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ISSN 1843-763X

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ESSAY



SOCIAL WELFARE: INSIGHTS FROM THE AUSTRIAN SCHOOL OF ECONOMICS

Stanislav PERCIC*

Abstract: *When looking back in the last decades, one can notice the assertion of the state as the main provider of the social welfare. The state proclaimed itself as the “welfare state” and assumed all the responsibilities for ensuring the welfare of its society. The economic and social situation (stressed and unstable in current times), combined with limited resource availability and aggressive state policies, have once again highlighted the importance of understanding the meaning of social welfare. This study aims at emphasizing some important aspects regarding social welfare in light of the Austrian School of Economics perspective. We dare to think outside the box and propose this theoretical foray as a cornerstone for rethinking the meaning of social welfare and the role of the state in ensuring the welfare for its members within the society.*

Keywords: *social welfare, state, human action, entrepreneurship*

JEL Classification: *B13, B25, I30*

1. INTRODUCTION

The distinctive trait of the Austrian School of Economics, outlined by Carl Menger since the advent of this economic trend, lies in the attempt to build the entire economic science starting from man as a creative actor and as central element of all the social processes. In the vision of the Austrian School, economic theory overlaps the theory of human action. Austrian scholars perceive economic theory more like a theory of human action rather than one of the decisions made by individuals, which distinguishes and separates them from their predecessors.

2. ECONOMIC THEORY VERSUS THEORY OF HUMAN ACTION

The Austrian School tries to explain economic science by always starting from the human being, made from flesh and blood, considered a creative actor and

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an initiator of all the social processes through human action. The concept of human action incorporates and, consequently, is superior to the concept of individual decision (Huerta de Soto, 2011c). On the one hand, the fundamental concept of action refers not only to the hypothetic process of making a decision with regard to purposes and means, but also, and this is the most important thing, the very perception of the system of purposes and means within which economic allocation occurs. On the other hand, what matters most for Austrian scholars is for the decisions to be made under the form of human actions where the process involves a series of interactions and acts of coordination, process whose study constitutes the object of research of economic science. For the Austrians, economic science represents a theoretic corpus concerning the process of social interaction and is far from being a system of theories on choice or decision.

Mises (2007) stated that “economic theory does not rely on material things and objects; it deals with human beings, the way they think and, consequently, the resulting human actions. The goods, the commodities, the wealth and all the other behavioral notions are not elements of nature, but elements of spirit and human conduct. Who wishes to enter this secondary universe must forget the outside world and focus their attention on the significance of the actions taken by human beings.” Mises reveals the position of the human being and of human action in economic theory. From the position of primary actor, man, through human action, is the one who puts everything in motion in economy.

In its famous treatise entitled “Human action”, Mises defines the state of content or total satisfaction of a human being as that state which does not give birth and cannot give birth to any action. Through human action, man wishes to substitute a less satisfactory state of things with one that is preferably better. The mental capacity of the human being determines the conditions which satisfy him the most, and his action is aimed at achieving that preferable state. By way of consequence, the force which drives man to act in everyday life is always the same: *discomfort*. According to Mises (2007), the man which would be entirely satisfied with the state of things in which he finds himself would have no reason to change things and, consequently, he would have no reason to act. Such an individual is seen as being completely happy; an individual who would live without any worries whatsoever in maximum welfare.

If individual welfare reflected in the *level of happiness* of the human being, according to Mises, the maximum level of welfare would be reached when all the

established objectives have been attained. The final objective of human action is always represented by the satisfaction of the desire of the man who acts. Personal judgments are the only criterion for assessing the increase or decrease of satisfaction of the individual, which are different from one person to another and from one moment to the other for the same individuals.

As concerns the concept of happiness, Mises argues that the difference between the value of the attained objective and the expenses involved in the preceding actions represent a gain, an increase in the happiness of the man who acts.

The human being who acts chooses between various opportunities that arise. Depending on the hierarchy of values, one alternative is chosen over the other. According to *the theory of the hierarchy of values* of the Austrian scholars, the individual is tempted to satisfy its most intense desires, with a higher value, and leaves unsatisfied the things of a smaller value. Each action taken by the human being is always in agreement with the hierarchy of values, for this hierarchy represents an instrument of reflection of human action.

Most human beings are primarily interested in improving material welfare. They desire more and better food, a better shelter/home and better clothes, better healthcare, etc. In order to explain the way in which the individual interprets welfare, the Austrian School resorts to psychology. By using *the theory of the hierarchy of needs*, which is at the confluence of economics, psychology and other socio-humanistic disciplines, a distinction could be made between the “real” needs of the individual and his cravings.

Through multiplication, human action generates social cooperation, whose objective is cooperation and mutual help between the individuals, with a view to obtaining concrete results. The totality of the mutual relations created through joint human action is called society.

Given the above mentioned aspects, the lack of equality between individuals with regard to wealth and income is an essential feature of market economy. As long as everybody sets their own objectives to be attained in order to maximize the degree of happiness and, implicitly, of wealth, we cannot speak, not even hypothetically, at the level of perception, of equality of wealth.

3. ANALYSIS OF THE RELATIONSHIP BETWEEN THE ENTREPRENEURIAL FUNCTION AND SOCIAL WELFARE

The entrepreneurial function occupies a leading place in the Austrian economic theory (Huerta de Soto, 2011c). According to Mises, most of the times entrepreneurship overlaps human action and, by way of consequence, through each individual's veins runs a germ of entrepreneurship. This is the broad definition promoted by the Austrian School of Economics. In a narrow sense, entrepreneurship consists in the discovery and production of new information, which did not exist or was not available until then (Mises, 2007). This production activity is seen by the Austrian scholars as the source of the goods required for society to exist (Costea, 2007).

According to Israel M. Kirzner, entrepreneurship is a production factor, somewhat different from the other production factors due to the fact that the law of marginal productivity does not apply. Furthermore, this production factor cannot be sold or rented.

Another important feature of entrepreneurship is its capacity to generate benefits. In economic terms, the benefits are the profits registered by entrepreneurs. In a broad sense, profit represents the gain resulted from human action. This is the satisfaction bonus obtained through the difference between the bigger value assigned to the registered result and the smaller value assigned to the effort of obtaining this result. Mathematically speaking, it is the difference between income and costs. The profit is the driving force which guides the individual in any entrepreneurial action he undertakes.

The entrepreneurial function exists only in a real world and on a competitive market. The market, in the vision of the Austrian scholars, is the first social body and, by way of consequence, market phenomena are social phenomena. The market phenomena represent the active contribution of each individual. An important feature of the market, with direct effects on the individual welfare of its actors, is *selection*. The selection process of the market is kept operational by the cumulated effort of all the members of the market economy. Starting from the broad definition given to human action and to the entrepreneurial function, the individual, motivated by the desire to reduce or to eliminate his own dissatisfaction, to the extent possible, aims, first and foremost, to win as much as possible from the services provided by the other market participants and, secondly, to reach that position from which he can contribute the most to the fullest satisfaction of all the

others. According to Mises, “this means that he tries to sell on the most expensive markets and to buy from the cheapest ones”. The result of these efforts is not only the structure of the prices and, more importantly, the social structure, configured by the distribution of the profit and loss corresponding to individual actions. It is the market which makes people rich or poor. The market selection process never ends, constantly adjusting the social production machinery to the modifications of supply and demand.

Each individual which performs entrepreneurial activities is also exposed to *the political risk*. Governmental policies, revolutions and wars can affect him negatively or can even cause him to lose his enterprise. Such events that are impossible to control by the entrepreneur do not affect only him, but the entire market economy.

4. INVOLVEMENT OF THE STATE IN ENSURING THE SOCIAL WELFARE FROM THE PERSPECTIVE OF THE AUSTRIAN LIBERALISM

Although the state is considered an institution of the services for the use of the society, from their position as convinced liberals, the Austrian scholars argue that any intervention of the state in the socio-economic state causes severe imbalances in the functioning of a market economy (Huerta de Soto, 2011a). Murray N. Rothbard (2009a) describes interventionism as “the intrusion of aggressive physical force in the society”. The restrictions on economic freedom, imposed by the state, will lead sooner or later to an increase of the coercive actions of the state in various fields of the society, undermining and eventually destroying individual freedom, the main component of the happiness and wealth of a society. Governmental interventionism is the coercive and parasitic sequestration of a part of the production of the society or, better said, the reduction of welfare in the society to the unproductive benefit of the state (Rothbard, 2009a). The state does not produce anything, but only redistributes the products of the market.

Austrian scholars describe free market economy as an economy characterized by a free society and a free market, where individuals act and interact peacefully and without any violence with a view to achieving the established objectives (Rothbard, 2009b). Any governmental intervention has disruptive effects in various fields of the socio-economic life. The intervention will have direct and immediate consequences on the utility perceived by the market participants. In a free society, without the intervention of the state, the individual will always act in

the manner and direction which he thinks will maximize the utility perceived on his value scale. If we could use the term “society” to define the model of individual exchanges, then we could say for sure that the free market maximizes social utility. Coercive intervention will coerce individuals to act atypically and to do what they would normally not do voluntarily. Any human action taken under the pressure of interventionism loses its utility.

As Hayek (2005) highlighted, it is very important not to confuse opposition against the state interventionism and planning with the dogmatic laissez faire attitude. The Austrian liberal view does not plead for leaving things just as they are. It advocates making the best possible use of the forces of competition as a means of coordinating human efforts. The Austrian scholars are convinced that the effective competition is the best way of guiding individual efforts.

As emphasized by Joseph T. Salerno, the free market is “fully efficient”. The allocation of resources on such a market, which occurs through the human action of entrepreneurs, reflects the anticipated preferences of consumers, “just as the choices of an individual actor lead to a configuration of the use of resources in agreement with the classification of his anticipated satisfactions”. The possibility of the rational and efficient allocation of the production factors by the owners promotes welfare in the society (Costea, 2007). The free market, without the intervention of the state, enables its actors to choose rationally and to savor the benefits described by the law of competitive edge. From a social perspective, the unobstructed market is efficient, for it catalyzes social cooperation through the creation of economically motivated connections between producers and consumers. The intervention of the state inhibits this social cooperation by redistributing the resources to the “unproductive consumers”. The decrease in the volume of resources allocated for satisfying the most urgent needs of the “productive” consumers is interpreted by Salerno as an obvious reduction of social welfare.

5. CONCLUSION

The Austrian scholars blame and discourage the state interventionism in economic activity, considering that the absenteeism of state power in the economy would lead to prosperity and a better life. According to this line of thought, the government interventions in the area of socio-economic life unbalances the system, disturbing the harmony established in the society. As the classical economist Adam

Smith noted, the best policy for the government to increase the wealth of a nation is that which governs (therefore, it exists) but interfere the least.

This theoretical approach highlights the importance of the man as a creative actor and as central element of all the social processes. Through human action, man wishes to substitute a less satisfactory state of things with one that is preferably better. Through entrepreneurship, that overlaps human action, man capitalizes his capacity to generate benefits. The Austrian School of Economics emphasizes the role of competition and free market in the allocation of resources, which occurs through the human action of entrepreneurs. It is very important to understand that effective competition is the best way of guiding individual efforts in order to ensure the welfare of the entire society.

We are in line with and encourage the idea of a social welfare achieved in a competitive market economy, where the state is called upon to intervene when the human action does not cope. We advocate for a libertarian welfare state, which is involved in ensuring the social welfare, but the society does not feel the pressure of statist interventionism.

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RESEARCH PAPER



INSTITUTIONAL QUALITY – DETERMINANT OF TRANSITION PERFORMANCES IN CENTRAL AND EASTERN EUROPEAN NATIONS

Ion POHOAȚĂ*, Oana-Ramona SOCOLIUC**, Delia-Elena DIACONAȘU***

Abstract: *This study attempts to investigate the impact of institutions on the effectiveness of transition results achieved by emerging economies from Central and Eastern Europe. After more than two decades significant economic and social disparities have arisen between these nations. Consequently, the relationship between institutional efficiency and progress is investigated using a multiple linear regression model. Given the Romanian poor transition performances, the purpose of this paper is to highlight that even if Romania had followed a shock therapy, the resultant of institutional interaction at formal-informal level would have been the same. As results emphasize, the inertial character of informal values inherited from the past faded the echo of good formal initiatives. In the light of such circumstances, performances of countries such as Poland or the Czech Republic become not only understandable, but far from being reached in Romania.*

Keywords: *emergent economy, transition, formal institutions, informal institutions, path dependence.*

JEL Classification: *B52, P30, P37*

1. INTRODUCTION

There is a wide consensus today that development gaps between worldwide emerging nations remain a challenging subject for economic research area. Within this analysis, transition, in its multiple hypostases, illustrates the hard core. The general framework of emerging economies points out prominent economic, social, cultural, even structural disparities. In other words, for some nations the transition process gone well, while for others it encountered significant problems. Despite

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many classical and neoclassical attempts oriented to suggest solutions for development gaps all these initiatives did not had definite results. The response came from Institutional Economy, which elucidated the problem using the explanatory force of institutions, mainly of informal institutional component. As a certainty, the evolution of society is strictly connected today with changes that take place within institutional area. Institutions, the “rules of the game”, according to Douglass North, became the gravity center of Institutionalism’s approach. Such official and unofficial norms have the power to guide human interaction, minimizing uncertainty and disorder (North, 2005). Between the two areas, the evolution of economy and institutions, there is *a circularity relationship* (Pohoăță, 2009). This means that on the one hand, the institutions illustrate norms which emerged from the natural process of economic evolution, but, on the other hand it also emphasizes a basis which defines the trajectory of further economic dynamics. Not only the economic climate is changing, but also the institutional background. Consequently, we might admit a real process of institutional dynamics, a complex phenomenon that supports and has a relevant influence on social metamorphoses (Pejovich, 1999). The efficiency of the institutional background constitutes the driving force of the entire social system. Within this complex social structure, wealth and economic performance are the major achievements.

