the regression slopes for the social indicators X_1 through X_m; ε represents the error term.

4. Discussion

4.1. The 'economic conditions – property crimes' link

The dispersion of economic indicators shows diversities within countries and between groups of countries.
There are differences in the labour force and the poverty rate. Southern (Spain) and Eastern countries (Bulgaria, Estonia, Latvia, Lithuania) record the highest unemployment and poverty rate in Europe (EU-SILC 2011).

There is also heterogeneity in the number of part time contracts and percentage of females employed: Northern countries (Netherland, United Kingdom, Denmark, Germany, Sweden) register high values, the rest of Europe has low values (LFS 2011).

A preliminary elaboration on crimes correlation (results are in Appendix B3) shows that traditional property crimes are significantly correlated between them (R = 0.79), and new property crimes are correlated between them (R = 0.70). Fraud and theft that belong respectively to 'new' and 'old' property crimes, are highly correlated (R = 0.75).

In table 1 economic indicators are crossed with property crimes. Four-years data have been reported because the one-year correlation may be attributed to casual factors; four-year correlation more rarely. Given the small sample size, statistical significance is reported at the .05 as well as the .01 level.

Table 2. Bivariate correlation between economic indicators and property crimes in European countries (years 2004-2007)

Correlations	Parameter	theft				burglary				fraud				offences against computer			
		2004	2005	2006	2007	2004	2005	2006	2007	2004	2005	2006	2007	2004	2005	2006	2007
unemployment	Pearson Correlation	-0,32	-0,33	-0,31	-0,28	-0,39	-0,41	-0,51**	-0,58**	-0,06	0,00	0,08	0,12	0,07	0,21	0,31	0,43
	Sig. (2-tailed)	0,13	0,11	0,14	0,22	0,09	0,06	0,01	0,01	0,79	0,99	0,72	0,63	0,80	0,42	0,02	0,13
part time	Pearson Correlation	0,73**	0,76**	0,78**	0,72**	0,81**	0,84**	0,85**	0,72**	0,34	0,43*	0,44*	0,46*	0,52*	0,60**	0,64**	0,57*
	Sig. (2-tailed)	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,12	0,05	0,04	0,05	0,03	0,01	0,00	0,03
female employment	Pearson Correlation	0,71**	0,70**	0,66**	0,64**	0,76**	0,77**	0,77**	0,72**	0,51*	0,49*	0,46*	0,44	0,22	0,2	0,23	0,24
	Sig. (2-tailed)	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,03	0,05	0,06	0,46	0,49	0,43	0,4
poverty	Pearson Correlation	0,59*	0,64**	0,66**	0,65**	0,72**	0,52*	0,53**	0,54*	0,42	0,43*	0,39	0,44	0,30	0,42	0,37	0,36
	Sig. (2-tailed)	0,04	0,00	0,00	0,00	0,01	0,02	0,01	0,03	0,17	0,05	0,07	0,06	0,40	0,10	0,13	0,21
Gini coefficient	Pearson Correlation	-0,63*	-0,40*	-0,59**	-0,59**	-0,68*	-0,22	-0,42*	-0,38	-0,49	-0,32	-0,4	-0,43	-0,29	-0,24	-0,26	-0,04
	Sig. (2-tailed)	0,02	0,05	0,00	0,00	0,02	0,31	0,05	0,13	0,09	0,14	0,06	0,06	0,38	0,36	0,27	0,89
income	Pearson Correlation	0,26	0,43	0,27	-0,02	-0,57*	-0,39	-0,53**	-0,59**	-0,45	-0,32	-0,35	-0,41	-0,27	-0,26	-0,25	-0,07
	Sig. (2-tailed)	0,37	0,03	0,18	0,94	0,04	0,06	0,01	0,01	0,12	0,14	0,1	0,08	0,43	0,31	0,31	0,82
material deprivation	Pearson Correlation	-0,79**	-0,69**	-0,70**	-0,66**	-0,81**	-0,47*	-0,50*	-0,59**	-0,56	-0,42	-0,4	-0,45*	-0,12	-0,28	-0,31	-0,31
	Sig. (2-tailed)	0,00	0,00	0,00	0,000	0,00	0,04	0,02	0,01	0,07	0,06	0,07	0,05	0,75	0,31	0,21	0,29

* Significance 0.05 level **Significance 0.01 level

Results highlight that economic indicators related to poverty are highly correlated to traditional property crimes, not correlated to new property crimes.

