The Costs of Democracy

"There are boundaries of the nonsense
which must not be crossed with too much ease."
Adam Michnik

The theories are not guilty for the failure. No matter how many times the failure of neo-monetary theory is paired with the phenomenology of the present crisis, the truth lies elsewhere. The failure is due to the marriage between neo-monetary theory and the belief in the infallibility of the market. A sort of union with an omnipotent divinity.

Frankly speaking, the mystical marriage was contracted by the militants of neo-monetary theory and by the neoconservative politicians fueled by the latest forms of fundamentalism in the flavor of the libertarian religion. The first were, in fact, practitioners of the control of power through money, the other were executants for the power in the name of the natural right of those who hold the material basis of power.

The failure attributed to theory is in reality the failure of the instrumentation of the excess of power. That power which self-replicates only through the concentration of wealth. Which is the political power focused on the ownership of all powers, beginning with the economic and military ones, through to juridical power and ending with the scientific and civic powers. It is the power for which the discretionary control of liberties is something natural. It is the power which tends to be absolute and in this state the corruption of all values, the moral ones above all, is declared as a natural right of the political power.

The failure of neo-monetary theory is visible in these conditions. Its liberal extraction has – paradoxically – fermented a totalitarian potion, which creates dependencies. From something that was destined to become a blessing, it turned into something different, a bad omen. Instead of the gain in wealth obtainable through the rational instrumentation of the world of money, the end result is the distribution of freedom through a minority's will.

The synthesis takes into account just the antithesis, in a way in which history does not seem to need a thesis. Which is something absurd, the like of esoteric visions in which the world must be upside-down and inside-out. Not only relativization contributes to the new confusion of the understanding, but also a perversely entertained need for political absolutism and totalitarian control, being supported by their incontestable efficiency. The unique cost of the singular idea is the unavoidable argument for the rejection of the transaction because it proves to be... too expensive. Democracy becomes at most a façade behind which everything is amplified in order for control to be cheap.

The temptation is irresistible and acquisitions are transferred from the economic to the political judgment. Neo-monetary theory is robbed of the idea of direct governing by the neo-conservatory radicalism in order to use it in diminishing the transaction costs specific to democracy. In this way neo-monetary theory is falsified and democracy is emptied of content. Their antitheses, instead, triumph.

The resulting shock siderates consciousness. The bearings are increasingly distant. The lie, the cheapest product of the mind, is considered the norm for success. Corruption becomes the universe in which political action and decision are justified. The guilty are not included in this upside-down and inside-out universe. Cynicism founds new brotherhoods which practice the ritual of exorcising truth and justice. The boundary between good and evil is erased. The world re-lives the big-bang with the new god of the antithesis.

Certainly, by the Hölderian principle there also grows that which saves us from the danger resulting from the marriage between neo-monetary theory and the will for power. Reassuming the costs of democracy is the solution to the Gordian knot of political excess. Fleeing the extremes is inscribed in human nature. The meme of moderation is powerful. Mankind does not forget eternity even if people are obsessed with time. Exiting the age of excess is a normal resultant of eternity. It is not happening now, but it will happen tomorrow.

This is the implacable mechanism through which hope will always have the chance to push things forward. Through it, theories are cured of the fact that they are failed creations, while the will for power calibrates its amplitude to the transaction costs of the democratic system.

The balance of entitlements and responsibilities is re-equilibrated.

Marin Dinu

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Relationship between Occupational Stress, Emotional Intelligence and Job Performance: An Empirical Study in Malaysia

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Abstract. *This study was conducted to examine the effect of emotional intelligence in the relationship between occupational stress and job performance using 104 usable questionnaires gathered from academic employees who work in private institutions of higher learning in Kuching City, Malaysia. The outcomes of testing research hypothesis using a stepwise regression analysis showed that relationship between occupational stress and emotional intelligence significantly correlated with job performance. Statistically, the result confirms that the inclusion of emotional intelligence in the analysis has mediated the effect of occupational stress on job performance in the organizational sector sample. Further, implications and discussion are elaborated.*

Keywords: occupational stress; emotional intelligence; job performance.

JEL Codes: M12.
REL Codes: 14C.

Introduction

In organizational context, occupational stress is also known as job stress and/or work stress. These terms are often used interchangeably in organizations, but its meaning refers to the same thing (AbuAlRub, 2004, Harrison, 1978, Jamal, 1985, Larson, 2004). It has two major dimensions: physiological stress and psychological stress. Physiological stress is often viewed as a physiological reaction of the body (headache, migraine, abdominal pain, lethargic, backache, chest pain, fatigue, heart palpitation, sleep disturbance and muscle ache) to various stressful triggers at the workplace that directly and negatively affects an individual's productivity, effectiveness, quality of work and personal health (George, Jones, 1996, Newell, 2002, World Health Organization, 2005). For example, changes in eating, drinking, sleeping and smoking habits (Beehr et al., 2001, Sadri, 1997). While psychological stress is often seen as an emotional reaction (anxiety and depression burnout, job alienation, hostility, depression, tension, anger, nervousness, irritability and frustration) experienced by an individual as a result from the stimulate at the workplace (Luthans, 1992, Millward, 2005, World Health Organization, 2005).

In terms of eustress perspective, occupational stress occurs when employees' knowledge, skills, abilities and attitudes can cope with or match to their work demands and pressures in organizations. In this situation, it may increase the ability of employees to manage their physiological and psychological stresses (Adler et al., 2006, Cartwright, Cooper, 1997, Wetzel et al., 2006, World Health Organization, 2005). Conversely, in a distress perspective, occupational stress presents when employees' knowledge, skills, abilities and attitudes cannot cope with or do not match to their work demands and pressures in organizations. Consequently, it may decrease the ability of employees to control and manage physiological and psychological stresses, such as disturb their self-regulatory bodies, and cannot meet their duties and responsibilities as a member of an organization and a good citizen of a country (Basowitz et al., 1995, Cartwright, Cooper, 1997).

Recent studies in this area show that the ability of employees to manage their physiological and psychological stresses may have a significant impact on job performance (Hsieh et al., 2004, Leka et al., 2003, Wetzel et al., 2006). Job performance is often defined as the ability of individuals to accomplish their respective work goals, meet their expectations, achieve benchmarks or attain their organizational goals (Bohlander et al., 2001, Campbell, 1990, Eysenck, 1998). In an occupational stress model, several scholars believe that the ability of employees to properly control and manage their physiological and psychological stresses in performing job may lead to higher job performance in organizations (Adler et al., 2006, Hourani et al., 2006, Wetzel et al., 2006, Zhong et al., 2006). This finding is significant, but it has neglected to explain about how effect of occupational stress on job performance is not consistent in different situations (Karasek, Theorell, 1990, Lazarus, 1994, Spector and Goh, 2001, Wetzel et al., 2006).

Surprisingly, a thorough review of such relationships reveals that effect of occupational stress on job performance is not consistent when emotional intelligence is present in organizations (Diggins, 2004, Lyons, Schneider, 2005, Lopes et al., 2006, Slaski, Cartwright, 2002). Many scholars, such as Goleman (1998, 2003), Manna et al. (2009), and Salovey and Mayer (1990, 1997) state that emotional intelligence (EI) has two major dimensions: interpersonal competency (how well we manage ourselves) and intrapersonal competency (how well we interact with others). According to Goleman (1998), interpersonal competency consists of three components, i.e., self-awareness, self-regulation, and motivation. Interpersonal competency includes two components, i.e., empathy and social skills. Self-awareness refers to the ability of individuals to recognize their strengths, emotions, worth and capabilities. Self-regulation is often seen as the ability of individuals to resist emotional wish (think before acting). Motivation is often related to the internal driving force that enables individuals to focus on the task at hand and continue to reach the desired goals. Empathy is frequently viewed as the ability of individuals to understand the feelings of others and this may help them to act on those feelings and meet others' needs. Social skills are needed to develop and nurture good working relationships. Relying on an organizational behavior perspective, several scholars generally conclude that EI is a group of non-cognitive capabilities, competencies, and skills (Bar-On, 1997), as well as a form of social intelligence (Salovey, Mayer, 1990, 1997) where EI will act as a catalyst to increase the ability of individuals to identify emotions, use emotions to guide thinking and actions, understand and manage emotions, and to promote emotional and intellectual growth. If EI is properly managed this may motivate employees to properly handle external demands and pressures (Bar-On, 1997, Salovey, Meyer, 1990, 1997).

In the workplace stress framework, many scholars think that occupational stress, emotional intelligence and job performance are distinct constructs, but strongly interrelated. For example, the ability of employees to properly manage their emotions and other employees' emotions will increase the ability of employees to cope with physiological and psychological stresses in implementing job. As a result, it may lead to higher job performance in organizations (Bar-On, 1997, Gillespie et al., 2001, Spector, Goh, 2001). However the relationship has been studied, little is known about the mediating effect of emotional intelligence in occupational stress research literature (Slaski, Cartwright, 2002, 2003, Nikolau, Tsaosis, 2002). Hence, a further investigation about the nature of this relationship is imperative.

1. Objective of the study

This study has two major objectives: first, to measure the relationship between occupational stress and job performance. Second, to measure the effect of psychological stress and emotional intelligence on the job performance. Location of this study is private institutions of higher learning in Kuching City, Malaysia. For confidential reasons, the name of the studied organization is kept anonymous.

2. Literature review

2.1. Relationship between occupational stress and job performance

Several recent studies used an indirect effects model to examine occupational stress based on different samples, such as 178 academic and general staff in 15 Australian universities (Gillespie et al., 2001), 320 middle managers working in a major United Kingdom retailer (Slaski, Cartwright, 2002), and 212 professionals from a mental health institution in Greece (Nikolau, Tsaosis, 2002). Findings from these surveys showed that the ability of employees to use their emotions and regulate other employee emotions in performing job will decrease their physiological and psychological stresses. Consequently, it could lead to higher job performance in organizations (Gillespie et al., 2001, Slaski, Cartwright, 2002, Nikolau, Tsaosis, 2002).

The findings are consistent with the notion of human emotion theories. For example, general human emotion theories, such as Harrison's (1978) person-environment (P-E) fit model, and Karasek and Theorell's (1990) job-demand-control model, state that individuals who have faced high work demands with low work-control will have difficulties to meet the job demands, this may lead to increased occupational strains. Lazarus's (1994) transactional stress model explains that inability of individuals' cognitive processes and emotional reactions to manage strain environments may lead to increased occupational tensions. Spector and Goh's (2001) emotion-centered model of occupational stress posits that individuals who feel stressful when exposing with an event in particular environments may experience occupational strains. Cannon-bard theory of emotion (Cannon, 1927) states that a person who experiences physiological stress (e.g., heart attack) may simultaneously experience psychological stress (e.g., mental illness). Then, the concept has been expanded by Mueller and Maluf (2002) to establish a physical stress theory, which posits that the level of one's physical stress will determine the person's predictable biological response. For instance, a person who can habitually reduce his/her level of physical stress will be more experience a positive biological response compared to a person who often has high level of physical stress. This situation may lead to higher job performance (Hsieh et al., 2004, Gillespie et al., 2001, Slaski, Cartwright, 2002).

Ursin and Eriksen's cognitive arousal theory of stress states that a person's feelings of hopelessness, helplessness and inability to cope in stressful situations can trigger lower emotional health, which can potentially lead to higher negative attitudinal and behavioral outcomes, such as feelings of frustration, deprivation or discontentment (Ursin, Eriksen, 2002), and lower performance (Leka et al., 2003, Slaski, Cartwright, 2002). Bandura's (1977) self-efficacy theory proposes that if a person has high self-efficacy (i.e. belief to his/her ability in executing a course of action) this will not invoke his/her negative cognitive thoughts. Application of this theory in an occupational stress model shows that if persons have high belief to use their abilities in handling job stressors can result in higher job performance (Nikolau, Tsaosis, 2002, Wetzel et al., 2006). Thus, it can be hypothesized that:

H1: There is a significant relationship between occupational stress and job performance.

2.2. Relationship between occupational stress, emotional intelligence and job performance

Several recent studies used an indirect effects model to examine occupational stress based on different samples, such as 178 academic and general staff in 15 Australian universities (Gillespie et al., 2001), 320 middle managers working in a major United Kingdom retailer (Slaski, Cartwright, 2002), and 212 professionals from a mental health institution in Greece (Nikolau, Tsaosis, 2002). Findings from these surveys showed that the properly controlled physiological and psychological stresses had increased employee capabilities to manage (understand, use and regulate) their emotions and other employee emotions in implementing job. As a result, it may lead to higher job performance (Gillespie et al., 2001, Slaski, Cartwright, 2002, Nikolau, Tsaosis, 2002).

The findings are consistent with the notion of emotional intelligence theory, which posits that individuals who have sufficient interpersonal and intrapersonal competencies can properly handle their emotions (i.e., self-awareness, self-regulation, and motivation) and regulate other employee emotions (i.e., empathy and social skills) to cope with environmental challenges (Bar-On, 1997, Goleman, 1998, 2003, Salovey, Mayer, 1990, 1997). Specifically, Bar-On's (1997) model of emotional-social intelligence posits that the level of emotional intelligence will increase individuals' competencies and this may help them to decrease external demands and pressures, as well as increase human well-being. Salovey and Mayer's (1990, 1997) ability based model of emotional intelligence explains that the level of emotional intelligence will increase individuals' competencies and this can increase their ability to decrease stress situations and increase positive individual attitudes and behaviors. Goleman's (1998, 2003) emotional intelligence stresses that the level of emotional intelligence will increase individuals' competencies and this may help them to decrease environmental strains and increase leadership effectiveness in organizations. Application of the emotional intelligence theories in a workplace stress management shows that the ability of employees to properly manage their emotions and other employee emotions will not directly increase job performance, but its effect on job performance may increase if employees have sufficient abilities to cope with physiological and psychological stresses in the workplace (Gillespie et al., 2001, Harrison, 1978, Karasek, Theorell, 1990, Lazarus, 1994, Slaski, Cartwright, 2002, 2003, Nikolau, Tsaosis, 2002).

The literature has been used as foundation of developing a conceptual framework for this study as shown in Figure 1.

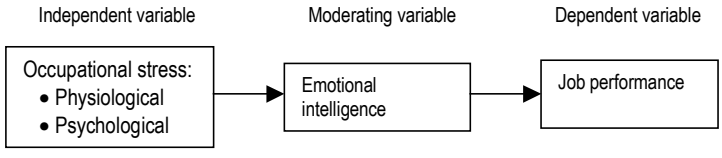

Figure 1. *Conceptual framework*

Based on the framework, it can be hypothesized that:

H3: Emotional intelligence ,mdiates the effect of occupational stress on job performance.

H4: Emotional intelligence mediates the effect of occupational stress on job performance.

3. Research methodology

This study used a cross-sectional method which allowed the researchers to integrate the occupational stress research literature, the in-depth interview, the pilot study and the actual survey as a main procedure to collect data. The use of such methods may gather accurate, less bias and high quality data (Cresswell, 1998, Sekaran, 2003). In the first step of data collection, in-depth interviews were conducted involving four experienced academic employees, namely two female lecturers and two male lecturers who have working experienced from 3 to 20 years. This interview was used to understand the nature of occupational stress features, emotional intelligence and job performance characteristics, as well as the relationship between such variables in the organizational sector. The information gathered from such interviews was categorized and constantly compared to the related literature review in order to clearly understand the particular phenomena under study and put the research results in a proper context. Further, the results of the triangulated information were used as a guideline to develop the content of survey questionnaires for a pilot study.

Next, pilot study was done by discussing pilot questionnaires with the lecturers. Information gathered from such participants was used to verify the content and format of survey questionnaire for an actual study. Back translation technique was used to translate the content of questionnaires in Malay and English in order to increase the validity and reliability of the instrument (Hulland, 1999, Wright, 1996).

Table 1 shows the validated items used in the actual survey questionnaires where it has three sections: physiological stress, psychological stress, and job performance. All items used in the questionnaires were measured using a 5-item scale ranging from “never/does not meet” (1) to “always/ exceeds all expectation” (5). Demographic variables were used as controlling variables because this study focused on employee attitudes.

Table 1

Survey questionnaire items

Variable	Item	Source of information
Occupational stress	1. Headache and/or coldness or hand and/or feet, 2. Indigestion and/or abdominal pain, 3. Backache and/or muscle ache and/or chest pain, 4. Sleeplessness and/or irregular sleep habits, 5. Weight loss or weight gain, 6. Breakouts of pimples and/or acne, 7. Excessive sweating, 8. Colds and/or flu,	8 items were adapted from Seaward's (2005) physiological stress scale.
	9. Slower recovery from illnesses, 10. Feel unable to cope in my work, 11. Feel angry/fearful/anxious/depressed about workload, 12. Find it difficult to control emotions, 13. Feel confuse and/or cannot concentrate.	5 items were developed based on Psychological stress literature (Beehr et al., 2001, Cox et al., 2000, Newel1, 2002).
Job performance	1. I state clearly the course objectives and grading procedures, 2. I prepare well-planned and organized presentation, 3. I am confident of my comprehensive knowledge and mastery of subject matter of each course, 4. I serve competently in completing all departmental, faculty, and university responsibilities, 5. I devote adequate time and thoughts to work assignments and resource allocations, 6. The quantity of work I produce meets or occassionally exceeds job expectations, 7. I constantly discuss career interests, provide advise and feedback to staff and inspire them, 8. I effectively delegate to subordinates with clear directives and guidelines, 9. I lead, motivate, and work closely with subordinates under me, 10. I am frequently successful in reaching a common understanding with others through verbal and non-verbal communication, 11. I serve as a resource person and provide professional consultancy necessary for the technical subject matter which I am specialized in, 12. I demonstrate a strong sense of work ethic, 13. I am motivated, dedicated and demonstrate a strong sense of responsibility when a task is assigned, 14. I maintain timely and accurate records on student performance and other kinds of required evaluation criteria, 15. I work cooperatively and effectively with departmental colleagues, University administration and staff.	5 items were adapted from job performance literature (AbuAlRub, 2004, Adler et al., 2006, Beehr et al., 2001, Hourani et al., 2006, Hsieh et al., 2004).
Emotional intelligence	1. Adopt positive thinking and/or good self-talk, 2. Having good understanding of own emotions 3. Finding right words to express what I feel about an issue, 4. Considering own feelings in decision making or problem-solving, 5. Calming down quickly, 6. Setting goals for myself and try my best to achieve them, 7. Remaining focused on what I am doing, 8. Thinking through what I have done and said, 9. Controlling my anger and/or frustration, 10. Handling difficulties rationally, 11. Thinking positively.	11 items were modified from (Consortium for Research on emotional intelligence literature Emotional Intelligence in Organizations, 2008, Goleman,1998, 2003, Salovey Mayer, 1990, 1997, Stough, 2003).