Transition economies illustrate a particular case of emerging nations, which experienced the profound transformation from a centrally planned to a market oriented economic system. According to the existent body of literature, gradual transition is considered to be responsible for perpetuating the inefficiency of the rule of law, corruption, even the lack of transparency of policymakers (Svejnar, 2007; Bjomskov and Potrafke, 2011), while shock therapy, based on the trilogy: prices liberalization, stabilization and privatization was able to promote development (Sachs, 1993). Taking into consideration these opposite positions the paper tries to redefine the terms of analysis. Our purpose is to highlight a different approach where the attention is focused on the general background which supported the transition process. In our point of view, significant post-transformation development gaps of ex-soviet countries might be also explained considering domestic cultural background, the path dependency phenomenon, even values, traditions or norms of behavior inherited from past generations. In other words, we are referring to the informal preconditions of transition. In such context, we admit that not the followed transition strategy is to be blamed for the failure of transition

process in some nations or for the success attained in the others, but the inefficiency or high efficiency of informal institutions which prevailed in these nations.

The paper is organized as follows: Section 2 discusses the existent body of literature which deals with the explanatory force of institutions in interpreting social and economic disparities of transition nations. Section 3 introduces the so-called preconditions of transition process with particular reference to countries from ex-soviet bloc in order to highlight the different starting point of nations on their road to capitalism and democracy. Section 4 presents the necessary details regarding the data and methodology used. Section 5 emphasizes the empirical results and their implications. Section 6 concludes.

2. LITERATURE REVIEW

Aspiring to the status of developed economies, emerging nations, mainly those from Central and Eastern Europe have made numerous changes in social, economic and political area in order to facilitate transition to progress and prosperity. Taking into consideration that such countries came from a closed economic system in the past, there was a need for a profound transformation of the institutional background. In other words, transition was required for settling the problem (Pohoată, 2000). From this perspective, we might admit transition as an omnipresent stage of the evolution process of emerging states, in his multiple hypostases. Tangential to transition from a centrally planned to a market oriented economic system we might observe changes that imply metamorphosis of economic strategies, commercial openness, international financial integration, etc. Obviously, the level of development is strictly dependent on formal institutional efforts oriented to promote a free, stable economic and social climate. Also the genetic heritage of every country should not be minimized in this context. Regardless of size or geographical location, all these nations have some specific features in common, as highlighted in Figure 1.

According to Kuepper (2011) all emerging nations present a higher investment potential at the beginning of capitalism building process given the immaturity of internal market whose capacity was not fully exploited and turned to its own advantage (Keupper, 2011). Moreover, as Schouwstra pointed out, the initial conditions of transition nations on their road to capitalism and democracy reveals fragility and instability as marks of intense exploitation (Schouwstra, 2011).

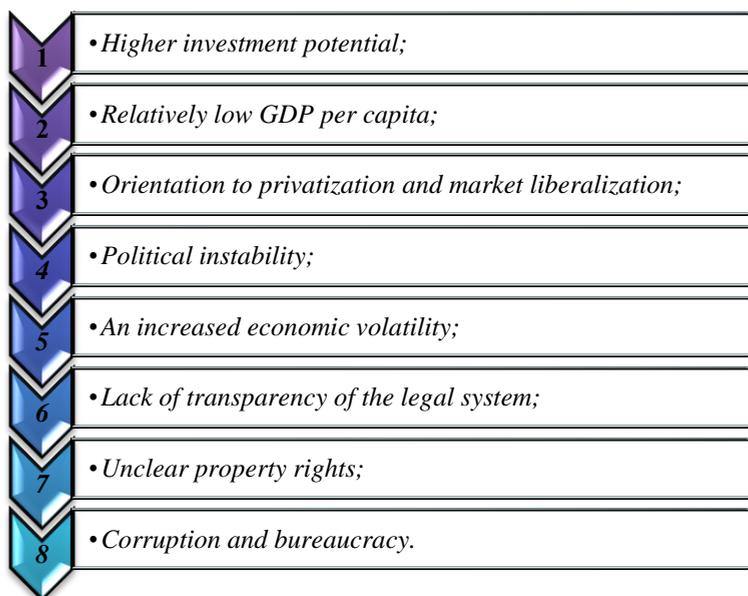


Figure 1 *Major features of transition economies at the debut of the transformation process*

These are the causes of low GDP per capita, higher uncertainty which prevails above legal, economic or political areas encouraging and supporting bureaucracy, corruption and lack of transparency. Together, all these signals shape a fragile social body unable to rally to the efficiency requirements of progress and prosperity. The analysis of different paths followed by emerging states illustrates significant disparities regarding the efficiency of the informal institutional basis.

Institutions are widely considered to be essential for economic development and growth. On the one hand, there are formal institutions reflected in economic, political or legal rules and norms. Flexibility is a particular characteristic of these official institutions, so they allow subsequent adjustments. On the other hand, there are informal institutions which shape the entire social metamorphosis process. They include values, customs, traditions, norms of conduct, codes of behavior, mindsets. They came from cultural genetic heritage of every society, being passed from a generation to another. The deep inertial character of these institutions becomes understandable in the light of past experiences that have generated behaviors and values deposited and filtered over time, which survived through teaching and imitation (Boyd and Richardson, 1985).

The entire process implies the evolution of both components. First, there is the improvement of formal rules. Second there are changes applied to the nodal parameter,

the unofficial norms. If mutations of the formal frame are encouraged by specific malleability of these norms, things are totally different concerning the informal institutional epicenter. Required changes of unofficial sphere are much slower. In other terms, they cannot be deliberately manipulated by human intentionality (North, 2003). These unofficial rules are not only important, but also “ready” to become the “gravity center” of transformation process. According to North, there is a path dependence phenomenon that is able to explain the progress and development gaps between nations worldwide. Such phenomenon might be understood and interpreted in the light of past experiences. As the author further emphasizes, countries that were conducted by good rules in the past have encouraging perspectives to achieve development in the future, while countries with values and traditions designed by negative past experiences have a relative potential to reach the status of a developed economy (North, 2003). Unfortunately, Romania illustrates a suggestive example for the latter category of nations. Here, “the creative destruction” of old totalitarian rules was essential for acquiring development and growth (Schleifer, 1997; Kolodko, 1999; Johnson et al, 1997; Giannaros, 2008; Wolf Holger, 1999) but such facelift did not happened at such a large scale. As we might observe, the orientation of social evolution is guided by the efficiency of institutional transformation phase, especially by the quality of values, customs or traditions inherited from past generations. In order to emphasize the quality of “dominant gene” of informal institutions, we nominate *the interaction thesis* of Svetozar Pejovich. The author highlighted the need for complementarities between changes that occur in formal rules area and the informal frame, as to create auspicious conditions for development by minimizing transaction costs and increasing wealth opportunities. In other terms, such context illustrates a positive institutional interaction. Conversely, the incompatibilities between those two institutional spheres will underline the expansion of transaction costs and consequently will minimize the potential of development (Pejovich, 1999). This latter situation is highlighting a negative institutional interaction. From this perspective, economic dynamics seems to be a kind of response to institutional dynamics. Profound implications of genetic heritage on transition nations will be highlighted in the next section.

3. PRECONDITIONS OF TRANSITION WITHIN EASTERN AND CENTRAL EUROPEAN COUNTRIES

The collapse of the Soviet regime pointed out the onset of a vast transition process to market economy. Broadly, the starting point conditions for the former

satellite states were relatively similar. But, a closer look to the reality of all these states reveal the fact that even though ex-socialist nations were united in the past by the partisanship at the Soviet Union, they have experienced a different economic path after the implosion moment. Placed outside the communist orbit all these countries remained guided by the invisible hand of informal institutions: their own traditions, customs and values. They served as foundation and nodal landmarks in the building process of a new society for each country.

Subsequent economic and social dynamics underlined the pseudo-homogeneity of values and traditions inherited from socialist experience. Despite relatively uniform initial conditions generated by the common communist “social experiment” reflected in the impossibility of economic calculation, centralized planning, terror and exploitation, the passage of time has revealed deep inter-state gaps. Their source is, in our viewpoint, cultural and genetic inheritance, which became a harder burden for countries like Romania and Bulgaria than other nations.

Economic and social disparities intensified on the way. As Tabellini pointed out, similar formal institutional arrangements had different contributions to economic growth and development of the nations, given the major impact of informal institutional component (Tabellini, 2005). There is no doubt that the Socialist regime affected cultural values of all member states of the Soviet Union. However, Romania and Bulgaria experienced the most intense centralization from the region, so their cultural genetic background was incontestably more harmed in comparison with countries like the Czech Republic, Estonia, Slovenia, the Slovak Republic, Poland or the rest of Baltic States. Such circumstances led us to the idea that the poor transition results of Romania descend from its cultural heritage which paved its own road to democracy and market economy.

There is a variation of institutional systems across continental states, able to provide a significant explanation for development discrepancies. Countries like The Czech Republic, Poland, Estonia, Slovenia, or Hungary were not that strongly brainwashed by communist values and traditions. This is the reason why, in such nations the deterioration of totalitarian ideology was propagated with increased rapidity. Since 1968 these states initiated partial reforms that promoted the decentralization and had a significant contribution to the process of shaping societal psychology after a liberal pattern (Economist Intelligence Unit, 2012). From this perspective, it can be asserted that these countries are highly attached to free economy values, obedience being often replaced by social mass uprisings.

Their capacity to activate the right norms: clear property rights, a coherent legal system, healthy norms, able to promote growth and economic development was not radically affected, taking into account that the informal institutional background was less injured by socialist experience. In other words, these countries took advantage of the “opportunity window” emerged with the decomposition of totalitarian construct and exploited it in order to reach a rapid transition to market economy (Balcerowicz, 1993). The enforcement of new formal institutional landmarks, total unleashed from the past socialist experience were able to support the success of transition. Unfortunately, for countries like Romania and Bulgaria, the situation was completely different. These states are included in the opposite group of nations that have a strong affinity for power (Weder, 2001). Soviet institutional arrangement based on coercion and centralized planning was the source of social-economic decay, but also the microbial source of inland institutional disease. As far as formal plan is concerned, we might admit the correspondence of created rules. From this point of view, Romania possesses laws and social norms comparable to those of the Czech Republic or Poland, in terms of legislation which provides the establishment of private property rights (Law No. 18/1991), foundation of private economic entities (Law No. 31/1990), privatization of former State enterprises (Law No. 15/1990, Law No. 58/1991), prices liberalization (Act No. 1109 of 18/10/1990), etc., but the accuracy of their outcomes was warped by the inefficiency of informal practices, which annihilated their own beneficent potential.

On the one hand, it is important to emphasize that, the inland cultural circumstances were not that favorable to economic development. On the other hand, the Communist regime, in its Romanian version, asphyxiated even the few propitious cultural values inherited from the past. From this perspective, informal institutions might be nominated as an omnipresent impediment for economic development in Romania. Regardless of well oriented initiatives, the cadence of results was guided by the prevailing influence of informal institutions. The genetically heritage proved to be responsible for the destiny of Romanians. This legacy seemed to be more „consistent” and obstructionist for our country than others, for what it supposed to be the emergence to development.

The Communist regime forbade any initiative oriented to institutional conversion. For Romania and Bulgaria the building process of a new institutional framework in such inauspicious circumstances was the major challenge of transition.

Unlike Poland, Estonia, the Czech Republic, Slovenia, Latvia, Lithuania or Hungary, in Romania and Bulgaria the “creative destruction” of old totalitarian rules was not possible, these latter countries remaining attached by the Russian model of “capitalists without capitalism” (Stark and Bruzst, 2002). The constancy of corruption, bureaucracy and inefficiency veiled the development path, retaining chaos. In a relatively similar situation we can nominate countries like: Ukraine, Moldova, Albania, Armenia, Georgia, etc. For nations such as: Bosnia and Herzegovina, FYR of Macedonia, Serbia, Croatia and Montenegro, the hereditary imprint of Socialist Yugoslavia has deeply harmed the future development potential. The resistance of some unofficial institutions, similar to those which persist in Bulgaria or Romania has promoted an increased cultural and institutional gap. For such emerging economies traces of the past remained alive, promoting insufficient development. In order to demonstrate the major implications of institutional substrate on economic progress of all transition countries from Central and Eastern Europe, as they are today, section 4 will present our methodological approach.

4. RESEARCH METHODOLOGY

As highlighted in the previous section, the purpose of this study is to analyze the main influence of institutions on progress of transition nations from Central and Eastern Europe in order to emphasize the fact that due to poor institutional efficiency, the final transition outcome for Romania would have been almost the same even if these countries would had followed the shock therapy and not the gradual transformation. In other words, what we want to demonstrate is the fact that not the followed strategy is to be blamed for the inauspicious achievements, but the quality of inland formal and informal rules which guided human interaction and social evolution during this entire time span of more than two decades.

In order to certify the fundamental impact of institutions on the evolution of Transition economies, we have used a multiple linear regression model based on four independent variables. The analysis was concentrated on a number of 31 countries, mainly from Europe, but also emerging nations listed by the International Monetary Fund. The selection of these independent variables was made in accordance with Principle Component Analysis. Using a multiple linear regression model we will test the hypothesis according to which, the final transition outcome for the case of Romania would have been similar, even if they would had followed a shock therapy.