Unemployment rate is inversely correlated to burglary (p-value < 0.05). Opportunities theory may help to explain this outcome: high unemployment rate means high proportion of people that spend time at home and this factor may reduce burglary rate (Cohen & Felson, 1979). Another aspect to consider is that in general unemployed persons provide a supplementary protection for their property and this aspect reduce property crimes.

The number of persons employed part-time is positively correlated to all types of crimes, traditional and new offences (p-value < 0.05): part time jobs decrease the legal income for family and may have a crucial role in producing motivated offenders.

Female employment is positively correlated to fraud (p-value < 0.05), theft and burglary (p-value < 0.01). Unemployed women supervise their home and their neighborhood, while employed women spend less time at home: this factor may increase property crime rates (Cohen & Felson, 1979).

'Unemployment', 'female employment' and 'part time' are factors that imply the absence or the presence of guardians, and they may have effect on crime.

The indicator 'people at risk-of-poverty threshold' well describes the 'relative poverty' and is positively correlated to theft (p-value < 0.01) and burglary (p-value < 0.05). Aebi and Linde (2010) observe 'in contemporary developed societies, the population is confronted with an anomic situation in which the material goods offered are unlimited, but the economic resources are limited. This situation would generate strain or stress that could lead to delinquency'. (Aebi & Linde 2010 p. 265)

'Gini coefficient', 'income quintile share ratio' and 'material deprivation' are negatively correlated to traditional property crimes like burglary and theft. In particular, 'Gini coefficient' is highly correlated to theft, 'income quintile share ratio' is highly correlated to burglary; 'material deprivation' well- describes both.

4.2 The 'demographic indicators- property crimes' link

Previous research shows that variables like 'gender' and 'age' are necessary to examine how the structure of the community may influence crime rates; they are central elements, so they are included in this paper.

Demographic indicators collected nowadays by Eurostat permit to make some considerations on the relationship 'property crimes –population structure'. Descriptive statistics highlights some differences between countries in terms of demographic features. In Italy, there is the highest percentage of population aged 65 and over (30.2% in 2007). In general, Southern countries are older and have a higher dependency rate than Northern European countries (Eurostat 2010).

The number of 'women per 100 men' is extremely high in Northern countries (Sweden, Denmark, Finland) and in Italy: a high number of females could show a large pool of potential victims.

In Italy, the high number of females is caused by the high proportion of elderly, in fact, the age pyramid shows that women arrive at old age more frequently than men. (Livi Bacci, 1999)

Elaborations on demographic indicators show that the indicators 'women per 100 men', 'old population' and 'old age dependency ratio' are highly correlated (p-value <0.05) (results are in Appendix B4).
In table 2 bivariate correlation has been reported.

Table 2. Bivariate correlation between demographic indicators and property crimes in European countries (years 2004-2007)