The number of private institutions of higher learning actively operating in Kuching City, Malaysia is 36 (Ministry of Higher Education, Malaysia, 2008). Of the number, 9 private institutions were agreed to participate in this study. The targeted population for this study is academic employees who work in the studied organizations. In the first step of data collection, the researchers met HR managers of the studied organizations to get their opinions about the rules for distributing survey questionnaires in their organizations. Considering the organizational rules, a quota sampling was used to determine the number of sample size based on the period of study and budget constraints, are 200 academic employees. After that, a convenient sampling was chosen to distribute survey questionnaires because the list of registered employees was not given to the researchers and this situation did not allow the researchers to choose randomly respondents in the organizations. Therefore, 200 survey questionnaires were distributed to employees who were willing to answer the questionnaires. Of that total, 104 usable questionnaires were returned to the researchers, yielding 52 percent response rate. The number of this sample exceeds the minimum sample of 30 participants as required by probability sampling technique, showing that it may be analyzed using inferential statistics (Sekaran, 2003). The survey questionnaires were answered by participants based on their consents and a voluntarily basis.

A Statistical Package for Social Science (SPSS) version 16.0 was used to analyze the questionnaire data. Firstly, exploratory factor analysis (varimax rotation) and confirmatory factor analysis (i.e., Kaiser Meyer Olkin, Bartlet's test of sphericity, eigenvalues, variance explained and reliability) were used to assess the validity and reliability of measurement scales (Hair et al., 2006). Secondly, analysis of variance, Pearson correlation analysis and descriptive statistics were conducted to assess the research variables and the usefulness of the data set (Foster et al., 1998, Yaacob, 2008). Finally, a stepwise regression analysis was used to assess the direct relationship between variables as well as show the causal relationship and the nature of relationship between variables. It can accurately quantify the magnitude and direction of each independent variable, and vary the mediating variable relationship between many independent variables and one dependent variable (Berenson, Levine, 1992,: Foster et al., 1998). According to Baron and Kenny (1986), the mediator variable can be clearly judged when a previously significant effect of predictor variables is reduced to non-significant or reduced in terms of effect size after the inclusion of mediator variables into the analysis.

4. Findings

Table 2 shows that most respondent characteristics were female (59.6 percent), aged between 26 to 30 years old (38.5 percent), bachelor degree holders (72.1 percent), lecturers (79.8 percent) and length of service from 2 to 5 years (41.3 percent).

Table 2

Respondents' characteristics (N=104)

Respondents' Characteristics	Sub-Profile	Percentage (%)
Gender	Male	40.4
	Female	59.6
Age	< 25 years old	22.1
	26 – 30 years old	38.5
	31 – 35 years old	22.1
	36 – 40 years old	9.6
	41 – 45 years old	3.8
	> 46 years old	3.8
Education	Diploma	2.9
	Bachelor Degree	72.1
	Master Degree	22.1
	Doctorate	2.9
Position	Senior Lecturer	2.9
	Lecturer	79.8
	Assistant Lecturer	17.3
Length of Service	< 1 year	33.7
	2 – 5 years	41.3
	6 – 9 years	16.3
	10 – 12 years	4.8
	> 13 years	3.8

Table 3 shows the results of validity and reliability analyses for measurement scales. A factor analysis with the varimax rotation was first done for three variables with 22 items. After that, Kaiser-Mayer-Olkin Test (KMO) which is a measure of sampling adequacy was conducted for each variable and the results indicated that it was acceptable. Relying on Hair et al. (2006) and Nunally and Bernstein's (1994) guideline, these statistical analyses showed that (1) the value of factor analysis for all items that represent each research variable was 0.5 and more, indicating the items met the acceptable standard of validity analysis, (2) all research variables exceeded the acceptable standard of Kaiser-Meyer-Olkin's value of 0.6, were significant in Bartlett's test of sphericity, (3) all research variables had eigenvalues larger than 1, (4) the items for each research variable exceeded factor loadings of 0.50 (Hair et al., 2006), and (5) all research variables exceeded the acceptable standard of reliability analysis of 0.70 (Nunally, Bernstein, 1994). These statistical analyses confirm that measurement scales have measured the same constructs and met the acceptable standard of construct validity and reliability analyses (Dulewicz, Higgs, 1999) as shown in Table 3.

Table 3

The results of validity and reliability analyses for measurement scales

Variable	Items	Factor Loading	KMO	Barlett's Test of Sphericity	Eigenvalues	Variance Explained	Cronbach Alpha
Occupational stress	13	.45 - .80	.86	585.03	5.51	42.37	.88
Job performance	15	.64 - .85	.90	1108.19	8.21	54.70	.94
Emotional intelligence	10	.54 - .83	.90	634.12	5.96	54.22	.91

Analysis of variance techniques are used to compare the mean scores between two or more groups in the studied organization. In this case, independent samples t-tests are used to compare two different (independent) groups of people (i.e., gender) and ANOVA is used to compare three and more different (independent) groups of people (i.e., age) (Hair et al., 2006, Yaacob, 2008). The results of one-way ANOVA showed that age and education were found to have a significant difference ($F=2.56$, $p<0.05$; $F=2.63$, $p<.05$, respectively), signifying that occupational stress was differently perceived by age and education structures. Conversely, the results of t-test and one-way ANOVA that had no significant differences were not reported in this study.

Table 4 shows the result of Pearson correlation analysis and descriptive statistic. The means for the variables are from 2.4 to 4.0 signifying that the levels of occupational stress, emotional intelligence and job

performance ranging from moderately high (2) to highest level (5). The correlation coefficients for the relationship between the independent variable (i.e., physiological stress and psychological stress) and the mediating variable (i.e., emotional intelligence), and the relationship between the independent variable (i.e., physiological stress and psychological stress) and the dependent variable (i.e., job performance) were less than 0.90, indicating the data were not affected by serious collinearity problem (Hair et al., 2006). The measurement scales that had validity and reliability were used to test research hypotheses. In terms of testing direct effects model, occupational stress insignificantly correlated with job performance, therefore H1 was not supported. This result demonstrates that occupational stress has not an important predictor of job performance in the studied organizations.

Table 4

Pearson correlation analysis and descriptive statistics

Variable	Mean	Standard deviation	Pearson correlation analysis		
			1	2	3
1. Occupational stress	2.4	.68	1		
2. Job performance	4.0	.75	-.05	1	
3. Emotional intelligence	3.7	.64	-.24*	.26**	1

Note: Significant at **p< 0.01.

Table 5 shows the results of testing hypotheses using a stepwise regression analysis. These tables show that demographic variables were entered in Step 1 and then followed by entering independent variable (i.e., occupational stress) in Step 2. Job performance was used as the dependent variable. An examination of multicollinearity in the table shows that the tolerance value for the relationship between occupational stress and job performance was 0.91, while the tolerance value for the relationship between psychological stress and job performance was 0.90. These tolerance values were more than tolerance value of 0.20 (as a rule of thumb), indicating the variables were not affected by multicollinearity problem (Fox, 1991; Tabachnick, Fidell, 2001).

Table 5

Results for Stepwise Regression Analysis

Variable	Dependent Variable (Job Performance)		
	Step 1	Step 2	Step 3
Controlling variable			
Gender	-.12	-.11	-.13
Age	-.05	-.06	-.09
Education	.08	.08	.08
Position	-.11	-.11	-.08
Length of service	.02	.03	.07
Independent variable			
Occupational stress		-.04	.03
Mediating variable			
Emotional intelligence			.27**
R Square	.03	.04	.10
Adjusted R square	-.03	-.03	.04
R Square change	.03	.00	.07
F	.68	.59	1.57
F Change R square	.68	.17	7.20**

Note: Significant at ** p < 0.01.

Table 5 shows the result of stepwise regression analysis were summarised in the three models. Step 1 showed that demographic variables were found not to be a significant predictor of job performance, accounting for 3 percent of the variance in dependent variable. Step 2 displayed that occupational stress (ß=-0.04, p>0.05) was found not to be a significant predictor of job performance, accounting for 4 percent of the variance in dependent variable. Step 3 revealed that relationship between occupational stress and emotional intelligence positively and significantly correlated with job performance (ß = 0.27, p < 0.01), therefore H2 was supported. This result demonstrates that before the inclusion of emotional intelligence in Step 2, occupational stress (Step 2: ß = -0.04, p > 0.05) insignificantly correlated with job performance. As shown in Step 3 (after the inclusion of emotional intelligence in the analysis), the previous insignificant relationship between occupational stress and job performance (Step 2: ß = 0.01 p > 0.05) did not change to significant (Step 3: ß = 0.27, p < 0.05). In terms of explanatory power, the inclusion of emotional intelligence in Step 3 had explained 10 percent of the variance in dependent variable. This result demonstrates that effect of occupational stress and job performance have increased when emotional intelligence entered in the analysis, signaling that emotional intelligence acts as a full mediating variable in the organizational sector sample.

5. Discussion and implications

The findings of this study confirmed that emotional intelligence acts as a full mediating variable in the relationship between occupational stress and job performance in the organizational sector sample. In the studied organizations, management teams have changed and implemented challenging jobs for academic employees to sustain and achieve their organizational strategies and goals. Majority academic employees perceive that the level of their stresses in implementing job is high, the ability to use their emotions in implementing job is high and their abilities to perform job is high. In terms of correlation, when academic employees perceive that they can properly use their emotions to cope with physiological and psychological stresses, this may lead to higher job performance in the workplace.

The study presents three major implications: theoretical contribution, robustness of research methodology, and practical contribution. In terms of theoretical contribution, the results of this study confirmed that emotional intelligence has mediated the effect of occupational stress on job performance in the studied organizations. This result is consistent with the studies by Gillespie et al., (2001), Slaski and Cartwright (2002), and Nikolau and Tsaosis (2002). In sum, the findings of this study advocate that the effect of physiological and psychological stresses on job performance is not direct, but their impacts upon job performance are indirectly affected by emotional intelligence. This finding indicates that the ability of employees to properly manage emotions will increase their capabilities to cope with physiological and psychological stresses. As a result, it may lead to higher job performance in the organizations.

With respect to the robustness of research methodology, the survey

questionnaires are developed based on the information gathered from the occupational stress literature, the in-depth interviews and the pilot study have exceeded a minimum standard of validity and reliability analysis. Thus, it may lead to the production of accurate and reliable findings.

In terms of practical contributions, the findings of this study can be used as a guideline by the management to overcome occupational stress problems in organizations. This objective may be achieved if management follows the suggestions: firstly, provide emotional intelligence based training program that focus on up to date knowledge, relevant skills and good moral values. If this training program is properly implemented it can upgrade the capability of mentors to use proper treatments in handling the mentees' needs, expectations and demands. Secondly, management should encourage employee participation in mentoring activities. For example, mentees should be allowed to provide suggestions, comments and take part in planning and managing mentoring activities. If this aspect is given due and proper attention it will increase mentees' feelings of satisfaction, trust and acceptance about the programs. Finally, management should take work-life balance initiative to reduce the employee job stress, for instance, organize company trips for the employee to relax their mind and body. If these suggestions are heavily considered this will increase the capability of employees to manage their personal emotions and use their positive emotions to create good interactional styles with other employees. This working situation may decrease occupational problems and increase job performance in organizations.

6. Conclusion

The findings of this study confirm that emotional intelligence does act as a full mediating variable in the relationship between occupational stress and job performance in the organizational sector sample. This finding is consistent with the occupational stress literature mostly published in Western countries. Therefore, current research and practice within workplace stress needs to consider emotional intelligence as a critical aspect of occupation stress. This study further suggests that properly managed emotions in implementing job will strongly increase the capability of employees to cope with occupational stress problems. As a result, it may lead to higher positive attitudinal and behavioural outcomes (e.g., satisfaction, commitment, and good moral values). Thus, these positive outcomes may lead to sustained and achieved organizational strategy and goals.

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The Impact of Decentralization on Public Health System's Results. The Case of Romania

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Abstract. *This paper examines the impact of decentralization of the public health system on health state of the population by means of an adequate econometric model and data series at development regions level measured by two global indicators, namely infant mortality and life expectancy. The results point out that the number of beds and physicians by 1,000 inhabitants – as two of the independent variables considered – have a positive contribution to the health state, while the effects of decentralization have a pretty low visibility.*

Keywords: decentralization; public health system; reform; econometric models.

JEL Codes: C10, C51, I18.
REL Codes: 9B, 9F, 13A.

I. Introduction

The decentralization of public services is a process in progress in all European countries. This process is based on subsidiarity principle and represents a means for increasing the efficiency in the public services sector.

After the radical change of the political system at the end of 1989, the decentralization of public administration has been applied in Romania as well. The process was difficult and long-standing, considering that during the communist regime the public service management was hyper-centralized. Over the transition years Romania benefited from a series of projects financed by the EU and the World Bank, aiming to support this complex process, covering a long period of time. For example, important Phare projects envisaging various components of public administration were launched in 1992 (amounting 1.5 million Euros), 1997 (5 million Euros), 2002 (4.73 million Euros), 2004 (two projects of 2.6 million Euros) and 2005-2006 (two more projects). Also, the PAL programme of the World Bank financed activities which contributed to the consolidation of the institutional framework of public administration decentralization.

The reform of the public health system was considered a component of public administration reform and a series of corresponding measures were applied, especially with regard to priority programmes for public health system, the creation of a national network of health system operators able to support the public administration reform, the training in public administration of health system staff, etc.

In the international literature there are many papers which analyze the correlation between decentralization of the health system and the corresponding service quality. In this respect country case studies like those for Spain (Cantarero, Pascual, 2008, Cantarero, 2005) and Italy (Giannoni, Hitiris, 2002) can be mentioned.

This paper proposes the evaluation of decentralization effects upon the quality of health services in Romania, also aiming to compare them to those obtained by Cantarero and Pascual (2008) in the case of Spain.

The paper is organized as follows. Section 2 introduces the econometric model which has been employed for measuring the decentralization effects in the public health sector. Section 3 discusses the results obtained after the estimation of regression parameters, using data recorded at Romanian development regions level for 1998-2005. The last section focuses on conclusions and final remarks.

II. The model

Data series for statistical indicators recorded at the eight development regions level between 1998 and 2005 were used in order to analyze the impact of decentralization of public health sector on some relevant demographic indicators. Table 1 presents a series of aspects regarding both the dependent variable and the independent ones, which have been employed by the econometric model

Table 1

The model's variables

Dependent variable H –	
RMI	Infant mortality rate
DVT	The average life expectancy. In national statistics it is evaluated at the development region level as an average of three consecutive years. The series of data has been built considering that each value corresponds to the median year
Independent variables	
PIB_R	GDP per capita at the development regions level. The model used all values expressed in 1998 prices
P_SSA	The share of each region in the contribution of health and social assistance system to GDP formation
M_P	Number of physicians per 1000 inhabitants
P_P	Number of beds per 1000 inhabitants

Data source: Statistical Yearbook of Romania, 2007, National Institute of Statistics, Bucharest.

Considering the complexity of reform in the Romanian public health system as well as the difficulties of measuring the decentralization process intensity, the identification of one or more statistical indicators able to measure the effects of decentralization in a country's public health sector is not an easy task. For our research we have proposed a model inspired from the previous experience of a Spanish scientist in this field, who employed the ratio of sub-national health care expenditures to the total health expenditures for all the levels of government (Cantarero, 2008).

In accordance with the model estimated for the case of Spain, our model is defined as follows:

$$\log(H_{it}) = a + b \times PIB\_R_{it} + c \times \log(M\_P_{it}) + d \times P\_P_{it} + \varepsilon_{it},\ i = \overline{1.8},\ t = \overline{1998.2005}$$

The following variables have been used:

- H_{it} is an indicator which characterizes the global performance of the public health system in region i, year t. As the model has been elaborated for two cases, two dependent variables have been used. Thus, in the first case the dependent variable is the infant mortality rate calculated for each year at the development regions level. In the second case the dependent variable is the average life expectancy at development region level.

- The independent variables are: (i) PIB_R – GDP per capita at the development regions level and P_SSA – the share of each development region in the contribution of health and social assistance system to GDP formation, in order to characterize the economy and the health sector at development region level ; (ii) two variables which refer to the local health system's resources, namely P_P – the number of beds per 1,000 inhabitants and M_P – the number of physicians per 1,000 inhabitants.