As dependent variable we have chosen the effectiveness component of state fragility index provided by Center for Systemic Peace 2012, which synthesized better the economic, political and social results of transition. As independent variables, the principal component analysis selected *human development index* (United Nations Programme, 2012) and *functioning of government* provided by Economic Intelligence Unit, *the rule of law* provided by World Bank – (World Bank -World Governance Indicators, 2012) and *economic freedom of the world index* of Fraser Institute (Fraser Institute, 2012). The multiple linear regression model has the following form:

$$Y = \alpha + \beta_1 * X_1 + \beta_2 * X_2 + \beta_3 * X_3 + \beta_4 * X_4 + \varepsilon \quad (1)$$

Where α is the constant of the model, β_1 , β_2 , β_3 , β_4 , β_5 are parameters of regression model, and ε is the random error variable. In order to validate this hypothesis we will take as reference group of countries those European states nominated by International Monetary Fund experts as being part of the „superior group”, like: The Czech Republic, Poland, Hungary, Estonia, Latvia, Lithuania, Slovakia and Slovenia, given the strict reforms initiated there after 1989. According to the estimated equation of the regression model we will calculate the value of general effectiveness for Romania. Taking into consideration the impossibility to make a prediction on Romanian general effectiveness if it would had been implemented the shock therapy, we assume that the new reference values of independent variables will be equal with the average value for each variable registered by those eight countries which experienced the rapid metamorphosis and became EU members in 2004. After this step we will have the opportunity to compare the new results, which will highlight Romania’s potential level of transition outcome’s effectiveness in the context of a shock transformation, with values of the same countries. In case that the new result will be at a lower level than the one of Poland, Czech Republic, Estonia, Hungary, or Slovenia, nations that are considered to be at the top of transition performances we might admit that our hypothesis is validated. Conversely, in case that the final outcome will be higher than values registered by shock therapy promoters, the hypothesis is disproved.

5. RESULTS AND DISCUSSION

As shown in the Appendix, Table A.1 – *Correlation matrix*, there is a negative relationship between the dependent variable, economic political and social effectiveness of transition and each independent variable. This might be explained

in the light of the fact that countries with higher performances in terms of transition, such as: the Czech Republic, Poland, Baltic States, have lower value for effectiveness. The zero value highlight a higher effectiveness, while an increased value indicates low efficiency in terms of economic, political and social transition outcomes. So, good results in terms of prosperity and wealth are associated with a higher level of human development and economic freedom, government autonomy decision all guided by an efficient and transparent rule of law. According to Principle Components Analysis results that are illustrated in Table A.2 indicate that the two factorial axes explain 80, 91% of total variance, so the Benzecri criterion is satisfied. Figure 2 below illustrate the graphic representation of the two factorial axes.

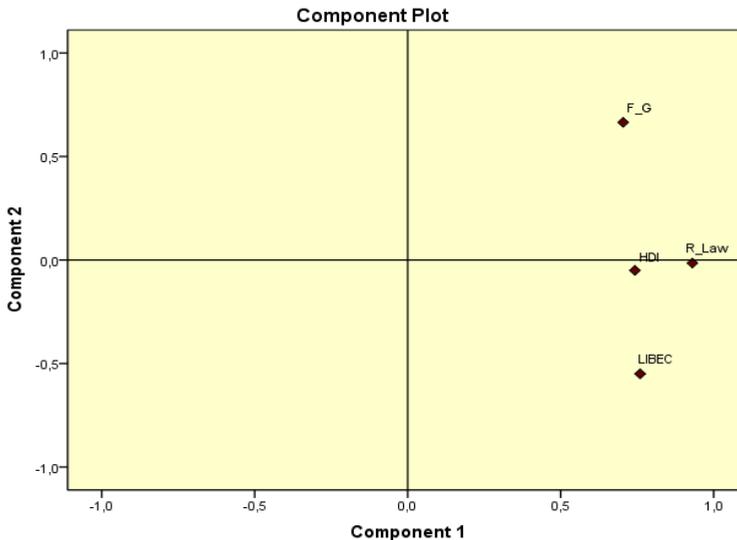


Figure 2 Representation of variables on the two first factorial axes

As indicated, the first factorial axis shows a positive correlation between functioning of government, the rule of law, human development index and the level of economic freedom. The situation of each country introduced in the analysis might be visualized in Appendix – Figure A.1. Romania seems to have a low level of rule of law. Concerning the functioning of government, our country is placed under the average, which is also a problematic aspect, indicating the reduced autonomy of government in taking and implementing decisions. Even so, the level of economic freedom and human development is above the average value. These four variables are used in the regression model which is presented below in Table 1.

Table 1 *Model Summary Results*

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	0,848 ^a	0,719	0,706	0,19020	0,719	16,628	4	26	0,000	2,260

a. Predictors (Constant), LIBEC, F_G, HDI, R_Law

b. Dependent Variable: EPS_eff

The R Square value indicates that the regression model explain the dependent variable in a proportion of 71,9%. The information about the coefficients of the regression model is presented in Appendix 4 – Table A.3. Using the data from the coefficients table, the equation of regression model becomes:

$$EPS_eff = 18,205 - 15,299 * HDI - 0,396 * F_G + 0,075 * R_Law - 0,038 * LIBEC \quad (2)$$

In other words, an increase with 1% of level of economic freedom will generate an increase of economic, political and social effectiveness with 3,8%. Also an increase with 1% of the quality of rule of law will contribute with 7,5% at the effectiveness area. The regression model was validated from the perspective of all model hypotheses: errors normality, homoscedasticity, the lack of autocorrelation and the absence of multicollinearity between independent variables. If we consider the equation of the regression model as an expression of economic, political and social effectiveness achieved after gradual transition, for the particular case of Romania, the calculated value of effectiveness is 1,33, while Czech Republic has an effectiveness value of 1,45. In order to see the level of effectiveness if Romania would had followed a shock therapy, we will consider as new references values, the average for each variable values registered by the Czech Republic, Poland, Hungary, Estonia, Latvia, Lithuania, Slovakia, and Slovenia. In the new context, the calculated value of general effectiveness output is 0,45, lower than value registered by countries that implemented a rapid transition. In such context, we might admit that even if Romania would have implemented the shock transition, the final outcomes would be almost the same, given the institutional fragility. The problems in terms of rule of law and functioning of government indicate major obstacles that came from the values and traditions, mentality inherited from the past regime. The transition was not that profound as to erase the path dependency phenomenon and until the moment when such impediment will not be removed from the path to development, the results in terms of progress and prosperity will remain poor and unsatisfactory.

6. CONCLUSIONS

In this article we tested the impact of institutional quality on economic evolution of transition economies, with particular reference to the situation of Romania. Using a multiple linear regression model based on 2012 cross section data, we emphasized that current economic performances of Romania would have been relatively the same irrespective of the implemented transition therapy – shock or gradual. The results provided by the regression model lead to the conclusion that in this latter nation the unofficial rules are responsible for poor economic performances. In other words, aspects like: bureaucracy, corruption, opportunism, political patronage, in one word inefficient traditions inherited from the past are able to offer a clear explanation to insufficient level of development in Romania. In comparison with countries like: the Czech Republic, Poland, Slovenia, or Estonia, Romania is highlighting the failure of transition to market economy.

The efficiency of the process is strictly dependent on the quality of the informal heritage. Following the same idea we also wanted to highlight the major contribution of the political organism to failure or success of the transition process. He is responsible of creating formal rules in order to ensure the triumph of transition. So, the attention is translated from the rules area to those who create the rules. Their opportunism vitiates the efficiency and performance of formal measures and policies that must shape the transformation. The perpetuation of old Communist practices was mediated by the deliberate inefficiency of informal institutional project, which tolerated the opportunism and superficiality of the political class to the injury of entire society. In Romania, the deviant behaviors of those who have the power, excessive intrusion in private sector activity, the practice of bribe, the lack of long term-orientation and inland mindset strongly distorted by the past experiences are the major obstacles for a positive economic and social dynamics. As long as the rules of the game will not be able to provide transparency and the fairness of political organism, the formal institutional initiatives will cease to furnish the expected results.

The emergence to development, as well as path dependency is subjects of great interest for the economic research area. Taking into consideration the previous conclusions we consider that research within this perimeter should provide answers for the following questions: assuming similarities of the formal institutional background what circumstances explain major development gaps between emerging economies? Why the same legal initiatives generate different

feedback from an emergent economy to another? Why, for the particular case of Romania, the membership of European Union in 2007 under the formal European institutional patterns did not had the effect of a vaccine able to generate a total detachment from the past, but it did for other countries, like Poland, Estonia, Hungary etc.?

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APPENDICES

Appendix 1

Table A.1 *Correlation matrix*

Pearson Correlation	Economic Political and Social Effectiveness	Index of Economic Freedom	Functioning of Government	Human Development Index	Rule of Law
Economic Political and Social effectiveness	1				
Index of Economic Freedom	-0,475	1			
Functioning of Government	-0,607	0,255	1		
Human Development Index	-0,761	0,413	0,373	1	
Rule of Law	-0,640	0,693	0,621	0,569	1

Appendix 2

Table A.2 *Total Variance Explained*

Component	Initial Eigenvalues			Extraction Sums of Square Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2,489	62,236	62,236	2,489	62,236	62,236
2	0,747	18,677	80,913	0,747	18,677	80,913
3	0,584	14,597	95,510			
4	0,180	4,490	100,000			

Extraction Method Principal Component Analysis

Appendix 3

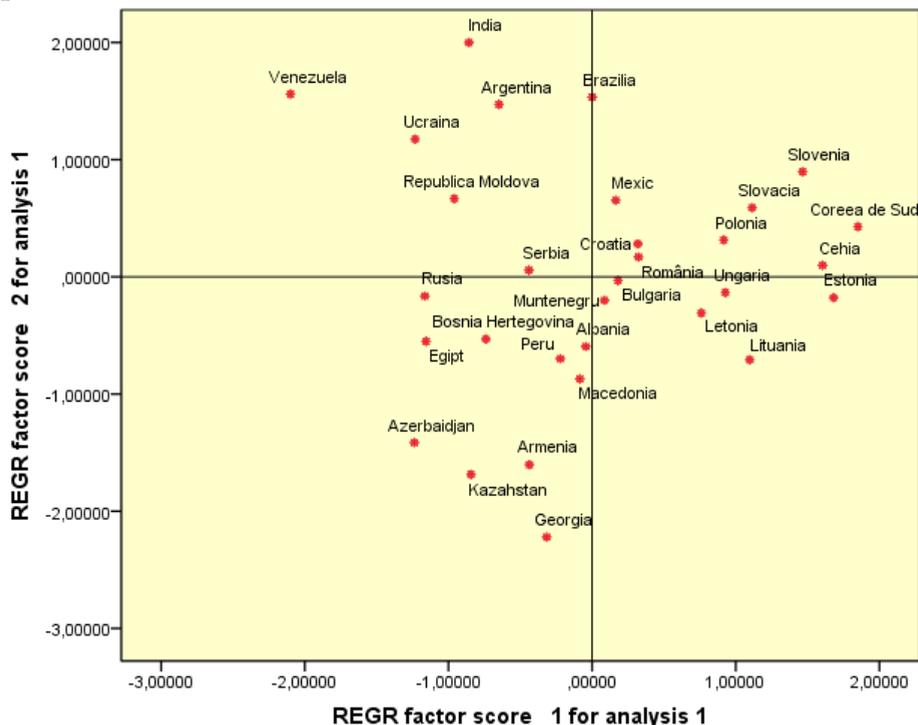


Figure A.1 The placement of emerging countries on the two factorial axes

Appendix 4

Table A.3 *Coefficients*

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
	β	Std. Error	Beta			Tolerance	VIF
<i>Constant</i>	18,205	3,599	-	5,058	0,000	-	-
<i>Human Development Index</i>	-15,299	3,386	-0,572	-4,519	0,00,	0,674	1,483
<i>Functioning of Government</i>	-0,396	0,150	-0,368	-2,639	0,014	0,555	1,802
<i>Rule of Law</i>	0,075	0,550	0,027	0,137	0,049	0,277	3,607
<i>Index of Economic Freedom</i>	-0,038	0,036	-0,163	-1,072	0,029	0,470	2,129

a. Dependent Variable: EPS_eff



MECHANISM OF AUTOCORRELATIONS OF INDIVIDUAL STOCKS' OPENING RETURNS

Andrey KUDRYAVTSEV*

Abstract: *In present study, I analyze the actual mechanism of autocorrelations in individual stocks' opening returns. For Dow Jones Industrial Index constituents, I document that if the previous day's market and individual stock's opening returns are taken together to explain the stock's opening returns, then the effect of the lagged general market opening returns is significantly negative, while the effect of the lagged stock's opening returns is significantly positive. Moreover, following days characterized by both positive and negative opening market returns, taken separately, a given stock's opening returns tend to be higher if its previous day's opening returns were positive. Finally, I construct a number of portfolios based on the opening trading sessions and involving a long position in the stocks on the days when, according to the findings, their opening returns are expected to be high and a short position in the stocks on the days when, according to the findings, their opening returns are expected to be low. All the portfolios are found to yield significantly positive returns, providing an evidence for the practical applicability of the results.*

Keywords: *Opening Returns; Return Autocorrelations; Stock Market Efficiency; Stock Price Drifts and Reversals.*

JEL Classifications: *G11, G14, G19*

1. INTRODUCTION

One of the most interesting and challenging strands of the contemporary literature deals with different kinds of stock market anomalies. Numerous studies report strong evidence that daily stock returns show empirical regularities that are difficult to explain using standard asset pricing theories. The main bottom line of these studies suggests that the use of historical data could be of some help for predicting future returns, with obvious implications for the efficiency of equity

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markets. The main motivation for this study is to detect some potentially profitable investment strategies that would be based on using historical stock price data, and namely, the intraday stock prices.