Correlations	Parameter	theft				burglary				fraud				offences against computer			
		2004	2005	2006	2007	2004	2005	2006	2007	2004	2005	2006	2007	2004	2005	2006	2007
women	Pearson Correlation	0,48	0,4	0,42*	0,30	0,27	0,25	0,26	0,30	0,11	0,01	0,04	0,37	-0,13	-0,11	-0,04	0,23
	Sig. (2-tailed)	0,14	0,06	0,05	0,19	0,45	0,28	0,26	0,24	0,74	0,98	0,85	0,12	0,74	0,71	0,87	0,43
old population	Pearson Correlation	0,25	0,27	0,28	0,24	-0,14	0,02	0,04	0,18	0,31	0,36	0,41*	0,52*	0,42	0,45	0,46*	0,61*
	Sig. (2-tailed)	0,24	0,2	0,19	0,3	0,56	0,94	0,86	0,48	0,15	0,09	0,05	0,02	0,09	0,07	0,05	0,02
young population	Pearson Correlation	-0,66**	-0,61**	-0,58**	-0,44*	-0,47*	-0,48*	-0,46*	-0,44	-0,39	-0,36	-0,34	-0,50*	-0,39	-0,39	-0,39	-0,45
	Sig. (2-tailed)	0,00	0,00	0,00	0,04	0,04	0,02	0,03	0,08	0,06	0,10	0,11	0,03	0,12	0,12	0,10	0,10
dependency	Pearson Correlation	0,32	0,36	0,36	0,31	-0,1	0,08	0,09	0,24	0,32	0,39	0,43*	0,57**	0,44	0,48*	0,50*	0,64**
	Sig. (2-tailed)	0,13	0,08	0,09	0,17	0,67	0,73	0,69	0,36	0,14	0,06	0,04	0,01	0,08	0,05	0,03	0,01

* Significance 0.05 level **Significance 0.01 level

Theft and burglary are highly correlated to the proportion population aged 15-24 (p-value <0.05): young people have high probability in becoming offenders. This result is supported by many theories and several scholarly works that say that

crime tends to peak in young age (Steffensmeier, Allan, Harer M.D. & Streifel, 1989).

Fraud and offences against the computer are highly correlated to the 'proportion population aged 65 and over' and to the 'old age dependency ratio' (p-value <0.05). This result can be explained recalling the Cohen and Felson's opportunities theory: a population composed by old persons is a population where crime categories like fraud or offences against the computer have a high probability to have success. Old people are more likely than young victims because they are not useful with tools like computers, so they have a high probability to be victimized.

Cohen & Felson (1979) say that there are persons at a high risk of being victimizes because they are less able to resist motivate offenders for features linked to 'age'.

4.3 Multivariate Results

This phase contributes to a better understanding of the interactions between criminality, economic and demographic factors so to identify social indicators that influence different types of property crimes.

A stepwise regression has been used; it includes variables like forward selection procedure and then tests the model on the basis of backward elimination procedure.

Crime is a multifaceted phenomenon and it can be adequately investigated using a large set of explaining variables. In table 3 explanatory variables are added in the model: R is the determination coefficient; R Square permits to evaluate how well the model fits reality; R Square Change explains how much R Square increases, inserting a new variable in the regression equation; Significance F depends on the results of the regression analysis and the confidence level chosen. In this elaboration a confidence level of 95% has been chosen, if Significance F is <0.05, then the null hypothesis is rejected (there is a statistically significant association between X and Y). While, if Significance F is >0.05, then the null hypothesis is accepted (there is not statistically significant association between X and Y).

Table 3. Regression model summary for property crimes in European countries– year 2007

Crime	Predictor	Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	Sig. F Change
Theft	Predictors: (Constant), part time	1	0,72	0,51	0,49	1122,19	0,51	19,91	0,00
	Predictors: (Constant), part time, Gini coefficient	2	0,84	0,71	0,68	884,43	0,20	12,59	0,00
	Predictors: (Constant), part time, Gini coefficient, poverty	3	0,89	0,80	0,76	759,59	0,09	7,40	0,01
	Predictors: (Constant), part time, Gini coefficient, poverty, female employment	4	0,92	0,85	0,81	678,74	0,05	5,29	0,03
Burglary	Predictors: (Constant), female employment	1	0,72	0,52	0,49	259,17	0,52	16,24	0,01
Fraud	Predictors: (Constant), dependency	1	0,57	0,33	0,29	197,37	0,33	8,25	0,01
	Predictors: (Constant),dependency, income	2	0,74	0,55	0,49	166,13	0,22	7,99	0,01
Offences against computer	Predictors: (Constant), dependency	1	0,64	0,41	0,36	13,75	0,41	8,38	0,01

Results presented in table 3, largely confirm the results of bivariate analysis.