- ε_{it} is the residual variable of zero average which observes auto-correlation and homoskedasticity hypotheses and is not correlated with other explaining variables.

III. The results

The model parameters for the two cases have been estimated for both fixed effects model and random effects model. Two methods have been applied for parameters estimation, namely ordinary least squares method (OLS) and the two stage least squares method (TSLS), the latter as described by Baltagi (2008). The results obtained by means of EViews are presented in Table 2 and Table 3.

For the fixed effects model the null hypothesis has been tested: according to this hypothesis, the specific effects at region level are neglected. In this case, a Fischer test is necessary. The statistics values calculated for the parameters estimated by OLS and TSLS are higher than those from the F distribution table, which shows that the specific effects at region level are significant.

This fact is obvious if we have in mind the large disparities between the eight development regions in terms of economic and social development.

Table 2

The characteristics of the model with dependent variable log(RMI)

	Classic Model		Fixed effects		Random effects	
	LS	TSLS	LS	TSLS	LS	TSLS
C (coefficient)	0.7619	0.8310	1.7222	1.3773	1.0985	0.8768
t-Statistic	(1.84)	(1.69)	(3.46)	(2.10)	(2.61)	(1.83)
Log(PIB_R) (coefficient)	-0.3424	-0.3314	-0.3311	-0.3477	-0.3118	-0.3554
t-Statistic	(-5.47)	(-4.34)	(-4.83)	(-4.53)	(-4.98)	(-4.80)
P_SSA (coefficient)	0.8620	0.5591	0.1015	2.6871	0.4989	-0.0294
t-Statistic	(1.42)	(0.86)	(0.06)	(0.78)	(0.51)	(-0.03)
log(M_P) (coefficient)	-0.1873	-0.2405	-0.6558	-0.6895	-0.2059	-0.1697
t-Statistic	(-1.84)	(-2,16)	(-4.06)	(-3.85)	(-2.11)	(-1.55)
P_P (coefficient)	-0.0050	-0.0054	-0.0683	-0.0763	-0.0169	-0.0184
t-Statistic	(-0.31)	(-0.30)	(-3.20)	(-3.24)	(-1.11)	(-1.16)
R-squared	0.8270	0.8248	0.9116	0.9070	0.6404	0.6357
F-statistic and Prob (F)	60.94 (0.0000)		41.24 (0.0000)		22.71 (0.0000)	
F-statistic (Classic Model vs Fixed effects) and Prob (F)	6.56 (0.000)	6.06 (0.000)				
Hausman statistic and Prob (Hausman)			15.443 (0.000)	26.004 (0.000)		

Source: Authors' calculations by means of data series described in Table 1.

Table 3

The characteristics of the model with dependent variable log(DVT)

	Classic Model		Fixed effects		Random effects	
	LS	TSLS	LS	TSLS	LS	TSLS
C (coefficient)	4.4740	4.5319	4.3875	4.4737	4.4220	4.4784
t-Statistic	(92.90)	(77.31)	(103.74)	(76.58)	(113.05)	(96.11)
log(PIB_R) (coefficient)	0.0336	0.0438	0.0303	0.0379	0.0270	0.0418
t-Statistic	(4.60)	(4.81)	(5.22)	(5.55)	(4.79)	(6.20)
P_SSA (coefficient)	0.1714	0.2500	-0.1749	-0.5086	0.0100	0.3583
t-Statistic	(2.42)	(3.22)	(-1.20)	(-1.66)	(0.08)	(2.01)
log(M_P) (coefficient)	0.0097	0.0097	0.0788	0.0691	0.0280	0.0062
t-Statistic	(0.88)	(0.88)	(5.74)	(4.33)	(2.87)	(0.57)
P_P (coefficient)	-0.0040	-0.0034	0.0043	0.0056	-0.0015	-0.0004
t-Statistic	(-2.06)	(-1.61)	(5.22)	(2.68)	(-1.07)	(-0.28)
R-squared	0.5805	0.5544	0.8863	0.8686	0.5252	0.8686
F-statistic and	17.64		31.19		14.10	
Prob (F)	(0.0000)		(0.0000)		(0.0000)	
F-statistic (Classic Model vs	18.45	16.40				
Fixed effects) and Prob (F)	(0.000)	(0.000)				
Hausman statistic and			48.29	71.02		
Prob (Hausman)			(0.000)	(0.000)		

Source: Authors' calculations by means of data series described in Table 1.

The results obtained show that the infant mortality variable is negatively correlated with PIB_R, M_P and P_P variables, whereas P_SSA variable has not a significant influence on the dependent variable.

Subsequently, the average life expectancy is positively correlated with PIB_R, M_P and P_P variables, while the correlation with P_SSA variable is negative and this correlation is weak. In order to test the orthogonality of the random effect and explaining variables, the Hausman test has been used (Baltagi, 2008). The test statistics values for both models support the use of the fixed effects models.

Moreover, when the same test is applied in order to choose between the results obtained by OLS and TSLS, it reveals that the second case is more relevant.

IV. Concluding remarks

Our paper has analyzed the relationship between infant mortality rate, respectively life expectancy and the factors which measure the characteristics of the decentralization of the public health system in Romania. In order to validate the conclusions, the parameters of the linear regression model have been estimated using the data series at the eight development regions level for 1998-2005. On this basis several conclusions can be formulated.

First, the results displayed in Table 2 and Table 3 point out that the infant mortality rate is negatively correlated with the variable which characterizes the economic development level (GDP per capita), with the number of beds and the number of physicians per 1,000 inhabitants.

Second, the life expectancy is positively correlated with the variable which characterizes the economic development level (GDP per capita).

Third, the specific factors at region level have a significant influence on infant mortality rate and life expectancy.

Fourth, we have to mention the lack of considerably positive effects of decentralization process on the outputs of public health system. The main explanation comes from the fact that, after its joining to the European Union, there are a lot of projects that still support the decentralization process in Romania. It is expected that the effects of the changes in the public health system determined by decentralization will be much more visible in the forthcoming years.

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Effective Results Analysis for the Similar Software Products' Orthogonality

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Abstract. *It is defined the concept of similar software. There are established conditions of archiving the software components. It is carried out the orthogonality evaluation and the correlation between the orthogonality and the complexity of the homogenous software components is analyzed. Shall proceed to build groups of similar software products, belonging to the orthogonality intervals. There are presented in graphical form the results of the analysis. There are detailed aspects of the functioning of the software product allocated for the orthogonality.*

Keywords: uniform software product; orthogonality; software complexity.

JEL Codes: C88.
REL Codes: 9A.

1. Similar software components

At present, as a result of the existing applications to solve various theoretical and practical problems, there is a wide variety of software. There are defined criteria and build multitudes of software products that meet these criteria.

For the programming language criterion one defines the multitude of programs written in C++, the multitude of programs written in C#, the multitude of programs written in Java.

For the criterion of working with databases there are identified applications that use relational databases, object oriented database and classic databases.

For the criterion of the operating system the software components are determined that deal with the organization and the management of a computer, respectively MS-DOS, Linux, Unix, Windows, Mac OS, Solaris.

For the criterion of programs allocated to protect the computers from some codes' malicious action to affect its proper functioning, there are identified the following components: BitDefender, Norton Antivirus, Kaspersky Antivirus, McAfee, avast!, Eset Nod32.

Let us consider the criteria C_1, C_2, ..., C_m, and the P multitude of programs.

If the C_i criterion is applied the P programs are divided into sub-multitude P_{i1}, P_{i2}, ..., P_{ih}.

If for the P_{ij} sub-multitude, obtained by applying the C_i criterion, the C_h criterion is applied the sub-multitude P_{ij1}, P_{ij2}, ..., P_{ijh} will result.

It is noticed that the criteria application is done step by step either on the P multitude line, or one after another on sub-multitudes (on top down criteria).

Further, by applying a different criterion C_s, it is obtained a new sub-multitude, composed by the elements of the old sub-multitude, but which respects the new criterion.

The general condition that must be respected for the application of new criteria is that the main multitude to have a large number of components, and the resulted sub-multitude to be large enough to allow the application of new criteria.

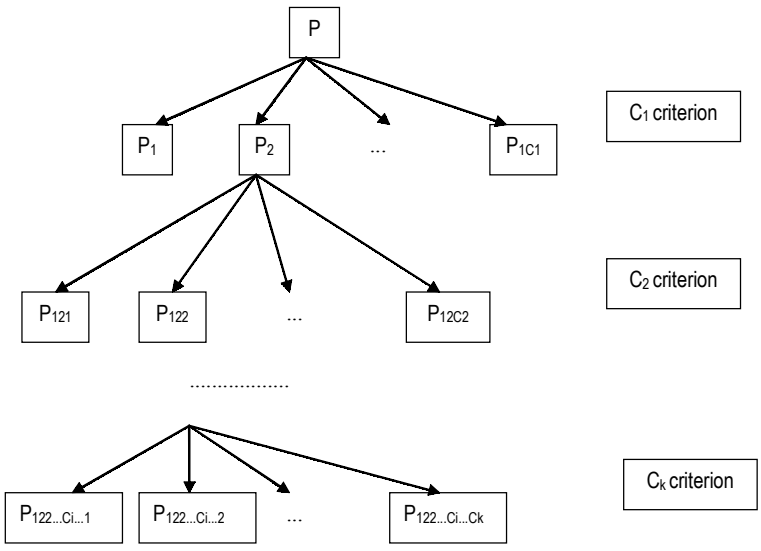

Figure 1. *Criteria implementation on multitude*

After applying the top down criteria, the obtained sub-multitude has achieved a level of similarity increasingly high.

It is considered the multitude of students who sign up to take the admission to the Faculty of Cybernetics, Statistics and Economic Informatics. A first criterion, C_1, which applies to this lot is that they must be high school graduates. Another criterion is that of mathematics knowledge. Since the admission has two test papers of mathematics, algebra and mathematical analysis, the students must be well prepared for this subject.

It is considered the multitude of students from the 3rd year – Economic Informatics specialization.

A first criterion to be applied to this multitude is given by the level of the students' preparedness in terms of programming languages.

In the 3rd year, the degree of similarity of the multitude of students from the specialization Economic Informatics is very high because:

- they have the same age;
- they took the same exams;
- they have the same level of experience;
- they have attended the same courses;
- the obtained marks are top level, because the selection for the Economic Informatics section is made on the average criterion.

It is required the construction of similar classes of software products, because the high quality derives from:

- qualitative members aggregation;
- further easy development;
- keeping the requirements imposed by the realization process;
- ensuring comparability, as human and financial effort;
- identifying the bad components, as in the case of distributed applications, regardless of their inferior quality processes, this reflects on dozens or thousands of users.

Citizen-oriented applications that are specific to knowledge-based economies must meet strict requirements of similarity, such as:

- technologies used for elaboration;
- style of elaboration;
- high quality level;
- high degree of compatibility.

Therefore it is proposed to conduct an analysis of similar software products, as citizen-oriented applications must be considered under this criterion.

2. Lots of applications

It is formulated a set of specifications for:

- problems to be solved (each stated problem to be solved by implementing the software products);
- used resources (programming language used);
- the characteristics of quality (reliability, simultaneity, orthogonality) and content (the source lines number, occupied space on the hard disk by the source file, contained key words).

The formulated specifications receive individual solutions from the community members.

Developers form a similar multitude, characterized by value, experience, knowledge level, age level.

It is considered the D_1, D_2, ..., D_n developers multitude, characterized by:

- close level of preparation from one user to another;
- level of knowledge which is not different from one user to another, fact proved by the covered qualifying stages;
- same level of experience in solving the mentioned problems;
- the compulsoriness to respect the deadline for formulating the solutions;
- the common source of processing the specifications for building solutions;
- the unique way of transmitting the generated solutions for evaluation.

In this context it is defined a first strict filter that ensures the construction of similar solutions:

- vocabulary based on a thesaurus and keywords from the C++ language;
- the length obtained by respecting the restriction of efficiency in programming;
- complexity defined through restrictions regarding the C++ procedures construction;
- correctness given by the compulsoriness of checking the C++ operations functioning;
- completeness achieved by the mandatory inclusion of a set of procedures, the orthogonality being the assessment objective.

There are considered the S_1, S_2, ..., S_6 specifications.

Based on these specifications homogenous lots of programs are constructed. Getting the lots of programs from the users is done using the ORTOES application.

The multitude of developers is composed of a number of 118 members. Of these, only 114 met the conditions imposed for loading the personal solutions for listed specifications.

Table 1 shows the users' arrangement according to the six types of problems that must be solved:

Table 1

The users' arrangements according to the specifications of the problems that must be solved

Specification	No. of the members who loaded solution	No. of the members who loaded no solution
S_1	96	18
S_2	96	18
S_3	93	21
S_4	91	23
S_5	81	33
S_6	103	11

As it results from Table 1, for any specification no solutions were submitted by all members of the community, the smallest value of the number of students who have introduced a theme is 81, according to S_5 specification and the highest value for the number of solutions corresponding to a specification is 103, corresponding to the S_6 specification.

3. The homogenous applications orthogonality

Orthogonality studies the degree of similarity between two or more entities. Through this quality characteristics it is determined the extent to which the entities differ from each other.

To study orthogonality it is defined an indicator of orthogonality contained within the interval [0, 1], which takes the following values:

- 1, if the elements are orthogonal, i.e. they have nothing in common;
- 0, the elements are identical, i.e. they don't have different values for any feature.

If the indicator tends to 1 it means that the provided data sets tend to orthogonality, and if the indicator's value is close to 0 it means that the data sets have many identical elements.

The orthogonality of the solutions is determined as internal orthogonality and external orthogonality. Internal orthogonality sets the measure in which, within the solution, the used words repeat, the existent links between words within it.

The external orthogonality shows the differences or similarities that exist between texts.

The orthogonality of the provided solutions is studied on the basis of the following criteria:

- the size of file that stores the solutions, expressed as the number of needed bits;
- the frequencies of occurrence of words within the solutions, calculated by identifying the number of words occurrences within them;
- the frequencies of occurrence of linking words, calculated by identifying the number of occurrences of the linking words within the solutions;
- the size of solutions considered as the number of words or number of letters constituting solutions;
- the words arrangement within the solutions, determining the position of each word and identifying the similarities;
- the distances between words defined as the number of words which interpose between two considered words;
- the number of sections for the solutions.

Two provided solutions are orthogonal if they do not have common words.

The orthogonality of two texts is calculated by taking stock of common words.

The orthogonality study is given by:

- the need to establish the level of similarity between two solutions;
- the need to identify the identical solutions;
- establishing the source for the given solutions, depending on the similarity level existing between them;
- the need to determine each user's contribution to generate original solutions.

The orthogonality is defined depending on the solution's component which is studied:

- orthogonality throughout the all solution identifies the level of similarity between the two provided solutions, based on the common words, the procedures of their disposal and the belonging of the solutions to a studied field;
- orthogonality on the fingerprints identifies the level of similarity between certain parts of the solutions, comparatively with portions from the same solutions or from different solutions;
- the orthogonality through vocabulary calculates the similarity between two or more solutions based on the frequencies of occurrence within the solutions of the words from the vocabularies devoted to the studied field.

There are situations in which on a T solution are performed a series of transformations, achieving a T' solution by:

- replacing the words with synonyms;
- establishing pairs of words (a_i-, b_i) and replacing the word a_i wherever appearing with the b_i pair to create the impression of originality;
- constructing paragraphs identical in meaning (p_i, q_i), so that the p_i paragraph will be replaced by the q_i paragraph; the instruction *for* is replaced with the instruction *while*, the instruction *if... else* is replaced by two conditions *if*, the metering formula is being replaced by i = i + 1 with i++, the procedure type is replaced with the function type that returns certain type of data.

It is reasonable that for the orthogonality analysis to be considered the similar aspects between terms and instructions, to identify the relationship of transformation between two solutions.

When T' is transformed by an orthogonality application results T", in this situation the orthogonality between T and T" is being analyzed, and depending on the orthogonality level it is verified the fact that T' is the product of a transformation applied to T. To establish the orthogonality of two source files, S_1 and S_2, it is used the indicator:

$$H(S_1, S_2) = 1 - \frac{NCC}{\max\{LG(S_1), LG(S_2)\}}$$

where:

NCC – the number of common words;

LG() – the solution's length, represented as a number of component words.

The members of the community must meet certain deadlines imposed for loading solutions to the mentioned problems. After overcoming the limits, the application no longer allows access for the users. After running the module for establishing the level of orthogonality it is determined the orthogonality of each solution provided by the members of the community. In Table 2 is presented a centralized situation of the results:

Table 2

The weight of the orthogonality level on intervals

Problem specification	Orthogonality within the interval [0;0.75)	Orthogonality within the interval [0.75;0.85)	Orthogonality within the interval [0.85;1.00]
S_1	0	3	93
S_2	0	0	96
S_3	0	0	93
S_4	0	6	85
S_5	0	5	76
S_6	0	0	103

It is observed a high level of the orthogonality, fact based on:

- the enouncement of problems with multiple solutions solving;
- a low level re-using modules to solve the problems;
- the use of a wide range of variables;
- the use of various data structures for the application's implementation;
- the building of instructions by varying the orders of language.

Table 3 shows the minimum and maximum values of the orthogonality indicator corresponding to the six specifications:

Table 3

Minimum and maximum values of the orthogonality

Problem specification	Maximum value	Minimum value
S_1	0.996	0.799
S_2	0.996	0.861
S_3	0.996	0.906
S_4	0.996	0.822
S_5	0.995	0.81
S_6	1	0.799

From Table 3 results that only for the 6th specification was obtained a high level of the orthogonality, value obtained because the solutions corresponding to these specifications are more elaborated, their complexity being high.