One of the most visible stylized facts in empirical finance is the autocorrelation of stock returns at fixed intervals (daily, weekly, monthly). This autocorrelation presents a challenge to the main models in continuous-time finance, which rely on some form of the random walk hypothesis. Consequently, there is an extensive literature on stock return autocorrelation; it occupies 55 pages of Campbell, Lo, and MacKinlay (1997)¹.

Over the last years, as increasing computer power and new statistical methods have permitted the analysis of very large datasets using intraday data, the focus has shifted to intraday patterns in stock returns, which make up the focus of the present study, as well. Blandon (2007) shows that while close-to-close stock returns are highly autocorrelated, daily returns calculated on an open-to-close basis do not exhibit significant levels of autocorrelation. Amihud and Mendelson (1987) and Stoll and Whaley (1990) report that the interday stock returns computed using open-to-open prices have greater variance and show more evidence of reversals than comparable returns computed from close-to-close prices. They attribute this result to differences in trading mechanisms between the opening and closing transactions. A long-standing literature on intraday stock price patterns identifies the distinct U-shaped return and return volatility pattern over the trading day (e.g., Wood et al. (1985), Harris (1986), Jain and Joh (1988), Pagano et al. (2008)). In other words, these studies indicate that average stock returns and return volatilities tend to be higher at the beginning and end of the trading day.

¹ Most researchers suggest explanations based on non-synchronous trading as the cause of the positive return autocorrelation observed across international stock markets (e.g., Fisher (1966), Scholes and Williams (1977), Atchinson et al. (1987), Ahn et al. (2002)). For example, Kadlec and Patterson (1999) argue that non-synchronous trading can explain 85%, 52%, and 36% of daily autocorrelations on portfolios of small, random, and large stocks, respectively. Accordingly, since daily returns are usually computed through a stock market index, the inclusion in the index of securities that are subjected to infrequent trading could cause positive stock return autocorrelation. However, since a significant level of first-order serial correlation has been found on common stock portfolios of large and actively traded firms (e.g., Perry (1985), Safvenblad (2000)), non-synchronous trading seems to be not the only cause of correlation in daily market indexes. In this context, several studies suggest that the gradual incorporation of market-wide information may cause serial correlation in short-term stock returns (e.g., Lo and MacKinlay (1990), Sias and Starks (1997), Chordia and Swaminathan (2000)). Other potential explanations for stock return autocorrelation include, but are not limited to, bid-ask bounce (e.g., Rhee and Wang (1997)); partial price adjustment, i.e. the observation that trade takes place at prices that do not fully reflect the information possessed by traders (e.g., Campbell, Lo, and MacKinlay (1997)); and the time-varying risk premium (e.g., Anderson (2006)).

Several recent studies detect systematic correlations, both within and between subsequent trading days, between different intraday return measures. Kudryavtsev (2012) finds that for the majority of stocks, open-to-close returns tend to be significantly lower, and in most cases negative, if on that respective day their opening returns are higher than the average or median opening return on the stocks in the sample. That is, relatively high opening stock returns may serve an indication for subsequent intraday price reversals and for even more pronounced intraday U-shaped return pattern. Furthermore, Kudryavtsev (2013) documents that stock returns in opening trading sessions tend to be higher following days with relatively low (either negative, or lower than the same day's average and median for the total sample of stocks) open-to-close returns. These findings are interpreted as reversals following stock price overreactions².

In present study, I further develop the idea of the two above-mentioned studies. Since, according to Kudryavtsev (2012), open-to-close stock returns tend to be lower following relatively high opening returns at the beginning of the same trading day, and furthermore, according to Kudryavtsev (2013), opening stock returns tend to be higher following days with relatively low open-to-close returns, then one might expect opening returns to be higher following relatively high previous day's opening returns for the respective stock. Thus, an important contribution of this study to the existing literature is the analysis of potential *interday* (between two subsequent trading days) drifts in opening stock returns, that is, in returns of a *similar* category.

I analyze opening returns on thirty stocks currently making up the Dow Jones Industrial Index, and find support for my research hypothesis. Namely, I detect that, after controlling for the previous day's average or median opening return on the stocks in the sample (showing evidence of significantly negative autocorrelations), opening stock returns tend to be positively correlated with the respective stocks' previous day's opening returns. The result holds separately

² The focus on long-term dynamics of stock returns' overreaction and subsequent reversals from the pioneering studies by Shiller (1984) and De Bondt and Thaler (1985) is more recently realigned to short-run return behavior, ranging over time periods from a few days up to a month, in the major part of the subsequent literature (e.g., Lehmann (1990), Zarowin (1989), Atkins and Dyl (1990), Cox and Peterson (1994), Park (1995), Bowman and Iverson (1998), Nam et al. (2001)). A continuously growing body of literature concentrates on even shorter time intervals, and studies intraday price reversals (e.g., Grant et al. (2005), Zawadowski et al. (2006)). The major focus of these studies is on identifying potentially profitable contrarian strategies built on a reverting behavior of stock prices in the short run.

following the days with positive and non-positive average opening returns within the sample³.

Furthermore, as a major practical contribution of my study, based on the above mentioned findings, I construct a number of daily-adjusted portfolios involving a long (short) opening-session position in the stocks on the days when, according to the findings, their opening returns are expected to be high (low), and demonstrate that the returns on these portfolios are significantly positive.

The rest of the paper is structured as follows: In Section 2, I describe the data sample. Section 3 comprises the research hypothesis and the results. Section 4 concludes.

2. DATA DESCRIPTION

For the purposes of present research, I employ daily opening and closing prices of thirty stocks currently making up the Dow Jones Industrial Index over the period from January 2, 2002 to September 30, 2011 (overall, 2455 trading days), as recorded at www.finance.yahoo.com. I adjust the prices to dividend payments and stock splits, by multiplying each actual price by the ratio of the respective day's reported adjusted (by Yahoo finance) closing to actual closing price. For each stock i in the sample and for each trading day t , except for the first day of the sampling period, I calculate:

- Stock's opening return ($R_{O,it}$), i.e., stock price's change from last day's closing price to today's opening price, as

$$R_{O,it} = \frac{P_{O,it}}{P_{C,it-1}} - 1 \quad (1)$$

where: $R_{O,it}$ is stock i 's opening return on day t ; $P_{O,it}$ is stock i 's opening price on day t ; and $P_{C,it-1}$ is stock i 's closing price on day $t-1$ ⁴.

³ At the first glance, this result seems to contradict the findings by Amihud and Mendelson (1987) and Stoll and Whaley (1990) reporting that opening returns show some evidence of reversals, but in fact, there is no contradiction (as explained in some more detail in Section 3). The point is that the average or median opening returns are negatively autocorrelated, and since most of positive (negative) opening returns for a given stock happen on the days when the average or median opening return is also positive (negative), the stock's next day's opening returns tend to be negative (positive), providing an evidence of a generally negative autocorrelation in opening stock returns. But if the effect of the previous day's median or average opening returns is *controlled for*, it appears that, following days with both positive and negative average returns, opening stock returns tend to be higher, the higher are the respective previous day's opening returns.

Table 1 comprises the basic descriptive statistics of the opening returns for the thirty sample stocks. At this stage, we may note that, as it might be expected for the largest industrial companies of the US, 21 (24) out of 30 stocks have positive mean (median) opening returns, the remaining 9 (6) showing negative, yet close to zero daily returns. Overall, the mean opening returns range from -0.116 to 0.158 percentage points, with standard deviations ranging from 0.663 to 2.045 percentage points.

3. RESEARCH HYPOTHESIS AND RESULTS

3.1. Interday drifts in opening stock returns

The main goal of present study is to shed light on the nature and the characteristics of the interday correlations of opening stock returns. Based on previous results by Kudryavtsev (2012) who finds that for the majority of stocks, open-to-close returns tend to be significantly lower, and in most cases negative, if on that respective day their opening returns are higher than the average or median opening return on the stocks in the sample, and by Kudryavtsev (2013) who documents that stock returns in opening trading sessions tend to be higher following days with relatively low (either negative, or lower than the same day's average and median for the total sample of stocks) open-to-close returns, I hypothesize that:

Hypothesis: A given stock's opening return on day t should be higher the higher was the stock's opening return on day $t-1$.

In other words, I suggest that if relatively high day- t opening stock returns serve an indication for subsequent intraday (open-to-close) price reversals, while relatively low day- t open-to-close stock returns serve an indication for subsequent reversals in day- $t-1$ opening returns, then we may expect interday (between day $t-1$ and day t) drifts, or *positive* autocorrelations, in opening stock returns.

In order to test my research hypothesis, one should first of all take into consideration the findings by Amihud and Mendelson (1987) and Stoll and Whaley (1990) reporting that opening returns show some evidence of reversals. At the first glance, these results seem to contradict the Hypothesis, but, in fact, may refer to

⁴ During the sampling period, the database on Yahoo Finance was missing only two trading days for Kraft Foods stock and one trading day for The Travelers Companies stock. I assumed the missing days' opening and closing prices to be equal to the average of the previous and the next trading days' opening and closing prices, respectively, for the respective stock.

another effect which does not imply any contradiction. The point is that the above-mentioned findings may be driven by generally negative first-order autocorrelations in the opening returns of the stock market as a whole. In this case, the general picture of the correlations in opening stock returns may look as follows:

- a) If on day $t-1$, the general market, either average or median, opening return is positive (negative), then, according to the findings by Amihud and Mendelson (1987) and Stoll and Whaley (1990), the general market opening return on day t may be expected to be negative (positive).
- b) According to (a), day- $t-1$ opening returns for the majority of stocks are positive (negative), and day- t opening returns for the majority of stocks are negative (positive).
- c) According to (b), stock i 's opening returns are positive (negative) mostly on the days when the general market opening returns are also positive (negative), and in many cases, due to the negative autocorrelation in the general market opening returns, stock i 's opening returns on subsequent trading days are negative (positive), which, in the absence of any other explanatory factors, represents an evidence for the negative first-order autocorrelation in stock i 's opening returns.
- d) If this study's hypothesis is true, it means that stock i 's opening returns may actually be *positively* autocorrelated *given* the sign of the previous day's general market opening return. That is, given the sign and possibly the magnitude of the day- $t-1$ general market opening return, the day- t opening return on stock i may be higher the higher was stock i 's opening return on day $t-1$.

Therefore, in order to check the validity of the research hypothesis, I first of all, test the model where stock i 's opening return on day t depends on the stock's opening return on day $t-1$, *controlling* for day- $t-1$ general market opening return. As two alternative proxies for the general market opening return, I employ the average (equally-weighted) and the median opening returns on the stocks making up the sample. That is, for each of the thirty sample stocks, I run two regressions:

$$OR_{it} = \beta_0 + \beta_1 AOR_{t-1} + \beta_2 OR_{it-1} + \varepsilon_{it} \quad (2)$$

where: OR_{it} represents stock i 's opening return on day t ; and AOR_{t-1} is the average day- $t-1$ opening return for the stocks in the sample.

and

$$OR_{it} = \beta_0 + \beta_1 MOR_{t-1} + \beta_2 OR_{it-1} + \varepsilon_{it} \quad (3)$$

where: MOR_{t-1} is the median day- $t-1$ opening return for the stocks in the sample.

I should note that for both regressions, I employ a simple linear specification, as I am in fact interested in detecting the direction of the explanatory variables' effects, rather than in fully explaining the individual stocks' opening returns.

Tables 2a and 2b report the results of regressions (2) and (3), respectively, for each of the sample stocks. First of all, we should pay attention to a very strong result regarding the effect of the general market opening returns on the next day's returns on individual stocks – with both market return proxies employed, the effect is negative for *all* the 30 stocks in the sample, being statistically significant at the 5% level for 27 of them, including 26 at the 1% level.⁵ Therefore, we may conclude that the reversals in opening stock returns documented by Amihud and Mendelson (1987) and Stoll and Whaley (1990) are actually driven by the negative effect of the previous trading day's *general* market opening returns and not by "stock-specific" price behavior.

Furthermore, both Tables clearly support the research hypothesis. With the average (median) proxy for the general market opening returns, the effect of the previous day's stocks' opening returns is positive for 27 (23) out of 30 stocks. Out of these 27 (23) positive regression coefficients 13 (12) are statistically significant, including 11 (11) at the 5% level, and 10 (10) at the 1% level. None of the remaining 3(7) negative coefficients are significant.