The parameterized model is an equation function of the main factors of crime that can be used as 'predictors'. The model is particularly good for theft (R square = 0.85, p-value <=0,01), while it is not enough convincing for burglary, fraud, offences against the computer. In this case, the significance is not sufficient to explain and predict crimes, but it can be useful to give some suggestions on the social indicators to monitor.

This model reveals significant effects of 'female employment' on traditional property crimes. In addition, 'part time', 'Gini coefficient', 'poverty' are significant for theft. These predictors have low multicollinearity between them.

Increase in theft is associated with a decline in 'Gini coefficient' and increase in 'female employment' and 'part time', while the increase in burglary is associated with the increase in 'female employment'. These effects are consistent with the opportunity interpretation: whereby decrease in unemployment increases criminal opportunities as homes are left unguarded, whereby increase in female employment increases criminal opportunities because homemakers had the guardianship responsibilities (Cantor & Land, 1985; Cohen & Felson,1979).

However, indicators that are significant in bivariate correlation, may become not significant in a multiple regression model (e.g. 'material deprivation' for theft, 'part time' for burglary).

Economic conditions have a secondary effect on fraud, no effect on offences against the computer, while the population structure is the main element to predict new property crimes.

'Old age dependency ratio' is positively correlated to fraud and offences against computer. It means that old people are at higher risk of becoming victims of new property offences: they can be victims of fraudulent practices in particular if they are dependent on care or are otherwise disadvantaged or vulnerable or without relationships to protect themselves and their property (Hirshi, 1969).

Ending, the model highlights two important elements to monitor that can help to predict property crimes: firstly, rising 'female employment' increases traditional criminal opportunities; secondly, rising 'old population' increases elderly vulnerability as victims.

5. Conclusions

Bivariate results show that traditional property crimes (theft, burglary) are positively correlated to the 'number of part time contracts', 'female employment' and the 'proportion of young population,' while they are negatively correlated to 'Gini coefficient'. New property crimes (fraud, offences against the computer) are positively correlated to the 'number of part time contracts', the 'proportion of old population' and 'old age dependency ratio'.

These elaborations highlight some significant outcomes. Firstly, traditional property crimes are both linked to economic indicators that well explain the poverty and the labour dimension, while new property crimes are linked to economic indicators that well describe the labour dimension. Secondly, traditional property crimes are linked to the proportion of young age population, while new property crimes are linked to the elderly indicators ('proportion of old age population' and 'old age dependency ratio').

The focal point is that while traditional property crimes are correlated to the offender dimension, new property crimes are correlated to the victim dimension.

Economic and demographic indicators interact in the regression model. It highlights the most significant social indicators for each crime category.

There are factors that have a double effect: on one hand, they may increase criminal opportunities, on the other hand, they may decrease crime. The use of multiple statistics helps to discover these effects and combine several factors. The equilibrium changes. Social indicators that are significant in bivariate correlation disappear in multiple models a cause of multicollinearity.

Old property crimes are related to economic conditions; new property crimes are related to the population structure ('dependency' in particular). The economic dimension survives in fraud ('income' as predictor), but it totally disappears in offences against the computer.

The regression model confirms and draws attention to the contrast between offender on one hand and victim, on the other hand. The first is related to motivations and features that behave a person to commit a crime with a high degree of probability; the latter is related to those features that identify a person as particularly vulnerable to crime. The mean volume of delinquency may take advantage in the high proportion of potential victims (Farrington, 1986).

Economic conditions are strong indicators to monitor, describe and predict traditional property crimes at European level but they are poor indicators for new property crimes.

Population structure is the first point to provide indications on new property crimes, but it is necessary to address the analysis through new directions because other factors may be associated with new property crimes.