4. ORTOES application

It is implemented to allow to a number of users to establish the orthogonality of the structured entities that are generated.

The ORTOES application is built for automation of the interaction with users. In the first phase, the application's manager loads the users that have access to the application's functions. Based on these records the users create their accounts and passwords for access, load the solutions, envision the orthogonality level.

A first problem about the application's management was the loss of passwords or accounts for access by the users. The problem was solved by querying the database, finding the user account in question and generating a new password.

Passwords are protected by encryption, so that the application's administrator can not view password's text, the only solution in this case being the passwords rewriting.

Application's functions:

- building the list of users;
- building access data allocated to each user (username and password);
- taking-over the solutions generated by each user for each specification;
- measuring the level of orthogonality on categories of solutions built by users:
- $H(T_{ki},T_{kj})$, where k is the category of solution proposed for the analysis, $k = 1,2,3$, and i and j represent the users whose solutions are analyzed;
- determining the aggregate orthogonality corresponding to the categories of processed solutions;
- determining the medium orthogonality for each user on the basis of the aggregated orthogonality calculated for each category of solutions;
- displaying the partial, final, individual and general results;
- re-introducing solutions generated with the detention of the last generated solutions, because the program product aims to generate the increasing of the orthogonality generated over a period of time, has the character to assist the process of generating solutions.

Application's administration includes:

- introducing the list of users;
- introducing the accounts and passwords for the users list, selecting each user's account and password through which they access the application;
- allocating the unique numeric codes for each user; the allocation is made when user's data are inserted and not when he creates his account;
- retrieving txt files containing solutions provided;
- launching the implementation of procedures which analyze the orthogonality of the provided solutions;
- displaying the introduced solutions and their orthogonality level so that users whose solution does not meet the criterion of orthogonality to reintroduce their solutions modified;
- displaying the conditions to be followed to load txt files containing the solutions provided;

- managing the different versions of the application for intervals of time when the user accesses the application in order to send generated solutions;
- managing the messages sent by users, and display them either individually or in the form of lists containing the final results;
- managing the files placed by users and prepare them to be accessed by the module which examines the solutions' orthogonality; the files are renamed and given the code name assigned to the user who uploaded them;
- storing the results concerning the solutions' orthogonality and ensuring their matching with the module it shows;
- storing the information about the solutions that have the orthogonality level lower than the threshold;
- generating the results relating the average and aggregated orthogonality, results provided for each user or for all;
- managing the user's accounts;
- generating new passwords in a situation when this is desirable;
- deleting a user account;
- identifying and viewing the solution provided by users.

Administration performed by users includes:

- defining the username and the password;
- uploading the files with solutions provided;
- viewing the individual and the final results.

For the solutions collected from community members through direct input from the keyboard, orthogonality is calculated depending on when they are loaded using the ORTOES application: first user who loads the solution will have the maximum orthogonality level because there are no similar solutions for comparison. Solutions which are loaded later will be reported to the solutions already taken, fact based on evidence and analysis of results, arranged according to the time of loading.

For the solutions generated by users verification is performed after the deadline is exceeded for loading txt files containing solutions, by running a C+ + module which incorporates txt source files and analyzes them individually.

To ensure the security of the on-line application which offers the facility of establishing the orthogonality of the solutions generated by the users, it was resorted to the facilities offered implicitly by the used MySQL data basis (the creation of users with unique credentials, stocking their passwords in an encrypted format) and, on the other hand, by using the work sessions.

For each user that opens online the application it begins an individual work session, this thing offering protection for the attempts of accessing unauthorized the application's resources. So, the work session is closed when the user quits the currents account or when more than 5 minutes passed without the user to use the application for his personal project.

Another implemented method for ensuring the application's security is represented by the *mysql_real_escape_string (string unescaped_string[, resource link_identifier]*) function. It is used to ensure the data before sending them as a request towards the MySQL server, through eliminating the characters potential dangerous from the row.

The elimination is made by adding backslashes (\x00, \n, \r, \, ‘, “ and \x1a), thing that forces the MySQL to interpret the characters rather as characters with a single apostrophe than as part of the declaration SQL.

5. Correlation between the complexity of solutions provided and their orthogonality level

The complexity of the solutions provided by community members implies details involving the size of solutions. The size of solutions provided is expressed as the number of words contained in each txt file source and size in bytes occupied on the drive file.

It starts from the premise of multi-criteria dependency between the orthogonality of the provided solutions, the number of words and the size of solutions, independent features, which stressed the constructed graphs.

To establish dependencies one uses statistical concepts, like:

- correlation, used to determine the degree in which the outcome variable is dependent on the independent variables;
- regression, used to determined how the variables influence each other.

From Table 4 results that the independent variables are strongly correlated, and the introduction of both variables in the model of dependence leads to its invalidation.

Table 4

Correlation between variables

	HT1	CUV1	DIM1	HT2	CUV2	DIM2	HT3	CUV3	DIM3	HT4	CUV4	DIM4	HT5	CUV5	DIM5	HP	CUVP	DIMP
HT1	1.00																	
CUV1	0.48	1.00																
DIM1	0.44	0.96	1.00															
HT2	1.00	0.47	0.43	1.00														
CUV2	0.41	0.66	0.70	0.41	1.00													
DIM2	0.35	0.65	0.72	0.35	0.98	1.00												
HT3	0.91	0.42	0.39	0.91	0.41	0.36	1.00											
CUV3	0.49	0.47	0.43	0.49	0.70	0.65	0.53	1.00										
DIM3	0.48	0.44	0.41	0.47	0.69	0.66	0.52	0.99	1.00									
HT4	0.85	0.45	0.41	0.85	0.39	0.34	0.88	0.50	0.49	1.00								
CUV4	0.34	0.32	0.30	0.33	0.55	0.48	0.36	0.55	0.53	0.41	1.00							
DIM4	0.32	0.31	0.30	0.31	0.54	0.47	0.34	0.53	0.52	0.39	1.00	1.00						
HT5	0.67	0.35	0.33	0.67	0.30	0.26	0.69	0.35	0.33	0.78	0.27	0.25	1.00					
CUV5	0.35	0.47	0.42	0.35	0.55	0.50	0.38	0.64	0.62	0.42	0.38	0.36	0.52	1.00				
DIM5	0.35	0.49	0.45	0.34	0.56	0.52	0.37	0.65	0.64	0.41	0.38	0.36	0.52	0.99	1.00			
HP	0.16	0.09	0.09	0.17	0.05	0.04	0.21	0.05	0.04	0.17	0.06	0.07	0.12	-0.06	-0.07	1.00		
CUVP	0.06	0.11	0.20	0.06	0.23	0.24	0.10	0.05	0.06	0.08	0.01	0.02	0.02	-0.04	-0.03	0.33	1.00	
DIMP	0.09	0.18	0.27	0.10	0.27	0.30	0.13	0.10	0.10	0.11	0.03	0.04	0.03	-0.05	-0.03	0.34	0.96	1.00

Taking into account the results concerning the dependence between the orthogonality level corresponding to the 5 provided specifications and the project, it has been concluded that between the orthogonality level and the number of words of each solution provided there is a stronger connection than between the orthogonality level and the size of the source file and are presented the results of the dependence analysis.

Specifying an econometric model involves the choice of using mathematical functions which can describe the relationship

between the two variables. For single factor regression model, the method most often used is the graphical representation with scatter plot.

Figure 2 shows that between the orthogonality of first themes and the source file size expressed as number of words is a linear relation, single factor regression (Y = a×x + b) directly proportional.

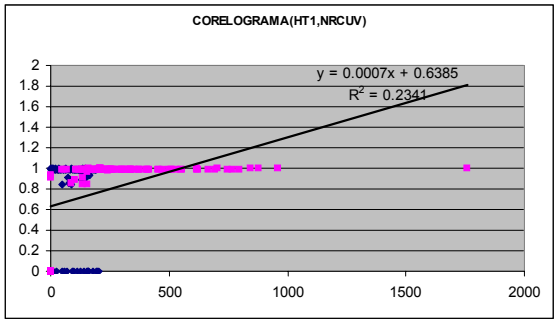

Figure 2. *Scatter plot orthogonality – words number for S_1 specification*

Using Excel it is build the linear regression model of addiction, for a total of 112 cases with a 95% probability and 110 degrees of freedom resulting model HT_1 = 0.0007 × NrCuvinte + 0.638. Parameter *a* has a positive sign and confirms our hypothesis that the link between the two variables is directly proportional.

The model shows that the variation of orthogonality is determined by the number of words in the proportion of 23.40%, the rest being affected by other factors, such as words belonging to a domain, the uniqueness of the words. Also, based on the tests performed using Excel results that the model and the regression parameters are valid.

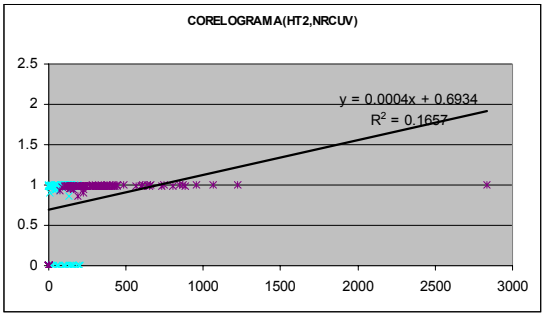

Figure 3. *Scatter plot orthogonality – words number for S_2 specification*

Figure 3 shows that for S_2 specifications there is a direct link between the level of orthogonality and the number of words used to solve the specification, the regression model being HT_2 = 0.0004 × NrCuvinte + 0.693, the level of orthogonality being explained in the proportion of 16.57% by the number of file words.

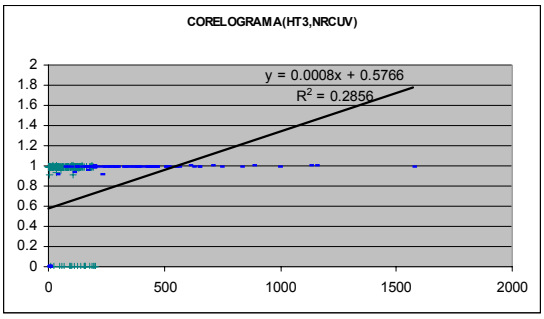

Figure 4. *Scatter plot orthogonality – words number for S_3 specification*

For S_3 specifications, dependence is linear, the regression model being HT_3 = 0.0008 × NrCuvinte + 0.576, for this case orthogonality is explained in proportion of 28.55% by the variation of the number of words as shown in Figure 4.

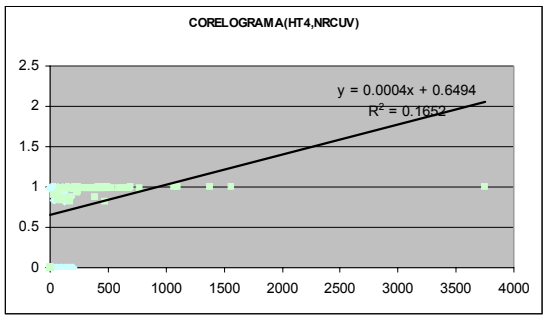

Figure 5. *Scatter plot orthogonality – words number for S_4 specification*

The link existing for S_4 specifications is shown in Figure 5, this link is a single factor regression, the regression model for this case is $HT_4 = 0.0004 \times NrCuvinte + 0.649$, variation of orthogonality is explained in proportion of 16.5% by the number of words variation.

Solving S_5 specifications led to a linear single factor regression model, represented in Figure 6, the regression model being $HT_5 = 0.0007 \times NrCuvinte + 0.503$, the variation of orthogonality is explained in the proportion of 27.47% by the variation of the number of words.

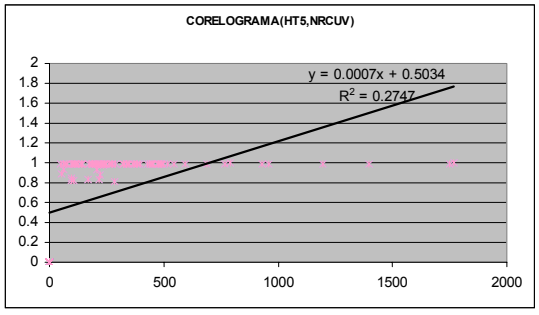

Figure 6. *Scatter plot orthogonality – words number for S_5 specification*

The S_6 specifications are designed to allow a larger approach from the community members, the size of files expressed as the number of words being larger.

In Figure 7 is represented the relation between the orthogonality of solutions according to S_6 specifications and the number of words used:

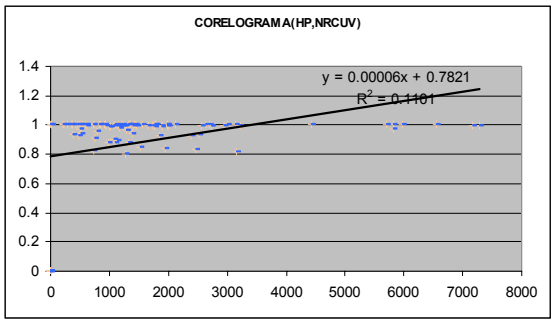

Figure 7. *Scatter plot orthogonality – words number for S_6 specification*

The relationship between variables is a linear single factor regression model, HT6 = 0.00006 × NrCuvinte + 0.782, the orthogonality variation being explained in proportion of 11% by the variation of the number of words.

For all presented models their validity and the regression parameters are tested with the Ficher test and Student test, models being constructed for a number of 112 cases with a 95% probability and 110 freedom degrees.

6. Conclusions

Defining the top down criteria for determining the sub-multitudes leads to a high degree of simi'larity of the sub-multitude's

components. Top down criteria should be defined so as to provide a filtrated resulting sub-multitude which contains components that strictly meet the criteria.

By building some similar components there are respected the quality criteria required by the citizen oriented applications. The use of similar applications in working with people helps to increase work efficiency and a higher data processing.

The ORTOES application ensures the source texts of the applications processing in order to determine their orthogonality degree. Building applications with a high orthogonality level and imposing certain restrictions with regard to their domain affiliation, same as the conformation to precise specifications, imposed to develop informatics' applications contributes to increase the applications homogenous degree, to make a better use of them by citizens.

Based on the built models it is observed that only approximately 20% of the orthogonality's value is influenced by the number of words. Turns out that except from the number of words there are other factors with powerful impact on the orthogonality level: originality, uniqueness of the used words, the newness which the defined concepts involve.

For the available data sets the linear models have a low relevance. The proposed technique represents an opening for the use of other classes of models and aims to establish the proportion in which the number of words influences the orthogonality level of a source file.

The application has an open character, allowing the introduction of new models and increasing the number of factors needed for the orthogonality's study, by introducing variables such as the distance between words belonging to the same class and the distance between identical words.

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Principles for Private and Public Internalisation of Externalities. A Synoptic View

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Abstract. *Externalities represent a market failure situation and they appear when one person´s activities influence other person´s welfare in a way that is outside the market mechanism. In contrast to the effects transmitted by market prices, externalities negatively affect the economic efficiency. They arise in everyday life and are noticed only if the effects are obvious. Ronald Coase´s approach started from the premises that externalities can be internalized. His model provides private sector means to defend against market failure. Coase´s solution to internalize externalities based on negotiation between the involved parties, given the property rights, has influenced the free market approach of market failures and today many economists consider that governments should work with the market and not against it using taxes and regulations. In the mainstream literature it is said that if for small local externalities the private sector can find solutions to solve problems, big scale externalities, such as global warming, need government intervention. As far as the last ones are concerned, we can talk about: a) the Pigouvian tax, which is a tax levied on polluting activities; b) the Pigouvian subsidy, given to those who suffer from negative externalities; c) the subsidy paid to individuals or firms to conduct activities with positive externalities; d) legal regulations, such as limits for emitting polluters and restrictions regarding the time of day or year when negative externalities can be legally produced.*

Keywords: market failure; externalities; Coasean Theorem; Pigouvian tax; Pigouvian subsidy.

JEL Codes: H23.
REL Codes: 7D.

1. The nature and characteristics of externalities

Externalities appear every time a person´s action influences another person, in a negative or positive way, without the first person to bear a cost or to receive a benefit from the undertaken action (Moșteanu, Iacob, 2007, p. 13). So, the fact that some persons´ actions influence other´s welfare does not generally generate market failure, as long as the effects are transmitted through price.

Negative externalities cause market goods overproduction, while positive externalities lead to an underproduction of goods, in both cases being induced different types of damages.

If a person has a factory that dumps its garbage in a river without an owner and another one makes her living fishing in that river, then the first person´s activities negatively influence the second person in a way that is not caught in a price change, therefore the damage done is not included in market decisions. For the first person, the clean water is an input. But the clean water is also a scarce resource that could enter in alternative use, like fishing. The efficiency principle (Rosen, 2008, p. 72) states that for the water the first person should pay a price that reflects its value as a scarce resource which can be used for other activities. But there isn't any price paid and the water is inefficiently used.

Externalities are the result of the incapacity to set property rights, therefore there are some opinions holding that the most proper solution to externality problem is the one in which the public authority grants the universal allowance to delimit through homesteading of previously unowned "public" resources to good faith first users (the universalization of privatization principle) (Rothbard, 1982, pp. 55-99).

If a river has no owner, there is no market for it and everybody would use it without payment.