Thus, we may conclude that the negative, and usually non-significant, first-order autocorrelations in individual stocks' returns documented in previous literature represent a "combination" of two effects: on the one hand, a strong and significantly negative effect of previous day's average or median opening market returns, and on the other hand, not that strong but pretty consistent positive effect of previous day's opening returns on the stocks themselves, indicating that if the general market effect on stocks' opening returns is controlled for, then the latter, in

⁵ I have repeated the analysis for different (shorter) time periods within my sample period. The results (available upon request from the author) are qualitatively similar. Tables 2a and 2b show that the regressions' adjusted R-squared values are quite modest, yet, this does not create problems, since the goal of the regressions is actually to detect the direction of the explanatory variables' effects, rather than to fully explain the individual stocks' opening returns. The Durbin-Watson statistics for all the regressions in both versions are very close to 2, indicating no autocorrelation in regressions' residuals. Finally, none of the variables show any presence of a unit root (the exact statistics are available upon request from the author), demonstrating that the regressions are not spurious.

fact, tend to exhibit *positive* first-order autocorrelations. Once again, I should note that these findings do not contradict the results previously obtained by Amihud and Mendelson (1987) and Stoll and Whaley (1990), but rather *amplify* them by detecting two opposite-sign effects, which determine the autocorrelations in stock returns.

Now, having detected the positive effect of stocks' opening returns on their next day's opening returns, I am interested in verifying if the effect persists separately both for the days characterized by positive and negative opening market returns. Table 3a presents for each stock i in the sample, its mean opening returns, separately, following the days when its opening returns were positive ($OR_{it-1}>0$) and non-positive ($OR_{it-1}\leq 0$), and the respective return differences, *given* that the previous days were characterized by positive average opening returns ($AOR_{t-1}>0$). Table 3b provides similar statistics following the days characterized by non-positive average opening returns ($AOR_{t-1}\leq 0$). In other words, the Tables contain mean opening stock returns for the 2×2 sample partition by the sign of the previous days' average opening returns and individual stocks' opening returns, and perform comparisons given the sign of the previous days' average opening returns. Finally, Tables 3a and 3b report and compare, for the days characterized by $AOR_{t-1}>0$ and $AOR_{t-1}\leq 0$, respectively, the mean opening returns for the equally-weighted portfolios of stocks with $OR_{it-1}>0$ and $OR_{it-1}\leq 0$ ⁶.

Table 3a demonstrates that at the individual stocks' level, the positive effect of a stock's previous day's opening return is quite weak, given that that the previous day showed a positive average opening return. The number of positive and negative return differences between stocks' opening returns following $OR_{it-1}>0$ and $OR_{it-1}\leq 0$ is equal, yet, 5 of the positive and none of the negative differences are statistically significant. On the other hand, if we consider the equally-weighted daily portfolios of stocks, then the results clearly corroborate my research hypothesis, showing a significantly higher mean opening return for the portfolio made up of stocks with $OR_{it-1}>0$. We should also note that mean opening returns on both portfolios and on

⁶ To construct the equally-weighted portfolios, for each day t characterized by, say, $AOR_{t-1}>0$ (previous day's average opening return was positive – relevant for Table 3a), I construct two portfolios, where the return on the first one is the equally-weighted opening return on all the stocks whose previous day's opening return was positive ($OR_{it-1}>0$), and the return on the second one is the equally-weighted opening return on all the stocks whose previous day's opening return was non-positive ($OR_{it-1}\leq 0$). I furthermore, calculate mean returns on both portfolios over all the days like t .

the vast majority of individual stocks are negative, indicating once again the generally negative effect of previous day's average opening returns.

Table 3b analyzes mean opening returns, given that that previous day showed a non-positive average opening return, and provides a strong support for this study's hypothesis, both at the individual stocks' level and for the equally-weighted portfolios. 22 out of 30 mean opening return differences between the stocks with $OR_{it-1} > 0$ and $OR_{it-1} \leq 0$ are positive, 5 of them being statistically significant, including two at the 5% level, and one at the 1% level. All the negative return differences are close to zero, and none of them are even close to being significant. The positive return difference between the mean opening returns of the portfolios of stocks with $OR_{it-1} > 0$ and $OR_{it-1} \leq 0$ is quite large (0.089% daily) and significant at the 1% level. Finally, we should note that mean opening returns on both portfolios and on the vast majority of individual stocks are positive, in line with the generally negative effect of previous day's average opening returns⁷.

3.2. Interday drift-based trading strategy

In previous Subsection, I have documented interday drifts in opening stock returns, suggesting that, if the general market direction of the previous day's opening session is controlled for, then day- t opening return for a stock i tends to be higher the higher was the stock's opening return on day $t-1$. Now, the major practical goal of this Subsection is to verify if one can formulate profitable trading strategies that would be based on the expectation of interday drifts in opening returns.

Recall that Table 3a demonstrated that following the days characterized by positive average opening returns, individual stocks' opening returns tend to be negative and are significantly lower for the stocks whose previous day's opening returns were non-positive, while Table 3b indicated that following the days characterized by non-positive average opening returns, individual stocks' opening returns tend to be positive and are significantly higher for the stocks whose previous day's opening returns were positive. Therefore, the idea behind all the trading strategies I formulate is that following the days of general decreases during the opening session, one should hold an equally-weighted long position in the

⁷ I have repeated the analysis presented in Tables 3a and 3b, employing the sign of the previous trading day's *median* (instead of average) opening returns for the stocks in the sample as a proxy for the general market opening returns. The results are qualitatively similar and available upon request from the author.

stocks whose previous day's opening returns were relatively high, while following the days of general increases during the opening session, one should hold an equally-weighted short position in the stocks whose previous day's opening returns were relatively low. The respective positions in stocks are taken at the end of each trading day, according to the general direction of the day's opening returns, and closed at the end of the next day's opening session.

For all the stocks in the sample and over the whole sampling period, I construct six alternative investment portfolios:

a) ***Portfolios based on the sign of the previous day's Average opening returns:***

Portfolio AP: Portfolio that following the days of non-positive Average opening returns, implies an equally-weighted long position (for the days' opening sessions) in the stocks whose previous day's opening returns were Positive, and following the days of positive Average opening returns, implies an equally-weighted short position (for the days' opening sessions) in the stocks whose previous day's opening returns were non-Positive⁸.

Portfolio AA: Portfolio that following the days of non-positive Average opening returns, implies an equally-weighted long position (for the days' opening sessions) in the stocks whose previous day's opening returns were higher than the sample Average, and following the days of positive Average opening returns, implies an equally-weighted short position (for the days' opening sessions) in the stocks whose previous day's opening returns were lower than or equal to the sample Average.

Portfolio AM: Portfolio that following the days of non-positive Average opening returns, implies an equally-weighted long position (for the days' opening sessions) in the stocks whose previous day's opening returns were higher than the sample Median, and following the days of positive Average opening returns, implies an equally-weighted short position (for the days' opening sessions) in the stocks whose previous day's opening returns were lower than or equal to the sample Median.

b) ***Portfolios based on the sign of the previous day's Median opening returns:***

Portfolio MP: Portfolio that following the days of non-positive Median opening returns, implies an equally-weighted long position (for the days' opening

⁸ This is, in fact, a portfolio based on the same approach as the one employed in Tables 3a and 3b.

sessions) in the stocks whose previous day's opening returns were Positive, and following the days of positive Median opening returns, implies an equally-weighted short position (for the days' opening sessions) in the stocks whose previous day's opening returns were non-Positive.

Portfolio MA: Portfolio that following the days of non-positive Median opening returns, implies an equally-weighted long position (for the days' opening sessions) in the stocks whose previous day's opening returns were higher than the sample Average, and following the days of positive Median opening returns, implies an equally-weighted short position (for the days' opening sessions) in the stocks whose previous day's opening returns were lower than or equal to the sample Average.

Portfolio MM: Portfolio that following the days of non-positive Median opening returns, implies an equally-weighted long position (for the days' opening sessions) in the stocks whose previous day's opening returns were higher than the sample Median, and following the days of positive Median opening returns, implies an equally-weighted short position (for the days' opening sessions) in the stocks whose previous day's opening returns were lower than or equal to the sample Median.

Table 4 concentrates over the sampling period the basic daily performance measures for all the six portfolios. Strikingly, all the portfolios yield positive and highly significant mean daily returns. These results, first of all, provide a strong support for my research hypothesis. That is, general market opening returns are negatively autocorrelated, but if we control for the sign of the previous day's market opening return, then for an individual stock, opening returns tend to be higher following the days when they were relatively high (either positive, or higher than the sample average or median for the same day). Moreover, from the practical point of view, at least if trading commissions are not a problem, the six portfolios represent potentially profitable investment strategies. Mean opening returns of about 0.1 percentage point may, at the first glance, seem not too impressive, but since we are talking about single-day opening returns, the mean annual return of about 37% on Portfolios AP or MP, for example, look promising (recall that they yield *significantly* positive returns).

Overall, the results in this Section strongly indicate that interday drifts, contradicting market efficiency, are exhibited in stocks' opening returns, and, therefore, investment strategies built upon the expectation of such drifts may possess a non-negligible potential.

4. CONCLUSION

The main goal of present study is to shed light on the actual mechanism of autocorrelations in individual stocks' opening returns. I suggest that the findings by Amihud and Mendelson (1987) and Stoll and Whaley (1990) reporting that opening returns show some evidence of reversals may be driven by generally negative first-order autocorrelations in the opening returns of the stock market as a whole, and that, if the general market opening returns are controlled for, then individual stocks' opening returns may actually exhibit positive, rather than negative, autocorrelations, in line with the results by Kudryavtsev (2012, 2013) indicating reversals in stocks' open-to-close returns with respect to opening returns, and also reversals in the next day's opening returns with respect to today's open-to-close returns. In other words, I expect, after controlling for previous day's opening market returns, to find drifts in individual stocks' opening returns caused by a kind of "reversals of reversals".

I analyze intraday price data on thirty stocks currently making up the Dow Jones Industrial Index, and find supporting evidence for my research hypothesis. Employing the sample average and the sample median of opening stock returns for each of the trading days within my sample period as two alternative proxies for the general market opening returns, I document that if the previous day's market and individual stock's opening returns are taken together to explain the stock's opening returns, then, in line with my hypothesis, the effect of the lagged general market opening returns is significantly negative, while the effect of the lagged stock's opening returns is significantly positive. Furthermore, to support my findings, I separately demonstrate that following days characterized by both positive and negative market opening returns, a given stock's opening returns tend to be higher if its previous day's opening returns were positive.

Finally, on the basis of these results, I test if it may be possible to define potentially profitable investment strategies. I construct a number of portfolios based on the opening trading sessions and involving a long position in the stocks on the days when, according to the findings, their opening returns are expected to be high and a short position in the stocks on the days when, according to the findings, their opening returns are expected to be low. All the portfolios are found to yield significantly positive returns, providing an evidence for the practical applicability of the pattern of drifts in opening stock prices.

To summarize, at least in a perfect stock market with no commissions, the daily-adjusted strategies based on the expectations of interday drifts in opening stock returns look promising. This may prove a valuable result for both financial theoreticians in their eternal discussion about stock market efficiency, and practitioners in search of potentially profitable investment strategies. Potential directions for further research may include expending the analysis to other stock exchanges and greater samples.

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APPENDIX

1. Descriptive statistics of sample stocks' opening returns

The table presents for each of the 30 sample stocks and over the sampling period (2454 trading days), the basic descriptive statistics of the opening returns calculated as follows:

$$R_{O,it} = \frac{P_{O,it}}{P_{C,it-1}} - 1$$

where: $R_{O,it}$ is stock i 's opening return on day t ; $P_{O,it}$ is stock i 's opening price on day t ; and $P_{C,it-1}$ is stock i 's closing price on day $t-1$

Table 1 *Descriptive statistics of sample stocks' opening returns*

Company (Ticker symbol)	Opening returns, %					
	Mean	Median	St. Deviation	Maximum	Minimum	% of positive
Alcoa Inc. (AA)	0.158	0.084	1.551	18.969	-11.636	58.62
American Express (AXP)	-0.008	0.004	1.212	8.201	-11.064	51.12
Boeing (BA)	0.033	0.015	1.004	9.636	-9.638	54.34
Bank of America (BAC)	0.104	0.015	2.045	26.050	-20.020	53.48
Caterpillar (CAT)	0.086	0.029	1.198	11.365	-10.945	57.03
Cisco Systems (CSCO)	0.026	0.022	1.410	16.379	-16.452	51.36
Chevron Corporation (CVX)	0.032	0.030	0.808	4.033	-8.638	56.74
E.I. Du Pont de Nemours (DD)	0.039	0.020	0.879	5.201	-7.156	54.75
Walt Disney (DIS)	-0.048	-0.003	1.094	15.941	-9.875	49.29
General Electric (GE)	0.086	0.026	1.275	17.511	-11.583	53.81
Home Depot Inc. (HD)	0.001	-0.002	1.047	8.841	-9.479	49.57
Hewlett-Packard (HPQ)	-0.116	-0.046	1.386	14.379	-20.034	45.46
IBM (IBM)	-0.061	-0.033	0.956	12.177	-10.028	45.25
Intel Corporation (INTC)	0.038	0.070	1.377	8.567	-18.117	54.26
Johnson & Johnson (JNJ)	0.005	0.008	0.715	6.092	-16.552	52.79
JP Morgan Chase & Co (JPM)	0.043	0.013	1.436	16.616	-11.570	53.36
Kraft Foods Inc. (KFT)	-0.013	0.002	0.829	5.433	-12.779	50.84
Coca-Cola (KO)	-0.009	-0.002	0.663	7.072	-4.787	49.37
McDonald's Corporation (MCD)	0.007	0.007	0.860	4.554	-9.366	51.93
3M Company (MMM)	0.017	0.007	0.756	8.270	-6.285	53.85
Merck & Company Inc. (MRK)	-0.022	0.009	1.110	6.543	-25.878	52.55
Microsoft Corporation (MSFT)	0.017	0.008	1.020	12.550	-11.080	50.47
Pfizer Inc. (PFE)	0.054	0.029	1.047	11.400	-15.100	53.89
Procter & Gamble (PG)	-0.043	-0.014	0.625	4.846	-6.057	46.07
AT&T Inc. (T)	0.053	0.038	0.933	5.734	-8.469	56.13
The Travelers Companies (TRV)	0.042	0.011	0.996	11.292	-9.025	53.40
United Technologies Corp. (UTX)	0.042	0.015	0.824	6.470	-7.192	54.58
Verizon Communications (VZ)	0.035	0.027	0.839	4.359	-7.286	55.56
Wal-Mart Stores Inc. (WMT)	0.018	0.011	0.735	5.044	-7.620	52.91
Exxon Mobil Corporation (XOM)	-0.005	0.011	0.801	4.215	-9.071	52.46

2a. Regression analysis of opening stock returns: General market opening returns proxied by average opening returns for the stocks in the sample

The table presents the regression coefficients, their t-statistics, and the DW and adjusted R-squared values for the following model:

$$OR_{it} = \beta_0 + \beta_1 AOR_{t-1} + \beta_2 OR_{it-1} + \varepsilon_{it}$$

where: OR_{it} represents stock i 's opening return on day t ; and AOR_{t-1} is the average day- $t-1$ opening return for the stocks in the sample.