APPENDIX

APPENDIX A –Definitions

A1 - Offences selected for the analysis

CRIME	DEFINITION
Theft	According to the standard definition, theft means depriving a person/organisation of property without force with the intent to keep it. Where possible, the figures include: – minor (e.g. low value) theft (even if subject to proceedings outside the criminal justice system); – burglary; – theft of motor vehicles; – theft of other items; – attempts; but exclude: – embezzlement (including theft by employees); – robbery (see above); – receiving/handling stolen goods.
Burglay	According to the standard definition, burglary means gaining access to a closed part of a building or other premises by use of force with the intent to steal goods. Where possible, the figures include: – theft from a factory, shop, office, etc.; – theft from a military establishment; – theft by using false keys; – attempts; but exclude: – theft from a car; – theft from a container; – theft from a vending machine; – theft from a parking meter; – theft from a fenced meadow/compound.
Fraud	According to the standard definition, fraud means deceiving someone or taking advantage of someone's error with the intent to unlawfully gain financial benefits, thereby causing the deceived person to enter any operation that will be damaging to his/her or a third person's financial interests. Where possible, the figures include: – minor (e.g. low value) fraud (even if subject to proceedings outside the criminal justice system); – attempts; but exclude: – receiving/handling stolen goods; – money laundering; – forgery of documents, passports etc.; – forgery of money/payment instruments; – tax and customs offences; – subsidy fraud; – fraud involving welfare payments; – computer fraud (i.e. deception of a computer instead of a human being); – consumer goods or services; – breaching of trust/embezzlement.
Offenses against computer	According to the standard definition, offences against the confidentiality, integrity and availability of computer data and systems comprise unauthorised entry into electronic systems (computers) or unauthorised use or manipulation of electronic systems, data or software. Where possible, the figures include: – illegal access (i.e. intentional access to a computer system without right, e.g. 'hacking'); – illegal interception (i.e. interception without right, made by technical means, of non-public transmissions of computer data); – data interference (i.e. damaging, deletion, deterioration, alteration or suppression of computer data without right); – system interference (i.e. serious hindering without right of the functioning of a computer system); – misuse of devices (i.e. production, sale, procurement for use, import, or distribution of a device or a computer password/access code); – computer fraud (i.e. deception of a computer instead of a human being); – attempts; but exclude: – illegal downloading of data or programs.

Source: adapted from Aebi M. et al (2010), European Sourcebook of Crime and Criminal Justice Statistics, WODC, Den Haag.

A2 - Social indicators selected for the analysis

Social indicator	Definition	Code
unemployment rate	Unemployed persons as a percentage of the labour force. The labour force is the total number of people employed and unemployed.	unemployment
employment female 15-64	The number of women aged 15 to 64 in employment divided by the total population of the same age group.	female employment
persons employed part time	Number of persons employed part time.	part time
people at risk-of-poverty threshold	The threshold is set at 60 % of the national median equivalised disposable income (after social transfers). It is expressed in Purchase Parity Standards (PPS) in order to take into account differences in cost of living across EU Member States.	poverty
Gini coefficient	The relationship of cumulative shares of the population arranged according to the level of equivalised disposable income, equivalised total disposable income received by them.	Gini coefficient
income quintile share ratio	The ratio of total income received by the 20 % of the population with the highest income (top quintile) to that received by the 20 % of the population with the lowest income (lowest quintile).	income
material deprivation	the indicator is defined as the percentage of population with an enforced lack of at least three out of nine material deprivation items in the 'economic strain and durables' dimension.	material deprivation
women per 100 men	number of women per 100 men	women
proportion population aged 65 and over of total population	number of population aged 65 and over divided by total population	old people
proportion population aged 15-24 of total population	number of population aged 15-24 divided by total population	young people
old age dependency ratio	number of persons of an age when they are generally economically inactive over the number of persons of working age	dependency

Source: adapted from Eurostat, data available at: http://epp.eurostat.ec.europa.eu/portal/page/portal/statistics/themes