But if this resource would have an owner, the price would reflect its value in alternative use, so it would be efficiently used. If the person that fishes in the river would own it, the one who has the factory should pay her a tax for polluting, that expresses the damage done, taking into account these changes in her production decisions, and therefore not wasting the water. But if the one who has the factory were the owner, he should ask a tax for the privilege to fish in the river, tax that depends on the pollution level. Hence, the factory´s owner would have an incentive not to excessively pollute the river, because it will trigger a smaller tax.

Externalities have the following characteristics (Rosen, 2008, pp. 72, 73):

▪ *Externalities can be generated by both consumers and producers.* Not all externalities are generated by companies. If a person smokes in a crowded space, she will diminish the welfare of the people breathing the polluted air. Smoking has also other negative effects, both physical and financial, such as labour productivity decrease, the risk of generating fire, but, in some degree, we can talk about a few positive effects that smokers have on non-smokers.

There is an interesting approach of externalities (Gruber, 2005, pp. 160-161) represented by the (cynical) positive externalities for tax payers, generated by smokers´ premature death. Smokers pay taxes for social security programs, but don't live long enough to benefit from them, leaving more money in the government budget that can be used for the non-smokers.

▪ *Externalities are reciprocal.* If we return to the previous example, the one with the river and the two persons managing their activities based on it, the individual dumping garbage in the river is instinctively considered the polluter. But the other person can also be considered as polluting the river with fishermen, increasing the social cost of the factory´s owner. From the social point of view, as alternative to fishing, using the river for dumping garbage is not necessarily more damaging, everything depending on the costs of alternatives for each of the two activities.

▪ *Externalities can be positive.* Vaccinating against smallpox is an example of positive externality. In the process of vaccinating there are some costs, such as the vaccine price, discomfort and small risk of inducing a disease. In case of a biological terrorist attack, the vaccinated persons would benefit, meaning that their probability to get sick would be very low. On the other hand, from a person´s vaccination, other members of the community will benefit, meaning there is a small chance they will get the disease from that person. Yet neither the vaccinated person nor people around it take into account such external effects which measure the costs and benefits of this kind of activity, in the absence of government intervention.

▪ *Public goods can be referred as a particular type of externality.* When a person generates a positive externality, with effects for everyone in the economy, the externality is a pure public good. Most of the time, the distinction between public goods and externalities isn't very clear. For example, if a person installs in his garden a device for electrocuting flies, it is considered that a pure public good has been created if it had killed the flies from his whole community. In case only a fraction of the neighbours has been affected, then an externality has been generated.

Taxonomically speaking, the most popular way of classifying externalities is between negative (external costs) and positive (internal costs) ones.

On another account, using as the main elements producers and consumers, there can be identified four possible combinations of externalities (Moșteanu, 2005, p. 21): *from consumer to consumer, from producer to producer, from consumer to producer and from producer to consumer.* Externalities from consumer to consumer are known a pure consumption externalities, those from producer to producer as pure production externalities, those from consumer to producer mixed consumption externalities and the externalities from producer to consumer are known as mixed production externalities.

Another way of classifying externalities is based on the scale criterion. In this respect, there are externalities of small dimension and produced at local level. In this category, there is, for example, the impact loud music on a roommate, smoking, alcohol consumption, drug consumption. There are also worldwide externalities, the most relevant example being global warming.

In the table below there are synthetically displayed some types of externalities.

Table 1

Example of different types of externalities

Types of externality	External costs	External benefits
Pure production externalities (*generated and received in production*)	Acid rain pollution discharged by a power station which harms a nearby commercially run forest	A farmer benefiting from drainage undertaken by a neighbouring farmer
Mixed production externalities (*generated in production but received in consumption*)	Dust polluting discharged by a brickwork, breathed by asthmatic children living nearby	Commercially owned bees pollinating fruit trees in neighbouring gardens
Pure consumption externalities (*generated and received in consumption*)	Noisy music at a party disturbing neighbouring households	Households benefiting from the beauty of neighbouring gardens
Mixed consumption externalities (*generated in consumption but received in production*)	Congestion caused by private motorists increasing firms´ transport and delivery costs	Commercial bees keepers benefiting from private gardens of nearby houses

Source: Powell, Ray, *Advanced Economics,* Raithby, Lawrence&Co.Ltd, Leicester, p. 152.

2. Internalising externalities

Internalising externalities requires actions where *private negotiations* or *government intervention* lead to a price that reflects the total external costs and benefits of a person's decision.

2.1. Private solutions to internalising externalities

a) In order to solve the problem with externalities, Ronald Coase (1960) suggested *direct compensations to those affected*, in this respect releasing a theorem that carries his name, consisting of two parts.

The first part of Coase theorem states that when property rights are adequately defined, negotiations between the party creating externality and the party affected by it determine reaching social equilibrium. Because parties' negotiations end with internalising externalities, it is revealed that externalities don't automatically generate a market failure. The government intervenes only to rigorously set property rights, the rest of the problems being the private sector's responsibility.

The second part of the theorem states that the efficient solution doesn't depend on which party receives the property rights, as long as these are given to one party.

Coase used as example (Powell, p. 157) locomotives which used wood as fuel and generated fires on farmers' fields. If farmers had "property rights to prevent crops' destruction", they could sell those rights to railways companies, as long as the price

paid was higher than the damage done. But if the railway companies had the "property right to emit sparks" farmers could pay the companies to reduce them, the companies accepting this deal only if the payment was higher than the foregone earnings.

The Coase theorem makes two assumptions: the costs of negotiation (transaction costs) between parties are low and the resources' owners can identify the source for the damage done to their property and can legally prevent these damages. The theorem is relevant for situations where only a few parties are involved, externalities are of a small scale, produced locally and their sources are well defined.

However, in some situations negotiation is impossible or it could be done, at least in theory, with higher costs, as is the case of air polluting, where millions of people are affected. Moreover, even if property rights for air could be set, it should be difficult for the owners to identify those responsible for polluting the air and to what extend each person is responsible for her share (Rothbard, 1982).

b) Another way to internalise externalities is *merger of the involved firms*. In this situation each would take into account the damage he could produce to the other party and so, based on activities' coordination the profit of the new entity will be greater than the sum of individual profits, when each would independently take decisions.

c) Individuals can't merge, but sometimes *social conventions* can be considered an attempt to determine people to take responsibility for their own externalities. For example (Rosen, 2008, p. 81), children are taught that throwing garbage on the ground is an irresponsible and not nice gesture, inflicting costs for other persons. Certain moral values make people coordinate each other and therefore internalise externalities their behaviour might create.

2.2. Government's solution to internalising externalities

a) A solution for internalising externalities, given by the economist A.C. Pigou, is to levy o tax on the polluter to compensate for the fact that some inputs have prices too low. The Pigouvian tax represents a tax levied on each unit the production that generates externalities, until the price paid by the consumer equals the social marginal cost of the production.

Corrective taxes compensate for the fact that there isn't a market for externalities.

It has to be noted that the purpose of the corrective tax is to reduce the actions generating externalities to an optimal level and not to directly compensate those affected. This because if it was common knowledge that people affected by externalities were to receive a certain sum of money, then more people would be tempted to expose themselves to externalities, in comparison with the situation where no compensation was given (*moral hazard*).

A problem with this approach is that no incentives are given to search for ways to reduce pollution, others besides reducing production. Since taxation is levied on each unit of production, the company is not

motivated to install a pollution reduction technology to reduce emission of pollutants on each production unit, because this wouldn't diminish its total tax burden. To solve this problem, there can be levied a Pigouvian tax on each polluting emission unit, called emission fee. For each emission unit reduced, the company bears a cost, but, due to the emission tax, the total amount of money owed to the government diminishes with every unit of pollution reduced. Reducing pollution is done as long as tax economy for each unit exceeds the cost of reducing pollution with another unit.

b) An efficient level of production can be obtained paying the polluter to reduce his activity.

The subsidy is paid to the polluter for each unit of production he foregoes.

Furthermore, subsidies can be money paid by government to individuals or firms to take up activities with positive external effect. Subsidies for producers move the supply curve to the right, increasing both the quantity of the good and the positive externality generated by its production. Subsidies for consumers, paid directly to consumers in order to spend them on a certain good, move the demand curve to the right. For example (Powell, p. 161), to encourage public transport, the government gives subsidies for railway or municipal transport or can provide subsidised tickets for passengers.

c) Regulations, as a means to reduce externalities, can take the form of limits for pollutants emission or restrictions regarding the time of day or year when negative externalities can be legally produced. Total elimination of the negative externalities is impossible to achieve because it would mean elimination of some goods vital for survival.

d) The traditional regulations can be improved by adding a flexibility element, such as *negotiable emission rights*, that allow reaching a certain level of production and have as feature their transferability between parties. Companies or countries capable of reducing pollution more than the law permits can sell the remaining emission rights to those companies or countries which, for various reasons, can't or don't want to reduce pollution below the maximum limit. According to the Kyoto Treaty[1], Romania, which was also the first country to sign the protocol, can sell other states the right to emit greenhouse gases within the limit of the legal quota of 250 mil tones of gases carbon dioxide equivalent less how much pollutes today.

Choosing a type of instrument for internalising externalities can be done according to the objective set by the government, which can be reducing pollution and lower the costs with reducing pollution. As a relevant example, Poland and Sweden have used taxes for polluting combined with regulation regarding waste water treatment, whose discharge in the Baltic Sea have generated considerable damage. Moreover, London uses a congestion charge, levied on motorists who want to go through the centre of London, for the purpose to avoid road traffic, considering that for reducing environment pollution fuel taxes are more appropriate.

Quantity approach of externalities (Gruber, 2005, pp. 140-141) (regulations) sets to reduce pollution as much as possible, regardless of the costs, being the best method to obtain a maximum benefit when the pollution effects are big both for the environment and for people's health.

In the case of the price approach (taxes and subsidies), costs with reducing pollution will never exceed taxes, letting the pollutions production to a level that is not optimal with respect to the pollution level. If marginal costs prove to be greater than expected, they will apply a smaller reduction.

If an environment protection is desired, then it is best to choose the quantity approach and leave the price approach for when the emphasis is on cost rather than fighting pollution effects.

If theoretically the government corrective role for solving externalities defines itself by setting certain intervention measure, such as taxes, subsidies, regulation, to lead to a private cost close to the social cost, in practice this internalising operation is not so simple due to difficulties in measuring external costs.

3. Conclusions

Externalities appear when a person´s activity influences another person, actions not included in the price mechanism. In general, externalities have their roots in the absence of property rights.

Negative externalities cause market goods overproduction, while positive externalities lead to an underproduction of goods, in both cases being induced different types of damages.

If the government appoints property rights, its intervention being limited only to this job, Coase believes that the involved parties can negotiate to obtain an efficient output. This solution for internalising externalities asks for inconsiderable negotiating costs, small scale externalities and exact identification of externalities' source.

In case market fails to solve the externalities' problem, government intervention can be justified. The government has two types of instruments to intervene: the approach based on price (taxes, subsidies) and the approached based on quantity (regulations), which it can manage depending of its objectives.

Note

(1) Forces the sighnig countries to reduce greenhouse gases by at least 5% below the 1990 emissions, between 2008-2010. EU engaged itself in a 8% reduction.

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Financial Globalization and the New Capitalism

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Abstract. *Financial globalization, a complex phenomenon that has multiple facets, is directly influenced by some aspects characterizing the current stage of capitalism. In order to decrypt the set of such interferences, the consequences have been emphasized of the excessive trust in the market mechanisms, the role of deregulation and liberalization in promoting a new economic direction, as well as other theses representing the essence of neo-liberal revolution. The realities specific to the last three decays of the 20th century generated enhanced criticism regarding the myth of pure and perfect transparency, the market inability of self-regulation and the illusion of perfect information.*

The excesses of neo-liberalism imposed the need for a new paradigm, concretized in the mutations in the nature and mechanisms of capitalism, the domination of finances and knowledge, a paradigm in which market globalization and financial profitability logic are becoming priorities.

In the second part of the article the conditions are analyzed that favored the occurrence and expansion of financial globalization, as well as the multiple implications of such over the micro and macro-economical mechanisms. A particular focus is on describing the characteristics of financial globalization in the current phase: the occurrence of new financial players (institutional investors) and tools, markets de-localization and un-intermediated financial operations. As a conclusion, the tendencies are noticed of the financial world economy to become fragile, of fading connections between the financial and the real economy, of enhanced risk for financial accidents to propagate. Based on these observations, the extent is emphasized to which financial globalization provides the possibility of the financial crises to occur and expand.

Keywords: financial globalization; shareholding capitalism; de-localization; des-intermediation; institutional investor; post-political; economy becoming more financial.

JEL Codes: B51, F59.
REL Codes: 10B, 19H.

Political and ideological mutations

At the end of the 70s, a genuine liberal revolution took place, inspired by Fr. Hayek and his adepts, the central focus of which was to reinstate the market mechanism, the reflux of ethatic/etatic power, privatization, de-regulation and liberalization.

The excessive trust in the market mechanisms (the magic of the market) and the thesis regarding the markets efficacy represented the main arguments for fighting against the Keynesian interference.

By giving up its traditional activism, reducing taxation, calling for de-regulation or liberalization, the state created a new economic direction. *The era of big government is over* became the slogan of the promoters of the neo-liberal ideology supremacy. A core feature of this new vision was its pursuit for universality (Plihon, 2003, p. 23), describing the market as a natural study of the society. The impossibility of providing an alternative conception of the world turned the liberal doctrine into the *unique thinking* and liberalism into the *natural order*. Therefore, the conservative revolution was considered the new ideological dogma, based on the idea that the state is not apt for managing the economy, as its regulations were unfit or inapplicable.

The neo-liberal doctrine represented the core of the Washington Convention, calling for trade and finance liberalization, de-regulation and privatization, the recoil of public expenses and taxation in favor of private activity, providing for priority of international investments and financial markets. In a nutshell, the main idea is that of decline of the politics and of the state in favor of private interests.

At the beginning of the third millennium, the neo-liberal ideology is highly contested, and proposals are made of giving up to the *unique thinking* and of using scientific methods in order to reflect reality. The main reproaches refer to the myth of pure and perfect market transparency, dominating ideas of the economists of neo-classical formation. More and more specialists considered that the entire theoretical apparatus had been created on false presumptions. Thus, markets are not perfect simply by deeming the state intervention as inefficient. Also, at the core of the de-regulation philosophy lays the self-regulation virtue. Nonetheless, self-regulation faces systemic risks.

By exacerbating the individualist ideology during the last three decays, the obsession for individual wealth and success to the damage of the common welfare, as well as the excesses of an *amoral* liberalism, concerned with the privatization of profits and socialization of losses, have called for the acknowledgement of the new paradigm, of an alternative that is more adapted to the current demands of mankind. Without speaking of an *ideological void* or of a *thinking blockage*, the concerns for recycling ill-fated, simplistic or simplifying ideas are increasingly manifested. In the same time, the analyses are noticed made in order to asses the current stage and the future of the capitalism.

Most researches are grounded on the width of the changes that have occurred during the past decays, the depth of which exceed the mainly technological mutations, invoked by the theoreticians of the *new economy*. The beginning of this millennium is characterized by the progressive occurrence of a new form of capitalism, marked by the domination of finances and knowledge.

The new phase, financial capitalism, provides priority to the global market and the financial profitability logic (Batsch, 2002, p. 5). This new regime is marked by economic and financial turbulences, which are the consequence of internal contradictions, mainly the capitalism's inability of self-regulation. Significantly different from the capitalism of the *30 years of glory*, the new phase troubles the social relations and introduces new forms of inequality.

Other debates refer to the legitimacy of dividing the wealth created by the capitalist societies, whereas the world economy faces a genuine deadlock. The conclusion of such analyses is that in the current phase in creating welfare the short-term and financial vision are dominating (Artus, Virard, 2007, p. 6).

Under such circumstances, the obsession for short-term profitability has ill-fated consequences over the economic and social system. The short-term logic of high profitability implies the scarification of the future. In such an interpretation, the existence of capitalism without a project creates the risk of self-destruction. The fact that the current system is in danger is mainly a matter of its own excesses.

The current debates introduce some theses and ideas of questionable scientific nature. Thus, by invoking the tendency of the public power of withdrawing from the multi-polar society, in which the increasing role of the non-ethatic players is asserted, the politics lack of power is claimed and its tendency of disappearing from the Western democracies. Under such vision, the ideologies have become superannuated, leaving room for pragmatism. Re-discussing the role of public power in the Western world is supported by the width and deepness of the mutations that are specific to the global society. To declare the post-political nature of the 21st century is not equal to the disappearance of the politics. In this new framework, where the power positions have dissipated, the politics has lost significant portions of its prestige and influence, following the boost of globalization and disintegration of budgetary movement margins.

More than ever, the size of the effects of the economic and financial crises and the creation of the conditions for economic re-launch call for the identification of new regulation forms, founded on freedom and responsibility, and not for the failures of the market economy to be exacerbated or for the *state bankruptcy* to be proclaimed (Laine, 2009, p. 19).

The understanding the post-politics as an essential mutation should be grounded on ascertaining obvious realities. On one hand, the model of market economy, grounded on exchange, freedom and responsibility, generates many positive externalities, which justify its being contested. On the other hand, the crisis of the welfare state, to which the transfer of a part of national suzerainty towards supra-state institutions enhances the weakness and relative recoil of the politics compared to other powers.