Table 2a *Regression analysis of opening stock returns: General market opening returns proxied by average opening returns for the stocks in the sample*

Company (Ticker symbol)	Regression coefficients, (t-statistics)			Durbin-Watson statistic	Adjusted R-squared
	Intercept	AOR_{t-1}	OR_{it}		
Alcoa Inc. (AA)	***0.0015 (4.78)	***-0.4667 (-7.08)	***0.1121 (3.66)	2.010	0.142
American Express (AXP)	-0.0001 (-0.15)	***-0.2140 (-3.75)	0.0204 (0.60)	2.007	0.112
Boeing (BA)	*0.0003 (1.73)	***-0.2479 (-6.49)	***0.0952 (3.47)	2.014	0.117
Bank of America (BAC)	**0.0010 (2.43)	***-0.6126 (-7.57)	***0.1641 (5.75)	2.010	0.132
Caterpillar (CAT)	***0.0009 (3.70)	-0.0041 (-0.08)	-0.0446 (-1.50)	2.002	0.071
Cisco Systems (CSCO)	0.0003 (1.01)	***-0.1571 (-2.87)	0.0003 (0.01)	2.001	0.096
Chevron Corporation (CVX)	**0.0003 (2.13)	***-0.1008 (-2.96)	-0.0135 (-0.44)	2.010	0.109
E.I. Du Pont de Nemours (DD)	***0.0004 (2.40)	***-0.1035 (-2.73)	-0.0354 (-1.14)	1.997	0.114
Walt Disney (DIS)	** -0.0004 (-1.99)	***-0.1666 (-4.12)	0.0375 (1.41)	2.005	0.097
General Electric (GE)	***0.0008 (2.97)	***-0.4038 (-7.06)	***0.2190 (6.77)	2.022	0.138
Home Depot Inc. (HD)	0.0001 (0.21)	***-0.1481 (-3.65)	0.0088 (0.32)	1.999	0.101
Hewlett-Packard (HPQ)	***-0.0011 (-4.02)	-0.0659 (-1.33)	0.0058 (0.22)	2.000	0.062
IBM (IBM)	***-0.0007 (-3.48)	-0.0137 (-0.36)	***0.1057 (3.69)	1.995	0.113
Intel Corporation (INTC)	0.0004 (1.53)	***-0.1734 (-3.27)	-0.0311 (-1.12)	1.999	0.120
Johnson & Johnson (JNJ)	0.0001 (0.52)	***-0.1306 (-5.28)	***0.0904 (3.62)	2.001	0.108
JP Morgan Chase & Co (JPM)	*0.0005 (1.67)	***-0.2921 (-4.28)	0.0131 (0.38)	1.993	0.124
Kraft Foods Inc. (KFT)	-0.0001 (-0.53)	***-0.1426 (-5.32)	***0.0805 (3.45)	1.997	0.106
Coca-Cola (KO)	-0.0001 (-0.55)	***-0.0764 (-3.29)	***0.0733 (2.90)	1.999	0.084
McDonald's Corporation (MCD)	0.0001 (0.54)	***-0.1464 (-5.01)	0.0226 (0.92)	1.999	0.117
3M Company (MMM)	0.0002 (1.25)	***-0.1319 (-4.50)	0.0440 (1.57)	1.999	0.100
Merck & Company Inc. (MRK)	-0.0002 (-0.90)	** -0.0872 (-2.40)	0.0127 (0.54)	1.996	0.061
Microsoft Corporation (MSFT)	0.0002 (0.97)	***-0.1745 (-4.37)	*0.0541 (1.91)	2.001	0.087
Pfizer Inc. (PFE)	**0.0005 (2.49)	***-0.1166 (-3.30)	***0.0698 (2.87)	1.998	0.074
Procter & Gamble (PG)	***-0.0004 (-3.05)	***-0.0911 (-4.13)	*0.0441 (1.73)	2.005	0.086
AT&T Inc. (T)	***0.0005 (2.59)	***-0.1924 (-5.48)	***0.1586 (5.84)	2.008	0.124
The Travelers Companies (TRV)	**0.0004 (2.24)	***-0.2112 (-5.39)	*0.0474 (1.67)	2.017	0.118
United Technologies Corp. (UTX)	***0.0004 (2.59)	***-0.1179 (-3.28)	0.0321 (1.02)	2.003	0.095
Verizon Communications (VZ)	**0.0004 (2.13)	***-0.1377 (-4.23)	**0.0578 (2.07)	2.000	0.089
Wal-Mart Stores Inc. (WMT)	0.0002 (1.32)	***-0.0950 (-3.77)	0.0380 (1.54)	1.997	0.075
Exxon Mobil Corporation (XOM)	-0.0001 (-0.15)	***-0.1339 (-4.05)	0.0244 (0.82)	2.008	0.099

Asterisks denote two-tailed p-values: * $p < 0.10$; ** $p < 0.05$; *** $p < 0.01$.

2b. Regression analysis of opening stock returns: General market opening returns proxied by median opening returns for the stocks in the sample

The table presents the regression coefficients, their t-statistics, and the DW and adjusted R-squared values for the following model:

$$OR_{it} = \beta_0 + \beta_1 MOR_{t-1} + \beta_2 OR_{it-1} + \varepsilon_{it}$$

where: OR_{it} represents stock i 's opening return on day t ; and MOR_{t-1} is the median day- $t-1$ opening return for the stocks in the sample.

Table 2b *Regression analysis of opening stock returns: General market opening returns proxied by median opening returns for the stocks in the sample*

Company (Ticker symbol)	Regression coefficients, (t-statistics)			Durbin-Watson statistic	Adjusted R-squared
	Intercept	MOR_{t-1}	OR_{it-1}		
Alcoa Inc. (AA)	***0.0015 (4.67)	***-0.5236 (-7.36)	***0.1040 (3.57)	2.012	0.144
American Express (AXP)	-0.0001 (-0.25)	***-0.2112 (-3.41)	0.0048 (0.15)	2.006	0.120
Boeing (BA)	0.0003 (1.60)	***-0.2787 (-6.36)	***0.0956 (3.45)	2.016	0.136
Bank of America (BAC)	**0.0010 (2.32)	***-0.6557 (-7.71)	***0.1436 (5.42)	2.008	0.142
Caterpillar (CAT)	***0.0009 (3.67)	-0.0264 (-0.48)	-0.0362 (-1.24)	2.003	0.061
Cisco Systems (CSCO)	0.0003 (0.96)	** -0.1167 (-1.98)	-0.0212 (-0.80)	2.001	0.083
Chevron Corporation (CVX)	**0.0003 (2.06)	***-0.1111 (-2.82)	-0.0143 (-0.46)	2.010	0.088
E.I. Du Pont de Nemours (DD)	**0.0004 (2.33)	***-0.1371 (-3.14)	-0.0236 (-0.75)	1.998	0.123
Walt Disney (DIS)	** -0.0005 (-2.07)	***-0.1907 (-4.23)	0.0364 (1.39)	2.005	0.097
General Electric (GE)	***0.0007 (2.83)	***-0.4576 (-7.41)	***0.2131 (6.92)	2.023	0.145
Home Depot Inc. (HD)	0.0001 (0.12)	***-0.1433 (-3.15)	-0.0023 (-0.08)	1.999	0.107
Hewlett-Packard (HPQ)	***-0.0012 (-4.11)	-0.0388 (-0.71)	-0.0051 (-0.20)	2.000	0.051
IBM (IBM)	***-0.0007 (-3.59)	-0.0341 (-0.81)	***0.1288 (4.62)	1.993	0.118
Intel Corporation (INTC)	0.0004 (1.47)	***-0.1751 (-3.06)	-0.0414 (-1.57)	2.000	0.115
Johnson & Johnson (JNJ)	0.0001 (0.44)	***-0.1608 (-5.70)	***0.0981 (3.91)	2.005	0.121
JP Morgan Chase & Co (JPM)	0.0005 (1.58)	***-0.3141 (-4.38)	0.0021 (0.06)	1.995	0.138
Kraft Foods Inc. (KFT)	-0.0001 (-0.63)	***-0.1513 (-5.02)	***0.0747 (3.23)	1.997	0.099
Coca-Cola (KO)	-0.0001 (-0.61)	***-0.0913 (-3.45)	***0.0764 (3.00)	2.000	0.074
McDonald's Corporation (MCD)	0.0001 (0.46)	***-0.1761 (-5.38)	0.0252 (1.04)	2.001	0.123
3M Company (MMM)	0.0002 (1.16)	***-0.1479 (-4.39)	0.0443 (1.56)	2.001	0.098
Merck & Company Inc. (MRK)	-0.0002 (-0.95)	** -0.0962 (-2.36)	0.0110 (0.47)	1.996	0.061
Microsoft Corporation (MSFT)	0.0002 (0.88)	***-0.1718 (-3.93)	0.0396 (1.45)	2.001	0.086
Pfizer Inc. (PFE)	**0.0005 (2.44)	***-0.1186 (-3.00)	***0.0639 (2.66)	1.999	0.063
Procter & Gamble (PG)	***-0.0004 (-3.10)	***-0.1088 (-4.27)	**0.0496 (1.91)	2.005	0.076
AT&T Inc. (T)	**0.0005 (2.49)	***-0.2079 (-5.19)	***0.1544 (5.66)	2.010	0.109
The Travelers Companies (TRV)	**0.0004 (2.14)	***-0.2172 (-4.96)	0.0359 (1.28)	2.015	0.108
United Technologies Corp. (UTX)	**0.0004 (2.53)	***-0.1133 (-2.67)	0.0216 (0.66)	2.003	0.094
Verizon Communications (VZ)	**0.0003 (2.04)	***-0.1688 (-4.56)	**0.0648 (2.31)	2.001	0.098
Wal-Mart Stores Inc. (WMT)	0.0002 (1.25)	***-0.1054 (-3.69)	0.0368 (1.49)	1.997	0.074
Exxon Mobil Corporation (XOM)	-0.0001 (-0.23)	***-0.1573 (-4.07)	0.0299 (0.97)	2.008	0.111

Asterisks denote two-tailed p-values: * $p < 0.10$; ** $p < 0.05$; *** $p < 0.01$.

3a. Opening stock returns following the days of positive and non-positive opening returns: Statistics following the days characterized by positive average opening returns

The table presents for each stock i , its mean opening returns, separately, following the days when its opening returns were positive ($OR_{it-1} > 0$) and non-positive ($OR_{it-1} \leq 0$), given that the previous days were characterized by positive average opening returns ($AOR_{t-1} > 0$). The table also reports the mean opening returns for the equally-weighted portfolios of stocks with $OR_{it-1} > 0$ and $OR_{it-1} \leq 0$. The rightmost column reports the differences between the respective mean opening returns, and their significance.