B1 - Economic indicators summary statistics in European countries – year 2007

Social indicator	N	Mean	Median	Std. Deviation	Minimum	Maximum
unemployment	27	6,4	6,1	2,0	3,6	11,1
part time	27	14,3	11,8	9,9	1,7	46,8
female employment	27	59,1	60,6	8,5	35,7	73,2
poverty	27	7498,9	7871,0	3555,6	1726,0	16108,0
Gini coefficient	27	29,7	29,8	4,3	23,2	37,8
income	27	4,8	4,4	1,2	3,3	7,8
material deprivation	27	20,9	14,3	16,6	3,0	72,4

B2 - Economic indicators summary statistics in European countries – year 2007

Social indicator	N	Mean	Median	Std. Deviation	Minimum	Maximum
women	27	18,27	17,30	6,00	8,70	34,40
old population	27	15,81	16,00	2,19	10,90	19,90
young population	27	13,24	12,80	1,64	10,20	15,90
dependency	27	23,25	24,10	3,61	15,80	30,20

B3 - Crimes Correlation in European countries – year 2007

Correlations	Parameter	(1)	(2)	(3)	(4)
1. theft	Pearson Correlation	1	0,79**	0,75**	0,31
	Sig. (2-tailed)	.	0,00	0,00	0,28
2. burglary	Pearson Correlation		1	0,46	-0,05
	Sig. (2-tailed)		.	0,08	0,88
3. fraud	Pearson Correlation			1	0,70**
	Sig. (2-tailed)			.	0,01
4. offences against computer	Pearson Correlation				1
	Sig. (2-tailed)				.

*Significance 0.05 level **Significance 0.01 level

B4 - Social indicators Correlation in European countries – year 2007

Correlations	Parameter	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
1. unemployment	Pearson Correlation	1	-0,34	-0,44*	-0,40*	0,10	0,14	0,26	0,05	0,17	0,01	0,14
	Sig. (2-tailed)	.	0,08	0,02	0,04	0,61	0,49	0,19	0,81	0,41	0,96	0,49
2. part time	Pearson Correlation		1	0,49**	0,65**	-0,26	-0,31	-0,62**	0,28	0,09	-0,43*	0,18
	Sig. (2-tailed)		.	0,01	0,00	0,18	0,12	0,00	0,16	0,64	0,02	0,36
3. female employment	Pearson Correlation			1	0,27	-0,13	-0,17	-0,26	0,32	0,08	-0,05	0,13
	Sig. (2-tailed)			.	0,17	0,50	0,40	0,19	0,10	0,67	0,80	0,52
4. poverty	Pearson Correlation				1	-0,43*	-0,52**	-0,77**	0,03	-0,04	-0,52**	0,06
	Sig. (2-tailed)				.	0,02	0,01	0,00	0,90	0,85	0,01	0,77
5. Gini coefficient	Pearson Correlation					1	0,97**	0,54**	0,15	0,23	0,24	0,18
	Sig. (2-tailed)					.	0,00	0,00	0,47	0,25	0,22	0,36
6. income	Pearson Correlation						1	0,64**	0,21	0,27	0,22	0,21
	Sig. (2-tailed)						.	0,00	0,30	0,18	0,27	0,29
7. material deprivation	Pearson Correlation							1	0,02	-0,04	0,49**	-0,12
	Sig. (2-tailed)							.	0,94	0,85	0,01	0,55
8. women	Pearson Correlation								1	0,41**	-0,35	0,46*
	Sig. (2-tailed)								.	0,03	0,07	0,02
9. old population	Pearson Correlation									1	-0,58**	0,99**
	Sig. (2-tailed)									.	0,00	0,00
10. young population	Pearson Correlation										1	-0,62**
	Sig. (2-tailed)										.	0,00
11. dependency	Pearson Correlation											1
	Sig. (2-tailed)											.

*Significance 0.05 level **Significance 0.01 level

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