The predictions regarding the future of capitalism are various. A trenchant opinion is that of those claiming that we will not face the end of history, but the dawns of a new history. Although it has succeeded in providing a tremendous progress and to impose its individualist representation and behavior model, capitalism has also become inefficient in allocating resources, and has been eroded by its own contradictions. It faces a long-lasting planetary environmental crisis, as well as a profound economic and financial

crisis. Throughout the past decays, the inequalities have amplified, the economy has become highly criminalized, the finances have become increasingly independent from material production and so on, imposing the need for giving up to capitalism, however not to market economy, with the environmental emergency and social justice placed at the very core of the political project. In the opinion of some, capitalism reached its peak and is about to end (Kempf, 2009, p.12).

The causes and implications of financial globalization

The new global capitalism is the result of two major forces: the new technologies and financial globalization. The shift to non-assets based capitalism is viewed as one of the significant features of the world capitalist system, the essence of which is the trans-bordering of technologies and communications. Technological innovations have significantly contributed to the transformation of the general conditions of economic activity, they have dazzled the financial markets and have initiated the processes favoring the initiation of turbulences in the economic and financial field.

The globalization process, which contributed to the creation of a planetary wide economic area, is generally associated to the mechanisms for economy integration upon various levels: commercial integration, with the goods and services market opening, financial integration, characterized by the 3D (de-regulation, de-regularization, des-intermediation), and productive integration with companies becoming multinational.

The political and economic context at the end of the 20th century highly contributed to the boosting expansion of international finances. Thus, the conservative economy influenced the dominating financial doctrine and contributed to the export of Anglo-Saxon financial culture. As a political project, financial globalization served the interests of the market fundamentalism adepts and was supported by political decisions and state involvement for de-regulation and elimination of the obstacles impeding the international circulation of the capital. Whereas in the age of Ford capitalism the economy and finances were organized on national bases, starting with the 70s, as a reaction to the crisis of the Ford regime, most industrialized countries introduced significant reforms destined to liberalize and modernize their financial systems, for the purpose of inserting such in the global finances. Therefore, a new financial system started to function, in which capital markets gained priority compared to the banking financing. As a general rule, reform policies referred to two sets of measures: radical financial liberalization, together with banks privatization and creation of a wide capital market, which in the EU took the form of unique capital market founded by defining common rules and creating the unique currency.

The financial modernization process initiated by the public powers also referred to the need of financing the public debt. While the value of such increased considerably, national public treasuries had to call for international investors in order to purchase national public titles. Thus, in the 80s the states became one of the main players on the international financial markets. In order to meet the financing imperatives, industrialized countries introduced financial modernization and liberalization policies. Such concern had already begun in the 70s and represented a

decisive factor of financial globalization. The liberalization of the international finances was made in a specific context. On one hand, the competition between financial markets represented a significant pressure factor in favor of liberalizing the international capital movement. The states were the main players of such liberalization, as they eliminated the restrictions over capital movements, thus contributing to an increased level of financial opening.

Financial liberalization is based on one hand on the critical analysis of the ill-fated effects determined by the regulation and ethatic control over the financial systems. In the same time, aspects were also considered regarding the economic efficiency. In other words, favorable effects were predicted regarding the growth rhythm in the countries adopting measures that were favorable to liberalization.

By removing national borders, finances liberalization created the conditions for unlimited capital movement on an international level. The new technologies amplified such evolution, allowing for capitals to move rapidly along the planet. As a particular aspect, financial and technologic innovations supported each other. Financial liberalization and the new technologies eliminated the space-time sides, which represented the triumph of virtual economy. The new policies, applied by the governments of the main developed countries, lead to the creation of a unique money market on a planetary level. By such, the international financial system became a unified mega-market, characterized by time unity (continuous functioning) and space unity, as national financial markets became inter-connected by modern communication networks (Plihon, 2003, p. 26).

Financial globalization represented a complex, multi-faceted process, generated by the joint action of multiple factors, with obvious features and generating profound consequences over the evolution and stability of the economic and financial environment. Such phenomenon accompanied and even manifested the tendency for overcoming the other components of the world economy globalization. Therefore, the inter-connection between countries obtained by means of the world finances reached a higher level than the integration by goods and services markets. Financial globalization can be defined as the inter-connection process of the capital markets, on a national and international level, leading to the occurrence of a unified planet wide market. Such is manifested as one of the main sides of the globalization process and of the increased inter-penetration of national economies.

Starting with the 80s, the development of international financial activity has been marked by progressive de-localization of the financial markets in the developed countries. The evolution to globalization has been facilitated and amplified by a series of factors: capitals movements arising from the need of covering the external balance deficit, speculative capitals movements in search of remunerating placements, the de-regulation of national markets, favoring the international capital circulation, the development of financial innovations, which will lead to the occurrence of new financial tools, the progress of telecommunications and informatics, generating more rapid transactions and so on (Dumas, 2003, p. 114).

The joint action of such factors has concretized in the form of opening the national markets, which in their turn became part of a global financial market.

The role of finances in the world economy changed significantly. In the past, the function of the financial system consisted in ensuring the financing of the world trade and the payment balances deficit. Under the new circumstances, international financial flows have registered a progressive explosion, with no direct connection to the world economy needs. Amounts similar to the GDP of France are transferred daily on the world stock exchange. On the other hand, on such markets the transactions induced by financial operations exceed 50 times those regarding the international goods and services trade. Such evolutions emphasize the fact that under the new conditions international finances follow their own logic and are indirectly connected to the financing needs of the exchange operations and investments in the world economy. The main purpose of the financial operations is a speculative one.

The multi-form nature of financial globalization calls for a complex analysis in order to allow for its main features to be identified. Initially, the financial integration movement was made in an indirect manner, due to the development of a "supra-state" financial market, which was independent from the national financial markets. Since the 80s, financial integration has progressed based on a different logic, in close connection to the national financial markets, which has lead to the creation of the world financial market. From this standpoint, financial globalization is viewed as a final stage in the process for integrating the national financial markets (Lemoine et al., 2007, p. 393). Under such circumstances, the financial globalization phenomenon calls for multiple sided approaches. One of them refers to the very reality of such phenomenon. It is undeniable that the financial integration level has increased during the past decades. In order to emphasize its multiple valences, it is necessary for various sides to be approached, each regarding a privileged specific measure, and also the need for overcoming a simply quantitative analysis of the constitutive aspects of financial globalization.

Also, the distortions and inequalities specific to the current world economy are emphasizing an asymmetrical financial globalization. Whereas international transfers of savings are registered from the wealthy countries to the poor ones, a significant part of the planet is excluded from the area of defining processes regarding the international finances.

The capital inflows in the emerging countries have intensified. The structure of those countries' external financing has changed significantly. While the public funds represented two thirds of the long-term capitals received by such countries in mid 80s, nowadays such represent only a quarter. The major growth of financial operations represents a proof of international financial integration. Its width can be also evaluated in view of the ascension of capital movements and financial assets stocks in the developed countries, of the operations registered on the international capital market, as well as in the transactions registered on the stock exchange and on the derivative markets.

On a general level, the trans-border capital flows (portfolio investments – shares, bonds –, foreign direct investments and banking loans) have tripled since 1995, and exceeded 4,000 billion US dollars in 2004. In the same time, it is interesting to notice that such financial assets are owned to an

increasing percent by non-residents. At the present moment, foreign investors own 12% of the American shares, 25% of the private bonds and 44% of the titles issued by the American Treasury.

Globalization has generated cross-border opening of the national markets, along with the internal markets facing an augmenting of the existing areas: the monetary market (short term monetary operations), stock exchange, depository markets etc. Under such circumstances, the investors aim at obtaining the best profitability levels by shifting from one title to another or from one currency to another: from EUR bonds to US Dollars bonds, from private bonds to Treasury notes and so one. As a whole the specialized markets (the financial, currency or depository ones, etc.) are becoming the components of a global financial market.

Financial globalization implies the call for financial markets for the purpose of financing economies, increased competition between market players and the possibility of covering all of their sectors. Such situations become possible due to the congruence of a number of phenomena: de-localization of the financial markets and banking sector, de-regulation, marketing and mobilization of financial intermediaries balances (Lemoine et al., 2007, pp. 424-425).

Delocalization has contributed to the opening of the national financial markets. To such end, an important role has been played by the European directives for financial liberalization, which have led to the elimination of the effective exchange control (in 1989 in France and in 1987 in England). On an internal market, de-localization has contributed to the suppression of previously existent obstacles between the areas of the financial markets. Along with the monetary, strictly inter-banking market, a short-term and medium-term negotiable debt titles has been created, which can be accessed by all business units. Thus, any investor can benefit of the opportunity of deciding upon the duration of his placement in negotiable titles. In parallel, this market has been stimulated by a diversified offer of short- and medium-term titles: deposit certificates, treasury notes issued by non-financial institutions, negotiable treasury bills, or negotiable medium-term bills issued by companies and banks. In mid 80s, some American states authorized the diversification of the banking activity so that to expand placement operations into securities, insurances and even movables. After the abolishment in 1999 of the Glass Stegall Act, commercial banks can now establish financial holdings, a statute which will allow them to reach all financial and insurance areas. Under such circumstances, de-localization caused the bank's activities to become less specialized and the competition pressure to increase, whereas such became competitors in this field. In the same time, de-localization called for a de-regulation of the banking activity.

Marketization refers to the increases sensitivity of financial intermediaries as regards the price established on the financial markets. The basic banking interest becomes increasingly dependant on the interest rate, which in its turn becomes market price.

The increased complexity of the banking activities has also generated the *movementi-zation* of accountancy records. In fact, such a tendency refers to the regain of an ever increasing reflection of negotiable titles in the banking balance sheets (mainly securities), hence the occurrence of the term.

The current stage and perspectives of capitalism can also be assessed in view of financial globalization. There is no doubt about the important role of internationalization and globalization of the financial activities in the development of the world economy, as such have generated increased financial availabilities allocation. Markets de-localization, increased competition between financial intermediaries and the development of more flexible, less expensive and risking financial tools have lead to the improvement of the financial markets' efficacy and to the adjustment of the availabilities to the financing needs.

The amplified role of the financial markets in the economies' financing refers to the tendency towards des-intermediation and emphasizes the diminishment of the traditional banking activity. In some countries (Germany, France) banks hold the dominant position in the intermediary financing circuit. Financial systems also exist (as those in the Anglo-Saxon countries) marked by the central role played by the financial markets in the economy financing. The des-intermediation process stands for the recoil of the banks (indirect financing) in connection with the market (direct financing). In reality, the border between banking financing and market financing is becoming more and more fluid. In other words, banks are financing companies more and more, by buying the titles issued by such (shares or bonds). In the same time, banks collect an important portion of their resources by issuing titles by themselves. Thus, banks are adapting to a new form of intermediation: *market intermediation* (Plihon, 2003, pp. 59-60).

In conclusion, financial markets compete around a financial market model that privileges the stock exchange intermediation, to the disadvantage of banks. A financial *industry* is growing, characterized by complex financings and financial engineering over the titles.

The existence of different growth financing models explains why some countries are more exposed to the financial risk than others. Thus, the rankings of developed countries as regards economic efficacy and financial soundness are different, as their respective objectives are antagonist. The Anglo-Saxon models, with their particular features, are deemed as risk models (Chabot, Chabot, 2007, pp. 243-244).

Despite the particularities regarding the national financing systems, yet another feature of the financial globalization refers to the increased tendency for the world economy to become more financial. The expansion of the financial economy was stimulated by the oil shocks in 1973 and 1979. The sensitive rise in the oil price transferred an important mass of capital towards the producing countries. Most of these petrodollars were reinvested on the Western financial markets. In the same time, the countries which do not produce oil have started to become massively indebted, which has lead to a significant increase in their external debt. Under such circumstances, in order to attract oil incomes the obstacles have been eliminated that limited capital movement, also in order to ease the management of states' debts. The said objectives were achieved by placing the Treasury bills on the financial markets in the form of bonds, which allowed governments to finance themselves without creating any inflation at all. In the same time, the obstacles were eliminated that separated the different

financial functions (banking deposits and speculative investments), so that to attract capitals on the stock exchange. The increased de-connection between the evolutions of the financial activity accentuated the instability of the international financial system.

On a micro-economical level, the transformations of the companies' financial structures are becoming more and more obvious. Due to abundant savings following the improvement of their results, companies have gathered important available funds, which were used in order to reimburse debts, make financial placements and buy their own stocks. The increased share of financial activities compared to investments emphasizes the companies' management becoming more financial, which was one of the main features of the shareholding capitalism. In general, the occurrence of a new financial behavior of companies has had important consequences over the activity of financial intermediaries, banks in particular.

Financial innovations and the occurrence of new financial tools and actors have also influenced the national and world financial context.

The use of complex financial tools is destined to allow investors to obtain high profitability levels, higher than those from so-called traditional assets. During the last decades, the number of financial tools and sophisticated investments structures has faced unprecedented development. The option for such tools or for financial operations of high leverage effect is mainly due to the low level of the interest rates, far from meeting the needs of investors aiming for high profitability levels. The investors obsessed with the pursuit of profitability levels, imposing excessive profitability to companies, significantly contribute to the capitals' becoming more and more fragile at the beginning of the 21st century (Artus, Virard, 2007, p.70). The myth of 15% profitability rates under the dictatorship of return on equity represents the emblematic slogan of that period. Another phenomenon that has influenced the recent period was the double movement for centralization and globalization in the savings' management. Financial assets owned by individuals are more often managed by investments funds, called institutional investors or zinzins, which represent a heterogeneous category of investors. According to a classification by OECD, institutional investors include pension funds, mutual funds (OPCVM in France, Mutual Funds in USA), insurance companies, hedge funds. To such a number of other types of financial investors are added (credit institutions, investments companies etc.). Along with banks, institutional investors have become major investors, with the financial investors managing over 50,000 billion dollars in 2003 (160% of the GDP of the countries in OECD).

Conclusions

The often controversial debates over the assessment of the nature and implications of the financial globalization are particularly covered by the media. They equally refer to the relationship between the finances and the economy and to identifying the features of the current stage of the capitalism.

The decisive role of financial factors and the expansion of the financial markets' influence over the economy have influenced the economic growth conditions. This mainly refers to a growth regime the cyclical fluctuations of which are highly influenced by

the prices of financial assets. Sometimes, voices from anti or alter-globalization movements accuse financial globalization of diminishing the states' suzerainty over the financial environment and of their limiting the use of the *budgetary weapon* on increasing the economies' dynamic nature. Also, the priority of the financial area is contested. National macro-economic policies have been subordinated to the imperatives of international finances. States are thus subordinated to the *tyranny of the markets*. Central banks, which have become independent from the political power, are de facto entering under the dependence of financial markets. In reality, the main issue faced by monetary authorities in the context of financial globalization is not prices stability, mostly solved by now, but financial instability. In fact, from the analysis of the relationship between financial globalization and financial instability, as well as from emphasizing the limits and speculative nature, numerous questions have occurred, the answers of which are yet to come. Among others, the destabilizing nature of the speculations on the financial markets is referred to, the identification of solutions for protecting the economies, mainly in emergent countries, the way how financial globalization favors the occurrence of financial crises, as well as mitigation modalities etc.

The current realities in the world economy have lead to the reopening of the financial laisser-faire myth, and of the thesis regarding the tremendous benefits arising from the free capitals movement. While the international financial system is becoming more and more integrated, the risk of a financial accident to propagate from one area to another, from one entity to another, is increasing. The domino effect and the system risk are mentioned. Financial globalization is the one generating the germs of a systemic and unavoidable risk of financial instability, considering that it has speeded up the interconnection of the financial markets.

During the last decades we have witnessed a significant increase in the speculative financing, which has been carried out independently from the financing needs of the real area. The spectacular increase of the portfolio investments is a reflection of such tendency, whereas speculative financing meets short term profitability logic. Therefore, external financing of the economies is made with increasingly volatile capitals.

The possibility for financial crises to occur and develop shifts the interest to the issue of global finances governed by self-regulating market mechanisms and the need for the international institutions to get involved.

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Regional Discrepancies in the European Union

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Abstract. *The accession of the 12 Member States with GDP figures below the EU average, lead to increased differences between EU regions. The article analyses the discrepancies between NUTS2 and NUTS3 regions in EU-27, from the point of view of GDP/inhabitant and the dispersion of regional GDP/inhabitant.*

In case of NUTS3 regions, the majority of Member States registered increases in dispersion in the period 2000-2005. Romanian counties were characterized by an accentuated gap between regions.

Concerning NUTS2 regions, there are only eight Member States that shaw decreases in dispersion in 2000-2005, these being also the most populated. Nevertheless, at global level, the EU registered a decrease in regional discrepancies.

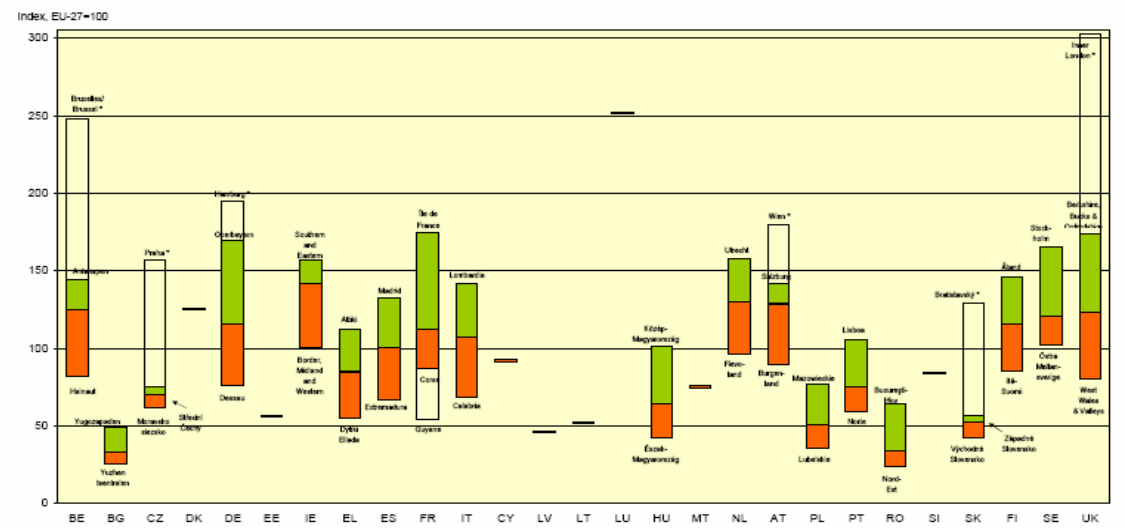
Keywords: regional policy; NUTS regions; regional discrepancies; dispersion of regional GDP per inhabitant; differences between EU regions.