Table 3a *Opening stock returns following the days of positive and non-positive opening returns: Statistics following the days characterized by positive average opening returns*

Company (Ticker symbol)	Mean opening returns, %, for the days when:		
	$OR_{it-1}>0$ (No. of days)	$OR_{it-1}\leq 0$ (No. of days)	Difference (t-statistic)
Alcoa Inc. (AA)	0.079 (1096)	0.050 (223)	0.029 (0.26)
American Express (AXP)	-0.103 (1034)	-0.021 (285)	-0.082 (-1.00)
Boeing (BA)	-0.023 (1004)	-0.049 (315)	0.026 (0.40)
Bank of America (BAC)	0.017 (1054)	-0.240 (265)	*0.257 (1.80)
Caterpillar (CAT)	0.036 (1087)	0.056 (232)	-0.020 (-0.22)
Cisco Systems (CSCO)	-0.046 (1037)	-0.134 (282)	0.088 (0.93)
Chevron Corporation (CVX)	-0.024 (1021)	-0.018 (298)	-0.006 (-0.12)
E.I. Du Pont de Nemours (DD)	-0.044 (1041)	-0.001 (278)	-0.043 (-0.67)
Walt Disney (DIS)	-0.125 (964)	-0.076 (355)	-0.049 (-0.78)
General Electric (GE)	0.028 (1098)	0.032 (221)	-0.004 (-0.05)
Home Depot Inc. (HD)	-0.070 (973)	-0.057 (346)	-0.013 (-0.19)
Hewlett-Packard (HPQ)	-0.017 (908)	-0.018 (411)	0.001 (0.10)
IBM (IBM)	-0.075 (919)	-0.139 (400)	0.064 (1.19)
Intel Corporation (INTC)	-0.073 (1081)	-0.053 (238)	-0.020 (-0.21)
Johnson & Johnson (JNJ)	-0.019 (968)	-0.084 (351)	*0.065 (1.65)
JP Morgan Chase & Co (JPM)	-0.100 (1060)	-0.061 (259)	-0.039 (-0.38)
Kraft Foods Inc. (KFT)	-0.066 (869)	-0.045 (450)	-0.021 (-0.38)
Coca-Cola (KO)	-0.012 (923)	-0.064 (396)	0.052 (1.29)
McDonald's Corporation (MCD)	-0.054 (954)	-0.023 (365)	-0.031 (-0.61)
3M Company (MMM)	-0.028 (995)	-0.035 (324)	0.007 (0.16)
Merck & Company Inc. (MRK)	-0.032 (971)	-0.145 (348)	*0.113 (1.73)
Microsoft Corporation (MSFT)	-0.063 (1032)	-0.030 (287)	-0.033 (-0.48)
Pfizer Inc. (PFE)	0.017 (1005)	0.016 (314)	0.001 (0.01)
Procter & Gamble (PG)	-0.074 (879)	-0.103 (440)	0.029 (0.82)
AT&T Inc. (T)	0.029 (1029)	-0.134 (290)	***0.163 (2.73)
The Travelers Companies (TRV)	0.045 (991)	-0.056 (328)	*0.101 (1.66)
United Technologies Corp. (UTX)	-0.015 (1018)	0.001 (301)	-0.016 (-0.35)
Verizon Communications (VZ)	0.001 (1034)	-0.092 (285)	*0.093 (1.67)
Wal-Mart Stores Inc. (WMT)	-0.043 (991)	-0.011 (328)	-0.032 (-0.70)
Exxon Mobil Corporation (XOM)	-0.059 (981)	-0.018 (338)	-0.041 (-0.81)
Equally-Weighted Portfolios	-0.020 (1319)	-0.094 (1319)	**0.074 (2.55)

Asterisks denote two-tailed p-values: * $p<0.10$; ** $p<0.05$; *** $p<0.01$.

3b. Opening stock returns following the days of positive and non-positive opening returns: Statistics following the days characterized by non-positive average opening returns

The table presents for each stock i , its mean opening returns, separately, following the days when its opening returns were positive ($OR_{it-1}>0$) and non-positive ($OR_{it-1}\leq 0$), given that the previous days were characterized by non-positive average opening returns ($AOR_{t-1}\leq 0$). The table also reports the mean opening returns for the equally-weighted portfolios of stocks with $OR_{it-1}>0$ and $OR_{it-1}\leq 0$.

The rightmost column reports the differences between the respective mean opening returns, and their significance.

Table 3b *Opening stock returns following the days of positive and non-positive opening returns: Statistics following the days characterized by non-positive average opening returns*

Company (Ticker symbol)	Mean opening returns, %, for the days when:		
	$OR_{it-1} > 0$ (No. of days)	$OR_{it-1} \leq 0$ (No. of days)	Difference (t-statistic)
Alcoa Inc. (AA)	0.232 (343)	0.263 (792)	-0.031 (-0.30)
American Express (AXP)	0.054 (221)	0.088 (914)	-0.034 (-0.38)
Boeing (BA)	0.179 (330)	0.075 (805)	0.104 (1.56)
Bank of America (BAC)	0.307 (259)	0.253 (876)	0.054 (0.38)
Caterpillar (CAT)	0.089 (313)	0.159 (822)	-0.070 (-0.91)
Cisco Systems (CSCO)	0.225 (224)	0.107 (911)	0.118 (1.14)
Chevron Corporation (CVX)	0.109 (372)	0.089 (763)	0.020 (0.41)
E.I. Du Pont de Nemours (DD)	0.112 (303)	0.130 (832)	-0.018 (-0.30)
Walt Disney (DIS)	0.108 (246)	0.001 (889)	0.107 (1.27)
General Electric (GE)	0.277 (223)	0.124 (912)	*0.153 (1.66)
Home Depot Inc. (HD)	0.194 (244)	0.049 (891)	**0.155 (1.96)
Hewlett-Packard (HPQ)	0.014 (208)	-0.067 (927)	0.081 (0.69)
IBM (IBM)	-0.013 (192)	0.011 (943)	-0.024 (-0.29)
Intel Corporation (INTC)	0.190 (251)	0.153 (884)	0.027 (0.37)
Johnson & Johnson (JNJ)	0.079 (328)	0.044 (807)	0.035 (0.70)
JP Morgan Chase & Co (JPM)	0.266 (250)	0.180 (885)	0.086 (0.86)
Kraft Foods Inc. (KFT)	0.049 (379)	0.036 (756)	0.013 (0.31)
Coca-Cola (KO)	0.012 (289)	0.011 (846)	0.001 (0.03)
McDonald's Corporation (MCD)	0.101 (321)	0.054 (814)	0.047 (0.79)
3M Company (MMM)	0.064 (327)	0.074 (808)	-0.010 (-0.21)
Merck & Company Inc. (MRK)	0.118 (319)	-0.014 (816)	*0.132 (1.71)
Microsoft Corporation (MSFT)	0.202 (207)	0.080 (928)	0.122 (1.59)
Pfizer Inc. (PFE)	0.245 (318)	0.040 (817)	***0.205 (3.09)
Procter & Gamble (PG)	-0.001 (252)	0.001 (883)	-0.002 (-0.16)
AT&T Inc. (T)	0.171 (349)	0.100 (786)	0.071 (1.14)
The Travelers Companies (TRV)	0.181 (320)	0.106 (815)	0.075 (1.10)
United Technologies Corp. (UTX)	0.159 (322)	0.080 (813)	0.079 (1.48)
Verizon Communications (VZ)	0.164 (330)	0.070 (805)	*0.094 (1.74)
Wal-Mart Stores Inc. (WMT)	0.118 (308)	0.065 (827)	0.053 (1.06)
Exxon Mobil Corporation (XOM)	0.044 (307)	0.045 (828)	-0.001 (-0.03)
Equally-Weighted Portfolios	0.161 (1135)	0.072 (1135)	***0.089 (2.71)

Asterisks denote two-tailed p-values: * $p < 0.10$; ** $p < 0.05$; *** $p < 0.01$.

4. Historical performance measures of the portfolios based on the idea of drifts in opening stock returns

The table presents the basic performance measures of opening returns over the sampling period (January 2, 2002 to September 30, 2011) for 6 portfolios constructed daily, based on the expectation of drifts in opening stock returns and on the sign of previous day's opening market returns:

Table 4 *Historical performance measures of the portfolios based on the idea of drifts in opening stock returns*

Statistics	Portfolio performance measures (opening returns) over the sampling period (2454 days)					
	Portfolio AP	Portfolio AA	Portfolio AM	Portfolio MP	Portfolio MA	Portfolio MM
Mean, %	0.125	0.095	0.094	0.126	0.097	0.094
Median, %	0.060	0.077	0.079	0.057	0.075	0.075
Standard Deviation, %	0.791	0.662	0.650	0.793	0.666	0.653
Maximum, %	9.121	7.183	7.121	9.121	7.183	7.121
Minimum, %	-7.072	-4.154	-4.364	-7.072	-4.154	-4.364
Percent of positive	54.81	58.27	58.60	55.01	58.27	58.64
t-statistic (Mean=0)	***7.80	***7.09	***7.18	***7.84	***7.19	***7.15

Asterisks denote two-tailed p-values: * $p < 0.10$; ** $p < 0.05$; *** $p < 0.01$.



A PRE-TEST ON THE MORAL DEVELOPMENT OF PROFESSIONALS WORKING IN THE PUBLIC PROCUREMENT SECTOR IN ROMANIA

Andrei TABARCEA*

Abstract: *The purpose of this study is to measure the moral development of public procurement experts working in Romania and test the hypothesis regarding the relationship between moral judgment and demographical variables. The study takes into consideration a strong analysis of the literature, presenting results from previous studies in order to create the testing hypothesis. This research is a pre-test of the data resulting from administering the Defining Issues Test (DIT-2). The conclusions anticipate a larger study on the subject, one that will shed light on some of the issues derived from the small sample size of the current study.*

Keywords: *Moral judgment, moral development, public procurement, DIT, factors of influence.*

1. INTRODUCTION

Issues linked to scandals in the public procurement process are a reality in Romania, the same as in the European Union (see Infringements at EU level in the Annual Public Procurement Implementation Review, 2012). News about bribing, corruption, bid riggings and failed privatizations are daily subjects in the media. Taking into consideration the actuality of the problem and the potential impact it has on the economic development, this initial part of a larger study is aimed at identifying the factors that have an impact on the moral judgment of public procurement experts. This research is the first use of the Defining Issues Test (DIT), an instrument that has produced notable results worldwide, on a sample of Romanian public servants. The results generate a new understanding of the development regarding moral judgment and propose new elements that should be taken into consideration during the recruitment process. The research analyses the

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theoretical background and the innovation brought by the DIT, as well as the results generated by other researchers. After positioning the research in the sphere of the current literature, the instrument, the research hypothesis and the methodology are presented. The results are listed as an important input regarding the managerial decision-making process. The research ends with the conclusions of this current pre-test as well as the limitations and directions for future research.

2. THEORETICAL BACKGROUND

2.1. The work of Lawrence Kohlberg

Based on the writings and beliefs of Immanuel Kant about morality, Jean Piaget developed in the 1930s a theory of moral development. This theory has a two-stage typology and was used to study the moral development of children.

Continuing the research of Piaget, Lawrence Kohlberg (1969) introduced an innovative model built around three levels and six stages which could be used to measure the cognitive development of an individual. The Theory of Cognitive Moral Development (CMD, 1969) is an universal approach of human behavior and is based on the process of active decision-making which determines the relation between the correct behavior and the surrounding environment. The theory is based on two processes: the first refers to the capacity of analyzing situations with moral consequences and of applying fair concepts and the second refers to the ability of interacting in role playing games inside the environment (Izzo, 2000). The individuals are situated on different levels of development and have different aptitudes which help them resolve moral dilemmas.

The model of Kohlberg is built as a ladder on which the individual matures in a progressive and cumulative way over time. The progression through each stage reflects an increased cognitive capacity to reason at levels of greater abstraction and formalization (Kohlberg, 1958). Therefore, an individual that has reached the fifth stage also knows the principles that govern stages one to four and has not skipped any of them in order to reach the fifth. The first level is the pre-conventional one and contains two stages: obedience towards the law and making fair deals and exchanges. The second level, the conventional one, comprises stage three: pleasing others and obtaining their approval and stage four: respecting the social law. The last level comprises stage five: respecting laws and regulations, but understanding their limitations and stage six: following the ethical principles such as justice, equality and respect towards life and human dignity. The last level,

called the post-conventional one, is structured on the Kantian distinction between universal principles of justice and the consequences of an action, a deeply deontological perspective. Wimalasiri makes the distinction between the three levels. Pre-conventional refers to basing ethical judgment on the safeguard of one's psychic self, recognising rules set by others and avoiding punishment, while conventional refers to the grounding of ethical judgment on the need to preserve social norms and harmony in local peer groups or the wider society. Post-conventional refers to the basing of ethical judgment on more idealistic notions of justice and universal well-being (Wimalasiri, 2004). Kohlberg also concluded that the majority of adults are found in stage three of four of the development model.

Kohlberg used the interview method exclusively in his research and considered it is the only method complex enough to allow the researcher to fit an individual inside a certain stage of moral development.

Although the model has been successfully used over time, it has numerous critics, such as: Gilligan (1982) who considered the theory as being sexist. Also, Shweder (1982), that considered the theory as culturally biased. Snell (1996) considered that the model is exclusively preoccupied at higher stages with justice-based ethical reasoning and excludes or underrates some equally important values such as warmth, love and care. Another contested aspect was that the theory claimed to be irreversible, invariant sequenced and organized around structures that have been questioned (Philip and Nicolayev, 1978). Locke (1986) even considered that the theory was philosophically naïve. Probably the most important critique was pointed at the claim of universality, as Bay (2002) stated that culture and any origin of thought are ignored.

Kohlberg (1971) considered that almost all individuals from all cultures go through the same order or sequence of moral development. This aspect is one of neo-kantian nature and was the safest way in which Kohlbergs model would escape moral relativism.

2.2. Neo-Kohlbergianism and the DIT

At the beginning of the 70s, John Rest, influenced by the six stage theory of Kohlberg, created the DIT (The Defining Issues Test), an alternative to the much too complex and hard to administrate Kohlbergian interview (Wright, 1995). According to Rest et. al. (1999), moral action is determined by four components: moral sensitivity (interpretation of a situation as moral and the appropriate affective response generated by it), moral judgment (judgment about what

constitutes the moral ideal), moral motivation (decision about a course of action influenced by what moral values dictate) and moral character (having qualities such as strength of ego, perseverance and courage to act). At the same time, Rest offered a description of morality, as *a social construction, evolving from the community's experiences, particular institutional arrangements, deliberations and the aspirations that are voiced at the time and which win the support of the community*. (Rest. Et. al. 1999, p. 301). Rest basically re-interpreted Kohlberg's interview sheet into a questionnaire, which was easier to administer and analyze.