JEL Codes: R11.
REL Codes: 16H, 16J.

Although the EU is one of the richest areas in the world, there are considerable differences between its regions from the point of view of development and opportunities. The accession of the 12 new member states, whose GDP/inhabitant is below the EU average, lead to an increase in the discrepancies between regions. Through its regional policy, the EU aims to transfer resources from the prosperous areas to the less prosperous ones. The purpose is to modernize less developed regions in order to give them the chance to catch up with the more developed ones.

The discrepancies between the regions can have various causes, such as persistent disadvantages like geographic location, recent socio-economic changes, or a combination of these factors. Often, the impact of these disadvantages is felt in poor quality education systems, social exclusion, high unemployment rates and improper infrastructure. For some Member States, the discrepancies are partly due to their former centralized economies. Globalization, climatic changes, the aging population, external immigration or the need for sustainable sources of energy are just as many challenges for the European space, which go beyond national, institutional or political borders. Europe should find common solutions to these problems, in partnership with representatives at national, regional and local level. They have direct impact on regional and local communities and necessitate the collaboration of all public and private partners in finding practical and integrated solutions.

As mentioned earlier, there are great differences in prosperity levels in the EU, between Member States, but also within their borders. Today, 43% of economic income and 75% of investments in research and innovation are concentrated on only 14% of the European territory, the so-called penthagon between London, Hamburg, Munich, Milano and Paris. From the point of view of GDP per inhabitant (the standard measure of the degree of prosperity) the most prosperous regions are situated in urban centers – London, Brussels, Hamburg. Luxembourg, the most prosperous country in the EU, is seven times richer than Romania and Bulgaria, the poorest Member States and the last to join the EU. Such differences can also be noted between the regions in China and India, in both countries the region with the highest GDP/inhabitant being seven times above the level of the least developed one. On the other hand, in the US, this difference amounts to only 2.5, and in Japan to 2.



Source: European Commission – Eurostat.

Figure 1. *GDP/inhabitant (PPP) regional extremes in the 27 EU Member States in 2004*[(1)]

At regional level, the difference is even bigger: the richest region is the Inner London region, with 290% of the average EU GDP/inhabitant, while the poorest region is North-East Romania, with 23% of average EU GDP/inhabitant. Although GDP is not a perfect reflection of the standard of living because it is a relative factor in the cost of life, it does provide clues about the existing differences.

These differences are very well portrayed in Figure 1, which depicts the disparities between EU regions in 2004, with the North-East Romanian region registering the lowest GDP/inhabitant, followed by Severozapaden in Bulgaria. Even the poorest regions in Belgium, Great Britain, Italy, Netherlands, Finland, Spain, Austria, Ireland list a higher GDP/inhabitant than the richest Romanian region, Bucharest-Ilfov and the most prosperous Bulgarian region, Yugozapaden. Indeed, these countries are old EU Member States with levels of GDP/inhabitant well above the two newest Member States, Romania and Bulgaria. Considering the new member states for a comparison between them and Romania, Figure 1 emphasizes that Poland and Bulgaria register a development level similar to that of Romania, the latter having regions with a GDP/inhabitant even greater than Bulgaria. There are regions even in Hungary with a development level similar to that of some Romanian regions. Figure 1 confirms the fact that economic and social discpreancies in Europe are substantial.

The discrepancies are not registered only between regions of different countries, but also between regions of the same country. From a statistical viewpoint, EU regions are classified into NUTS regions on three levels.

INFO: What are NUTS regions?

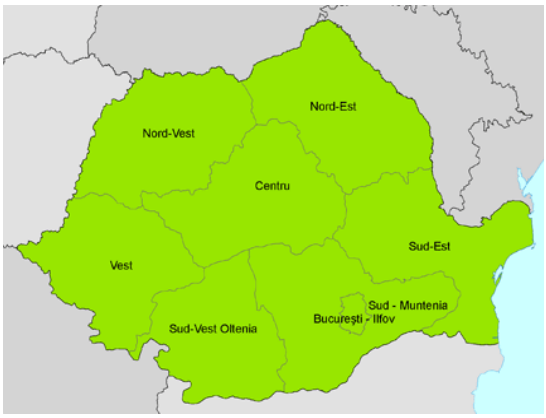
NUTS reprezents the Nomenclature of Territorial Units for Statistics and is a classification system used by the European Union to collect statistical data at regional level. All regions in the EU are classified on three NUTS levels. A region is included in one of the categories below if it fulfills the folllowing population criteria:

Level	Minimum	Maximum
NUTS 1	3 milion	7 milion
NUTS 2	800,000	3 milion
NUTS 3	150,000	800,000

Each NUTS 1 region can be divided into several NUTS 2 regions, which in their turn can be split into NUTS 3 regions. The following types of regions exist:

- *normative regions*, which are the expression of political will; their limits are fixed according to the tasks allocated to the territorial communities, according to the sizes of population necessary to carry out these tasks efficiently and economically, and according to historical, cultural and other factors;
- *analytical (or functional) regions* are defined according to analytical requirements; they group together zones using geographical criteria or using socio-economic criteria;
- *regions of general character*, specific to certain fields of activity (mining regions, farming regions, labour-market regions, etc.).

For practical reasons the NUTS nomenclature is based on an institutional division (normative and analytical regions) due to the availability of information and easiness to implement regional policy. At present there are 268 regions at NUTS 2 level in EU-27. The second level is used for defining eligible regions to be financed from structural funds. For Romania, these are: North-West, Center, North-East, South-Muntenia, Bucharest-Ilfov, South-West Oltenia, and West. The Romanian regions corresponding to the NUTS 3 level are the counties.



Source: European Commission – Directorate General for Regional Policy

Figure 2. *NUTS 2 regions of EU regional policy*

NUTS 3 Regions: Dispersion of regional GDP per inhabitant (PPP)[2]

Table 1 presents the dispersion of regional GDP/inhabitant in the period 1995-2005. It can be noted that the greatest dispersion is registered in Latvia, which means this is the country with the greatest discrepancies between NUTS 3 regions. Trend analysis for the last 10 years suggests an increase in the dispersion from 31.7% in 1995 to 51.2% in 2005. Estonia ranks second with a dispersion of 41.2% in 2005, followed by Hungary with 40%. Also, it is noted that the majority of Member States oscillate in the dispersion range 15-30% for NUTS 3 regions.

INFO: What is the dispersion of regional GDP per inhabitant (PPP)?

For a certain country, the dispersion of regional DGP/inhabitant is the sum of absolute differences between regional GDP/inhabitant and national GDP/ inhabitant, proportional to the population of each region. GDP is expressed in purchasing power parity.

$$D = 100\frac{1}{Y} + \sum_{k=1}^{n} |(y_k - Y)|(p_k/P)$$

y_k = GDP/ inhabitant in region k;

Y = GDP/inhabitant national average;

p_k = population of regions k;

P = country's population;

k = the number of regions in the country.

The value of the dispersion of regional GDP/inhabitant is zero if the values of the regional GDP/inhabitant are similar in all the regions of the country and it will be positive when there will be differences in regional GDP/inhabitant.

The data in Table 2 suggests that the discrepancies between regions increased instead of decreasing, in the majority of Member States, with the exception of four. An analysis of the trend in the period 1995-2005 suggests that there is a tendency for the dispersion to increase in almost all EU Member States. Table 2 shows that the only countries that succeed to improve the differences in GDP/inhabitant between NUTS 3 regions are Spain, Italy, Austria and Belgium. From the old Member States, Sweden and Ireland are the countries that register the greatest increase in discrepancies between regions, namely a rise of 49% and 42%, respectively.

Table 1

Dispersion of regional GDP/inhabitant, NUTS 3 regions (%)

Country\Period	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Belgium	28.1	27.9	27.8	28	28.1	27.6	27.6	27.5	26.9	27.3	27.5
Bulgaria		24.4	21.1	23.3	26.4	27.1	28.9	30.3	29.2	29.4	32.5
Czech Republic	15.4	15.3	16.8	19.2	20.4	21.3	22.9	23.3	23.5	22.5	23.3
Germany	27.4	27.3	27.6	28	28.1	28.1	28.4	28.1	28.4	28.2	28.3
Estonia		31.6	35	37.1	36.1	38.7	39.3	40.2	41.5	44	41.2
Ireland	18.2	18.5	21.5	23.9	22.1	22.5	23.3	25.8	26.5	25.5	25.9
Greece						22.9	24	25.4	26.1	27	29.1
Spain	19	19.5	19.8	20.2	20.6	20.5	20.2	19.6	19	18.5	18
France	22.1	22.5	22.9	22.6	23.3	23.9	23.8	23.5	23.6	22.7	22.7
Italy	24.7	24.8	24.4	24.4	24.2	25	25.3	24.8	24.7	24.9	24.2
Cyprus	0	0	0	0	0	0	0	0	0	0	0
Latvia		31.7	36.2	41.3	46.1	46.8	45.2	51.9	49	52.9	51.3
Lithuania	11.1	11.3	13.8	15.4	17.3	19	20	23	22.8	22.2	23.5
Luxembourg	0	0	0	0	0	0	0	0	0	0	0
Hungary	31.4	33.4	35.2	36.2	37.6		36.8	38.8	37.3	37.2	40
Malta						3.4	3	3.3	3.9	4	4.1
Netherlands	15.5	15.9	16.1	16.2	16.3	16.7	15.6	16.2	16.4	16.7	17.2
Austria	26.7	26.8	26.5	26.2	26.1	26	26.1	25.9	25.9	25.4	25.1
Portugal	26.6	26.2	26.8	27	26.2	27.4	27	26.9	27.3	27.6	28.1
Romania	12.8	13.8	15.6	22.7	24.6	28.7	29.1	30.8	28.1	27.4	31.9
Slovenia	19	19.1	18.6	18.7	20	19.9	20.6	20.9	22.5	22.2	22.4
Slovakia	28.3	27.2	28	27.6	27.3	27.8	27.2	28.1	28.7	29.2	33.8
Finland	16.3	17.3	17.6	19.8	21.6	21.8	22.1	20.8	19.2	19	19.8
Sweden	10.4	11.9	13.8	14.7	15.3	15.1	14.4	14.6	14.2	14.8	15.5
Great Britain	19.4	19.6	23	24.1	25.5	26.6	26.8	27.2	27.2	26.9	26.5

Source: European Commission – Eurostat.

Ireland has had an impressive evolution from the moment of its accession to the EU in 1973, when it was the poorest EU Member State, succeeding to become nowadays the country with the highest GDP/inhabitant after Luxembourg[3], and evolving from an agricultural economy to a technologically advanced economy. Nevertheless, the discrepancies between NUTS 3 regions increased, rathen then decreased. The explanation resides probably in the capabilities to absorb EU funds and ability to direct the money towards projects with a high value added. All regions were eligible for EU funding, but some had better abilities to implement projects financed from structural funds. Therefore, the regions developed together, the more advanced didn't wait for the lagging ones to catch up with them. Moreover, the more technologically advanced regions developed faster than the agricultural regions, creating bigger differences between NUTS 3 regions.

Table 2

Percentage increase in dispersion in the period 1995-2005

Country	% increase from 1995 to 2005	Country	% increase from 1995 to 2005
Old EU Member States		**Last accession wave (2004 and 2007)**	
Germany	3.28	Bulgaria	33.20
Belgium	-2.14	Czech Republic	51.30
Ireland	42.31	Romania	149.22
Greece	27.07	Cyprus	0.00
Spain	-7.69	Latvia	61.83
France	0.89	Lithuania	111.71
Italy	-2.42	Hungary	27.39
Portugal	5.64	Malta	20.59
Luxembourg	0.00	Slovenia	17.89
Netherlands	10.97	Slovakia	19.43
Austria	-5.99	Estonia	30.38
Finland	21.47		
Sweded	49.04		
Great Britain	36.60		

Source: European Commission – Eurostat.

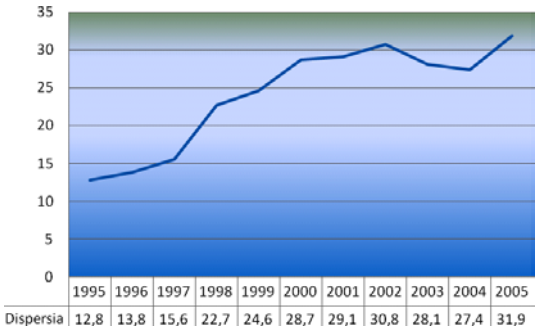
Romania is the country with the greatest rise in dispersion in the period 1995-2005, with an increase of approximately 150%, which lead to a deepening of the gap between counties (NUTS 3 regions considered in the calculation of dispersion). The second ranking, with an increase of about 110%, is Lithuania, followed at a big distance by Latvia, with an increase in dispersion of 62%.

It can be noted that, between 1995 and 2005, the dispersion for Romania registers an increasing trend which doubled in only four years and became 2.5 times bigger in 2005 compared to 1995. The only period of improvement was registered between

2003 and 2004, followed by another increase in 2005 that went beyond the 2002 level, as it is portrayed in Figure 3.

The beginning of the period under analysis was characterized, in the economic sphere, by decline and instability, as well as by an obsolete industrial base that needed big investments. In the second part of the 90's, a lot of plants were closed down or registered substantial losses, being privatized afterwards. Nevertheless, the privatization process didn't solve the problems because in many cases the foreseen investments were never made. Foreign investments didn't flood the country, especially due to economic and political instability that kept investors away, especially those that were risk averse.

Although Romania holds a strategic position at the intersection of commercial roads between Europe and Asia/Middle East, the lack of transport infrastructure had a negative impact on a harmonious regional development. Some counties were preferred by investors due to their geographic position (for example, the counties in the west of Romania as they were closer to the western market, where the products made in Romania were exported), cheap workforce, proximity to raw materials, etc. The lack of transport and administrative infrastructure capable to sustain the market economy, lead to a heterogeneous development of the various Romanian counties. Thus, this situation is also the result of a combination of traditionally historical factors and recent tendencies for development, including unforeseeable factors related to the geographic dimension of the privatization process. More precisely, the counties were affected in various ways by the privatization and the restructuring/ dissolution of unprofitable sectors of the economy or of companies owned by the state.



Source: European Commission – Eurostat.

Figure 3. *Dispersion of regional GDP/ inhabitant for Romania (%)*

To have a complete picture, it should be pointed out that the counties had, from the beginning, a different start, meaning that each had a different level of development, and the least developed ones didn't manage to catch up or to keep up with the development pace of other regions, mostly due to the lack of know-how, infrastructure, administrative capacity and ability to attract investments. Table 3 shows that the GDP of some counties increased faster than that of others, the smallest rise amounting to 189% in Olt county and the most significant one amounting to 316% in Timis county. Only four counties registered an increase in GDP below 200% in the period 2000-2005: Olt,

Harghita, Covasna, Vrancea. Only two counties, Timis and Tulcea, recorded an increase in GDP higher than 300% during the analysed period, while 12 counties enlist an increase between 200% and 250% and 23 fall in the range 250-300%. As the data in the table suggests, the most homogeneous NUTS 2 regions in terms of GDP increase are Bucharest-Ilfov, North-West and South-Muntenia.

Table 3

Gross domestic product by Romanian NUTS 2 and NUTS 3 regions (counties)

	2000	2005	% increase 2000/2005		2000	2005	% increase 2000/2005
North-East	9634.8	34037.4	253	South-West Oltenia	7508.9	24126.3	221
Bacau	2154.8	8044.5	273	Dolj	2147.3	7274.1	239
Botosani	925.8	3186.4	244	Gorj	1688.1	5246.4	211
Iasi	2469.1	8720.4	253	Mehedinti	779.5	2760.2	254
Neamt	1483.8	5000.6	237	Olt	1387.7	4010.1	189
Suceava	1802.5	6233.8	246	Valcea	1506.3	4835.5	221
Vaslui	798.8	2851.7	257				
				West	7526.8	28880.5	284
South-East	9286.8	33096.7	256	Arad	1838.8	7044.4	283
Braila	1041.2	3665	252	Caras-Severin	1070.7	3855.3	260
Buzau	1317.8	4538.6	244	Hunedoara	1703.2	5851.7	244
Constanta	3187.5	12511.8	293	Timis	2914.1	12129.1	316
Galati	1995.1	6467.7	224				
Tulcea	627.6	2577.4	311	North-West	9501	34620.4	264
Vrancea	1117.6	3336.2	199	Bihor	2146.3	8147.4	280
				Bistrita-Nasaud	944.5	3446.8	265
South-Muntenia	9807.1	36322.1	270	Cluj	3241.5	11340.2	250
Arges	2451	9532.9	289	Maramures	1355.5	5042	272
Calarasi	709.1	2287.6	223	Satu Mare	1134.3	4069.8	259
Dambovita	1403	5458.7	289	Salaj	678.9	2574.2	279
Giurgiu	564.5	2059.9	265				
Ialomita	836.6	2939.4	251	Center	10177.5	34286.1	237
Prahova	2794.1	10637.1	281	Alba	1322.1	4720.7	257
Teleorman	1048.8	3406.5	225	Brasov	2734.7	9513.9	248
				Covasna	885.7	2572.4	190
Bucharest-Ilfov	16879	62373.6	270	Harghita	1239.5	3632.6	193
Ilfov	1521.5	5461.9	259	Mures	2403	7540.3	214
Bucuresti	15357.5	56911.7	271	Sibiu	1592.5	6306.2	296
Total GDP		2000	2005				
		80377.3	288176.1	259			

Source: Romanian National Institute for Statistics – Statistical Yearbook 2007.

NUTS 2 Regions: dispersion of regional GDP/inhabitant

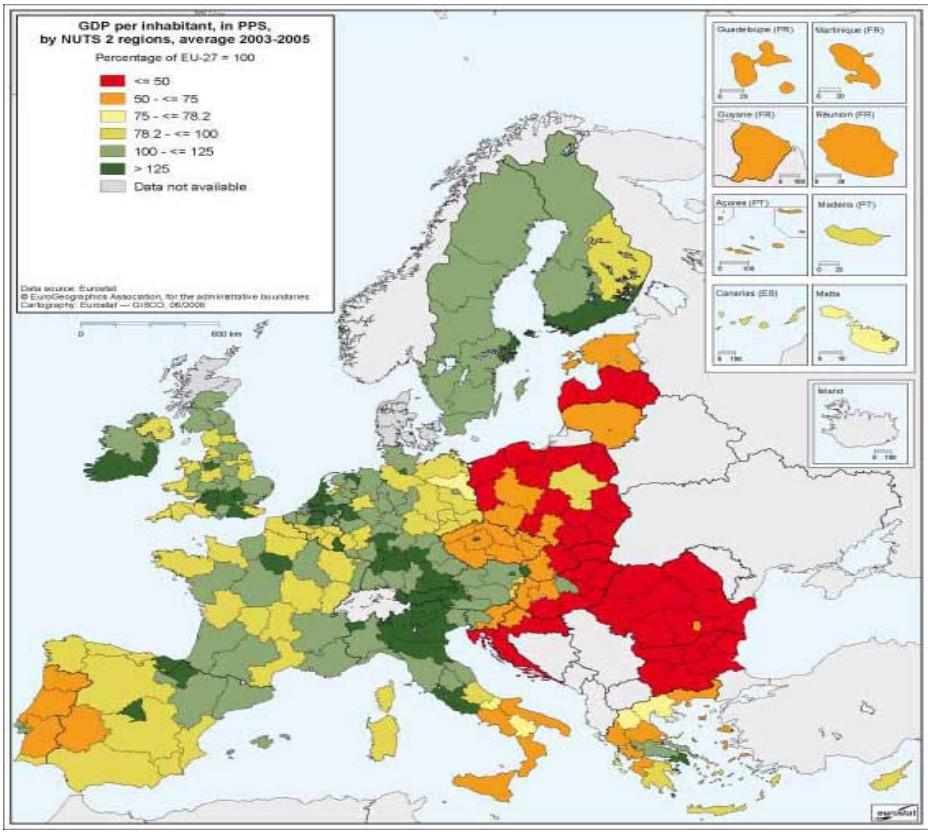
Taking into account that NUTS 2 regions are considered in the allocation of EU funds, an analysis is deemed more important than in the case of NUTS 3 regions (counties in the case of Romania).

Even in the case of NUTS 2 regions there are substantial discrepancies within national boundaries, as it can be observed in Figure 4 for Italy, Spain and Germany.

In 2005 the highest value of GDP/ inhabitant was two times bigger than the values registered in 12 of the 22 Member States with more than one NUTS 2 region (for example, Luxembourg has only one region). This group includes seven new Member States and seven of the 14 old Member States with more than one NUTS 2 region. The most significant regional differences are in the United Kingdom, where there is a factor of 3.9, followed by Slovakia and France, with a factor of 3.4 between the two extreme values. The lowest values are in Ireland and Slovenia, with a corresponding factor of 1.5 for each. Moderate regional disparities in GDP/ inhabitant[4] are found only in the EU-15 Member States and in Bulgaria, Croatia and Slovenia. In all the new Member States and in a number of the EU-15 Member States, a substantial share of economic activity is concentrated around the capital regions. As a result, in 18 of the 22 countries with more than one NUTS 2 region, the capital regions are also the regions with the highest GDP/ inhabitant. Figure 2 shows the leading position of the regions of Brussels, Prague, Sofia, Athens, Madrid, Paris, Lisbon, Budapest, Bratislava, London, Warsaw, and Bucharest.

Figure 2 presents the distribution of the average GDP/inhabitant (PPP)[5] in the period 2003-2005 in 6 groups and by NUTS 2 regions. The three-year average is important because it is used in the allocation of EU structural funds to each region. Figure 4 shows a concentration of the less developed regions (with a GDP/ inhabitant below 75% of EU-27 average in the period 2003-2005) in Italy, Portugal, Greece, Germany and the new Member States.

In Spain, just Extremadura registers values below the 75% threshold, and in France only the four overseas departments (Guadaloupe, French Guyana, Martinique, Reunion) are in a similar situation. All regions in Eastern Germany passed the 75% threshold when the the EU grew in 2007 to 27 members, which means that GDP/inhabitant in the new EU-27 is some 4% lower than it was in EU-25. Overall, 70 NUTS 2 regions register values of the average GDP/inhabitant in the period 2003-2005 below 75% of the EU-27 average. These regions are inhabited by 25.4% of the population of the enlarged Union.



Source: European Commission – Eurostat.

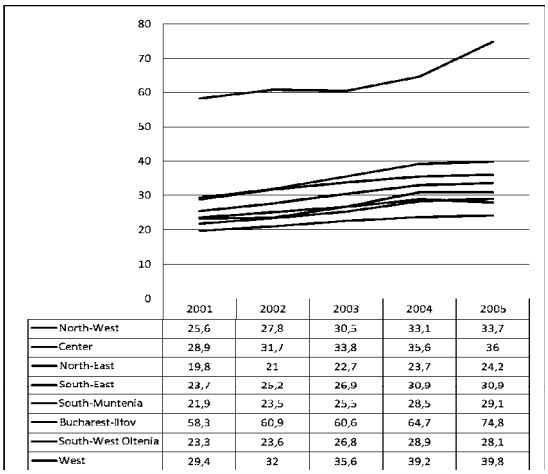
Figure 4. *GDP/inhabitant in purchasing power parities for NUTS 2 regions (average values for the period 2003-2005)*

Figure 4 also shows very prosperous regions, with an average GDP/inhabitant higher than 125% of the EU average. These 47 regions are inhabited by 23% of the EU-27 population. Contrary to what one might think, these regions are not located in the heart of Europe, but include regions around the capitals mentioned above (especially London, Brussels, Dublin, Paris, Madrid, Prague, Bratislava), as well as in pheripheral regions such as Attiki in Greece, South and Eastern Ireland, Etela-Suomi in Finland.

Regions characterized by an average development, which amount to 34 and are inhabited by 12.6% of the EU-27 population, registered in the period 2003-2005 an average GDP/inhabitant of less than 50% of the EU-27 average. Most of the Romanian and Bulgarian territory (with the exception of Bucharest-Ilfov) falls into this category. Other seven regions fall into this category only due to the last wave of accessions in 2007 when Romania and Bulgaria joined the EU, which caused a 4% decrease in the GDP average and resulted in three Greek regions, two Italian, one German and one Maltese to be reclassified.

As Figure 5 and the corresponding table show, Bucharest-Ilfov is well above the rest of the Romanian regions in terms of prosperity. As mentioned previously, it is characterized by a higher level of development given the fact that it spreads around the capital. In 2001, the regions varied in development levels, with the exception of South-East and South-West Oltenia, which in

2001 listed a similar percentage for the GDP/ inhabitant compared to the EU average (23% of the EU-27 average). While in 2001 the level of all regions (with the exception of Bucharest-Ilfov) oscillated in the range 20-30% of EU-27 average, in 2005 this figure increased by 5-10 percentage points. The West and North-West regions witnessed a more rapid increase than the others, among which is worth mentioning South-Muntena and South-West Oltenia as having an accelerated growth. These are followed by Bucharest-Ilfov, which surprinsingly was not the region with the most rapid growth.



	2001	2002	2003	2004	2005
North-West	25,6	27,8	30,5	33,1	33,7
Center	28,9	31,7	33,8	35,6	36
North-East	19,8	21	22,7	23,7	24,2
South-East	23,7	25,2	26,9	30,9	30,9
South-Muntenia	21,9	23,5	25,5	28,5	29,1
Bucharest-Ilfov	58,3	60,9	60,6	64,7	74,8
South-West Oltenia	23,3	23,6	26,8	28,9	28,1
West	29,4	32	35,6	39,2	39,8

Source: European Commission – Eurostat.

Figure 5. *GDP/inhabitant relative to EU27 average (%)*

Table 4 portrays the values for GDP per capita in the eight NUTS 2 Romanian regions, as well as the increase registered in the period 2001-2005. Contrary to the data supporting Figure 5, the data in Table 4 are not expressed in terms of the EU-27 average. Neverthless, it can be noted that the ranking of the regions doesn't change, the most significant increase being witnessed by the West and North-West regions, followed by South-Muntenia and South-West Oltenia. Bucharest-Ilfov ranks only fifth. In 2005, the difference between the most prosperous and the poorest region is quite significant – the GDP/inhabitant for Bucharest-Ilfov is three times higher than that for North-East, the least developed region in Romania and, in fact, in the enlarged European Union. Moreover, the GDP per capita for the region around the capital is almost double that of the second ranking region in terms of development. In 2001 the situation was more or less similar, the GDP/inhabitant of the most developed region being approximately three times higher than the figure for the least developed one. From 2001 to 2005 the regions maintained their ranking positions with a single exception – South Muntenia and South-West Oltenia swapped positions, although they are not far apart on the scale.

Table 4

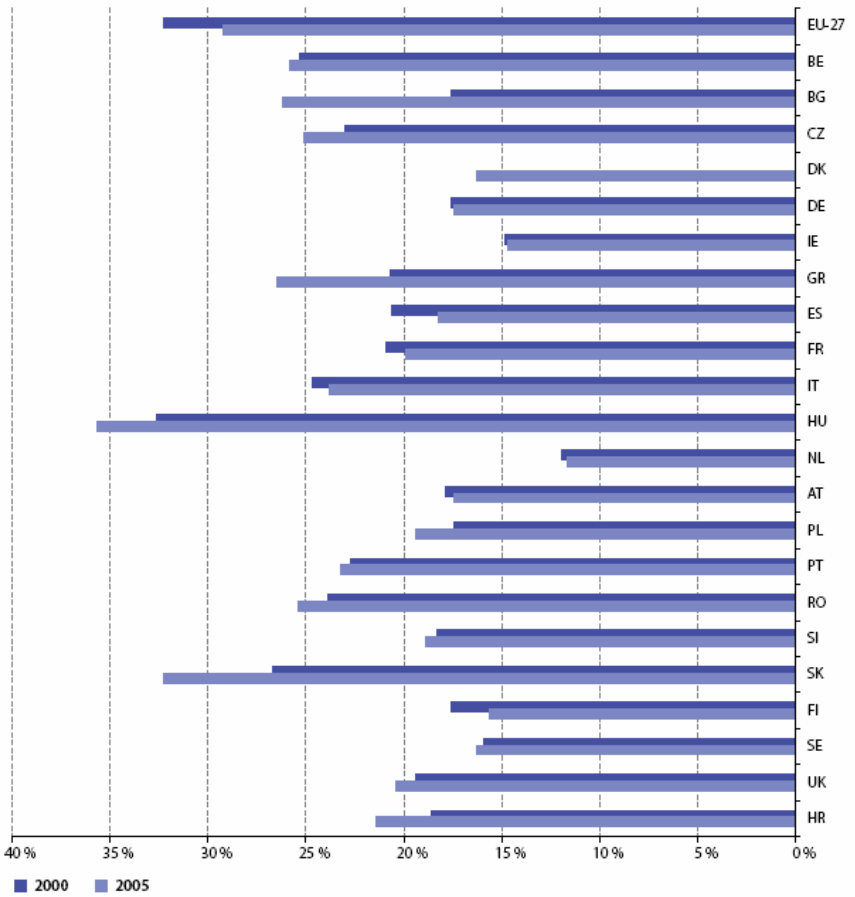
GDP/inhabitant (PPP) by Romanian NUTS 2 regions)[6]

Region \ Year	2001	2002	2003	2004	2005	% increase 2001/2005
North-West	5051	5666.1	6305.2	7153.7	7542	49.32
Center	5706.3	6478.7	6982.2	7694.2	8066.3	41.36
North-East	3904.4	4291.6	4700.2	5113.3	5429.6	39.06
South-East	4678.3	5144.4	5551.3	6668.4	6920.6	47.93
South-Muntenia	4320.1	4802.1	5273.5	6163.2	6526.5	51.07
Bucharest-Ilfov	11498.6	12432.8	12537.3	13980.0	16760.1	45.76
South-West Oltenia	4597.3	4816.2	5530.2	6235.4	6293.3	36.89
West	5804.2	6524.7	7356.5	8466.9	8916.7	53.62

Source: European Commission – Eurostat.

A comparison of the data for the period 2000-2005 shows significant differences in the development of the old Member States compared to the new-entrants, regional differences for the majority of EU-15 countries seeing a downward trend. Nevertheless, only the extremes of regional values cannot provide a complete picture, taking into account that they are all treated the same regardless of their population figures. Thus, the linear dispersion indicator will be analysed as, for each region, it weights the difference in GDP/inhabitant compared with the national average on the basis of the population of the region in question.

Thus, the extreme values of regions with a small population (i.e., Aland in Finland) will receive a smaller weight, while the more populated ones (i.e., Ile-de-France) will be assigned a higher weight.



Source: European Commission – Eurostat.

Figure 6. *Regional dispersionGDP/inhabitant*[7] *in the period 2000–2005*

Figure 6 depicts the dispersion for all Member States with more than one NUTS 2 region. The highest regional dispersion is registered by Slovakia and Hungary, with values higher than 30%. These values are three times higher than the Netherlands, which registeres the greatest homogeneity with values of just 11%. The majority of the Member States can be found in the 20-30% range, with the exception of Poland and Slovacia whose values are below 20%.

In the case of NUTS 2 regions, the dispersion increased for Romania from 2001 to 2005, a conclusion similar to the one reached for NUTS 3 regions. Nevertheless, the increase in dispersion is not as significant for Romania as it is for other countries such as Greece, Bulgaria, Slovakia, Hungary, the first one being an old member state, and the last two having joined the EU in 2004. Of the new Member States, only Slovenia and Portugal show a smaller increase, while of the old Member States whose dispersion figures have amplified, only those for Belgium are lower than those for Romania. Nevertheless, at EU-27 level a fall in dispersion below the 30% threshold can be noted. Among the states that show an amelioration of this indicator can be listed: Germany, Ireland, Netherlands, Austria with very small reductions and Spain, France, Italy, Finland with a more significant decrease. Although the graph may leave the false impression that the overall diminution in dispersion is smaller than the overall increase, leading to an absolute rise, it must be pointed out that this indicator is weighted against the population figures for each country, which in the end leads to an overall decrease in dispersion at EU-27 level.

Conclusion

Although the EU is one of the richest areas in the world, there are considerable differences between its regions from the point of view of development and opportunities. The accession of the 12 Member States, with GDP figures below the EU average, lead to increased discrepancies between EU regions. The most prosperous country in the EU, Luxembourg, records a GDP/inhabitant seven times bigger than that of Romania and Bulgaria. At regional level, the difference is more accentuated: the most prosperous region is Inner London with 290% of average EU GDP/inhabitant, while the poorest region is North-East Romania with 23% of the average EU GDP/inhabitant, while the poorest region is North-East Romania with 23% of average EU GDP/ inhabitant.

In case of NUTS 3 regions, the majority of Member States registered increases in dispersion in the period 2000-2005, only four countries registering decreases: Spain, Italy, Austria, Belgium. Romania is the country with the greatest rise in dispersion in the period 1995-2005, with an increase of approximately 150%, which lead to a deepening of the gap between counties (NUTS 3 regions considered in the calculation of dispersion).

Concerning NUTS 2 regions, there are only 8 Member States that saw decreases in dispersion in 2000-2005: Germany, France, Spain, Italy, Austria, Ireland, Netherlands, Finland, the first ones being the most populated. Nevertheless, considering that the dispersion is weighted agains the population, at global level, the EU registered a decrease in regional discrepancies.

EU regional policy aims at transferring resources from prosperous areas to the poorere ones by modernizing the latter ones in order to offer them the possibility to catch up with the developed ones.

Notes

(1) Purchasing Power Parity.

(2) Purchasing Power Parity.

(3) In 2007 Luxembourg registered a GDP/inhabitant in purchasing power parity of 266.5, while Ireland registered 150.4 and Romania 44.3, according to Eurostat.

(4) Factors of less than 2 between the highest value and the lowest.

(5) Purchasing Power Parity.

(6) Purchasing Power Parity.

(7) Expressed in puchasing power parity (PPP) for NUTS 2 regions.

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