The biggest similarity between the two methods is that both derive from the concept that moral judgment is a profound cognitive process. This similarity at the stage of premises is one of the motives why Rests model is named the neo-Kohlbergian approach. The biggest contribution of the development of the DIT is that it has helped ease many methodological issues surrounding moral judgment research (Elm and Nichols, 1993).

Even if there are sufficient similarities between the two approaches, there are also big differences such as: the rejection of the idea of universalization and of the fact that individuals move from one stage to another, one stage at a time. Rest considers that individuals can jump stages of development and can even find themselves in regression. Another distinctive element is the instrument used. While Kohlberg considers that such a profound moral analysis can only be performed by an interview, Rest considers that the questionnaire opens the flood gates for researchers outside the field of psychology, such as economists.

The DIT presents a series of moral dilemmas in the form of short vignettes. Many of them were used by Kohlberg in his own research. For every moral dilemma the respondent has to evaluate and rate 12 short statements on a 5 point Likert scale and rank the most important ones. In addition to this, for every moral dilemma, the participant has to decide over what the protagonist of the story should do. The statements of the DIT are deliberately kept short in order to minimize the potential intention of the respondent to project his own meanings into stage statements.

Even if initially Kohlberg has compared the usage of the DIT to alchemy, the results have shown that the DIT and the model proposed by Kohlberg offer the same results, the difference is that in order to apply the DIT a researcher does not need advanced knowledge of psychology.

Rest (1999) explained the DIT: as the participant meets an item that both makes sense for him and activates a certain schema, that item gets a high rating and

is ranked high. Alternatively, when the participant meets an item that has no logic to him or seems simple and unconvincing (does not activate a schema), the item is rated low. Taking into consideration the models that are formed, the preferred schema of the subject can be identified. The three schemas are: the schema of personal interests, the schema of maintaining norms and the post-conventional schema. The schema format replaced the six stages proposed by Kohlberg. The schema of personal interests is formed during childhood and does not take into consideration the notion of society, being similar to the second and third stages of Kohlberg's model, a reason why in the DIT it is noted with S23. The maintaining norms schema derives from the fourth stage of Kohlberg's model, therefore noted with S4 and has the following elements: the need for the existence of norms, defining the aim in society, the conformation to laws and religious norms, the partial reciprocity of law and chain of command (such as the relationship between parent and child).

The post-conventional schema takes into consideration the moral obligations that result from sharing ideas and taking part in free discussions inside a community. This last schema contains four criteria that the subject has to cumulatively satisfy in order to be included into it. The first one is the moral criteria, in which the person realizes that laws, codes and contracts are social arrangements of social order and are not imposed by the state. Without these arrangements there would be only anarchy. The appeal to an ideal is the realization that there are higher things above yourself, such as the good of others and universal rights. The third criterion is represented by the ideas that can be shared, such as the fact that your own good should not be obtained at the cost of others. The last criteria is the complete reciprocity, that promotes not only the uniform application of social laws, as is the case in partial reciprocity of the maintaining norms, but the fact that social norms should not be broken for some in the name of others.

Rather than measuring intelligence or ideology, the DIT measures advancement or maturity in moral judgment in terms of preference for more complex, differentiating, and discriminating moral considerations. (Rest et al 1974, p. 492).

The DIT generates a P-score index, which is derived from the classification of post-conventional items, measuring the 5A, 5B and 6 stages. The score is *the relative importance a subject gives to the principled moral considerations in making a decision about moral dilemmas* (Rest, 1979). Because of some critics, such as the fact that quantitative data was treated as continuous and not all answers

were utilized, in 1997 the N2 score was developed. After a large volume of empirical studies it was determined that the new index performs better than the P-score and it is currently used more in the DIT research. The N2 score combines the acquisition of new thinking (increased P score) with the systemic rejection of simplistic thinking (decrease in PI score). The N2 attempts to measure the degree to which the P score items are prioritised in comparison with the degree to which PI items are rated lower than P score items. PI is the personal interest schema score (Jagger and Strain, 2007). At the same time, the DIT generates an M-score, which compares the ratings with rankings in order to determine the consistency. In addition to this consistency check there is a built-in reliability check which takes the form of items with no real connection to the moral dilemma.

The DIT has been used in thousands of studies, a fact that is supported by a fairly high reliability. The Cronbach Alpha is typically at a level between 0.70 and 0.80 or even higher. Therefore, the theory and the DIT appear to be an acceptable and reliable model for studying moral reasoning levels for individuals in different cultures. (Wimalasiri, 2001).

3. THE RESULTS OF PREVIOUS RESEARCH

Different models have been applied over the years offering different results in regard to the factors that influence the moral judgment of employees. For example Browning and Zabriskie (1983) have concluded that younger managers are more inclined towards ethical judgment in contrast to older ones. Also, the same study concluded that individuals with a higher degree of education are more inclined towards ethical judgment. In contrast, Barnett and Karson (1987) determined that older employees are stricter about ethical interpretations. Ruegger and King (1992) found that women are more developed when it comes to moral judgment than men. Many other researchers, such as Hegarty and Sims (1979), McNichols and Zimmerer (1985) and Serwinek (1992) have found no link between gender and the moral development. Ferrell and Gresham (1985) and even Hunt and Vitell (1986) focused their attention on the impact of religion over the moral development.

Another interpersonal element studied by researchers has been the influence of superiors and the influence of co-workers. Brenner and Molander (1977) concluded that there is a strong connection between the moral development of the superiors and the respect employees show towards ethics. Yukl, Guinan and

Sottolano (1995) linked this to the power of example, to the fact that employees seek a model in the superior.

Akaah (1992) considers that the organizational culture with all its elements is especially important in the development of moral judgment. The organizational culture also plays an important role in the model developed by Hunt and Vitell. Woods (1991) considers that managerial instruments such as ethics committees and public affairs departments can lead to a higher development of moral judgment.

Izzo&Vitell 2003 found professional education to be a significant predictor of moral development.

Weeks and Nantel (1992) consider that a clear communication of ethical codes is very important in influencing the moral development of employees. In their studies, culture plays a very important role and the results tend to indicate that Asian countries are more ethically developed then countries such as the USA.

Table number 1 presents the most important influences over the moral development and compares results from different researches. From this table, hypothesis can be created in order to test them on public procurement experts from Romania.

Table 1 *A comparison of results from different researches in the field of ethics*

Factor of influence	Authors of the research	Results
Age	Browning and Zabriskie (1983) Elm and Nichols (1990)	Younger managers have a superior moral development.
	Barnett and Karson (1987) Rest (1983) Travino (1992) McGeorge (1975) Arlow (1991) Lane (1995) Wimalasiri et. al. (1996)	Age is proportional to moral development.
Education	Browning and Zabriskie (1983) Rest (1979) Pascarella and Terenzini (1991) King and Mayhew (2002) Travino (1992) Wimalasiri et. al. (1996)	Individuals with a higher degree of education are more inclined to exhibit a higher moral reasoning then individuals with a lower level of education.
	Lysonski and Gaidis (1991)	Education has no connection to the moral reasoning level.
	Izzo (2000)	Mandatory ethical education does not always produce the expected results.
Gender	Rugger and King (1992) Hunt and Vitell (1986)	Women are more developed morally than men.
	Hegarty and Sims (1979) McNichols and Zimmerer (1985) Serwinek (1992) McCuddy and Perry (1996)	There is no link between gender and the moral development.

Factor of influence	Authors of the research	Results
	Wimalasiri et. al. (1996) Babeau and Brebeck (1987) Thoma (1989)	
Religion	Farrell and Gresham (1985) Hunt and Vitell (1986) Pargament et. al (1988) Lazarus and Stress (1984) Thomas (1997) Wimalasiri (2001) Alston (1971) Keasy (1974) Wimalasiri et. al. (1996)	Religious individuals are more inclined to be morally developed.
	Brown and Annis (1978) Sapp (1986)	There is no direct link between religion and moral reasoning.
Rewarding	Barnett and Karson (1987)	Lower managers are more economic, middle managers are more inclined towards ethical behavior and top managers are split evenly.
The organizational climate	Akaah (1992)	Marketing professionals that work in warm organizations have a lower moral reasoning than those who work in an organization with no warmth.
Organizational identity	Akaah (1992)	Marketing professionals that work in organizations that allow a good independence and high identity have higher moral reasoning than the ones working in organizations with a low identity.
Ethical Codes	Chonko and Hunt (1985)	Ethical codes, although necessary, seem to be insufficient when implemented alone.
	Weeks and Nantel (1992)	Well communicated ethical codes have a strong connection to the moral development of employees.

4. THE INSTRUMENT

The instrument used in this research is the DIT-2, an improved version of the DIT, which has proven its validity over a long period of time by being used in thousands of studies. The classic demographics of the DIT-2 have been replaced, with the permission of the Office for the Study of Ethical Development inside the University of Alabama, with a succession of more complex items in order to establish the influence of these demographics on the N2 score.

- The first item is linked to the age of the participant and contains five intervals: *lower than 30 years, between 31 and 40 years, between 41 and 50 years, between 51 and 60 years and over 61 years.*
- The second item takes into consideration the gender of the participant: *male or female.*

- The third item identifies the last graduated learning institution: *college, masters or doctoral studies*.
- The first level is college because public procurement experts need to graduate college in order to obtain their diploma.
- The fourth item investigates the level of the wage: *lower than 1000 lei, between 1001 and 1500 lei, between 1501 and 2000 lei, between 2001 and 2500 lei, between 2501 and 3000 lei, between 3501 and 4000 lei and over 4000 lei*.
- The fifth item identifies the organizational sector of the public procurement expert: *private or public*.
- The sixth item regards the marital status of the respondent: *not married, married, living with someone without being married, divorced and widowed*. It is interesting to see if there are differences between the moral development of married respondents and respondents that are not married. In the last category, all respondents that offered another answer except married will be included.
- The seventh item refers to the religious orientation of the respondents: *orthodox practitioner, orthodox non-practicing, catholic practitioner, catholic non-practicing, another orientation or atheist*. Regarding this item it is interesting to observe if there are differences in the development of moral judgment between respondents who are practicing and those who are not practicing their religious orientation.
- The eighth item is linked to the implementation of an ethical code in the organization where the respondent activates, and the options are: *yes, no and I don't know*. It is interesting to study if there is a link between the implementation of ethical codes and the level of moral judgment.
- The ninth item refers to the participation in ethical/deontological courses or seminars, and the options are: *yes, no and I don't know*. It is interesting to study if there is a link between the participation at such courses and seminars and the development of moral judgment.
- The tenth item refers to the knowledge participants have on the content of the good practice guide published by the National Authority for Regulating and Monitoring Public Procurements in Romania, and the answers will be given on a Likert scale, from *to a great extent to not at all*.
- The last item is formed from a succession of statements that the respondents have to rate on a Likert scale from *totally disagree to totally agree*. The statements are: *The mission of the organization in which I activate is clearly defined. In the organization I activate there is a clear system of values. The behavior of my superiors is a model to follow. I consider that the behavior of my superiors is an ethical one. The behavior of my coworkers influences my*

own decision in my activity. I consider that the behavior of my coworkers is an ethical one. The organization in which I activate promotes the image of persons with an ethical behavior. I consider that offences such as bribery and influence peddling are too harshly punished. The last statement has been used as a filter question.

5. RESEARCH HYPOTHESIS

The research hypotheses have been constructed on the conclusions of the previous literature in order to enforce validity. Eleven hypotheses have been developed as follows:

Age can have a strong impact on the development of moral judgment because of the accumulation of knowledge that takes place inside the organization. Authors such as Barnett and Karson (1987), Rest (1983), Travino (1992), McGeorge (1975), Arlow (1991), Lane (1995) or Wimalasiri et. al. (1996) have determined that age is proportional to the development of moral judgment. Taking into consideration these previous results the first hypothesis is: **H1. There is a positive relationship between age and DIT score.**

Gender is, along with age, one of the most tested demographics that impact the moral development of respondents. Rugger and King (1992) and Hunt and Vitell (1986) have concluded that women are more sensitive to moral development than men. At the same time, authors such as Hegarty and Sims (1979), McNichols and Zimmerer (1985), Serwinek (1992), McCuddy and Perry (1996), Wimalasiri et. al. (1996), Babeau and Brebeck (1987) and Thoma (1989), have obtained results that show that there is no direct link between gender and the development of moral judgment. Taking into consideration this, the second hypothesis is: **H2. Gender has no direct impact on the development of the moral judgment of public procurement experts.**

The degree of education takes into consideration the last graduated educational institution and, according to the literature, especially Browning and Zabriskie (1983), Rest (1979), Pascarella and Terenzini (1991), King and Mayhew (2002), Travino (1992) and Wimalasiri et. al. (1996), it should be proportional to the development of moral judgment. There are studies, such as Lysonski and Gaidis (1991), that have concluded that the level of education has no impact on the moral development. In this research the first level is college so it remains to be seen if the hypothesis: **H3. Public procurement experts with a higher degree of**

education will obtain a higher N2 score, will be proven right, or if the studies mentioned above reached this conclusion by having more levels that denote the educational degree. It is possible that the differences between college, masters and doctoral studies will not have such an important impact as the difference between high-school and college.

The level of income shouldn't theoretically have an impact over the development of moral judgment, but in a country with a low standard of living as is the case of Romania, it is necessary to take into consideration this possibility. The fourth hypothesis is **H4. There is a positive relationship between income level and DIT score.**

The marital status can influence the development of moral judgment in the sense that married individuals could take into consideration their own family when dealing with moral dilemmas. Therefore, the fifth hypothesis is: **H5. Public procurement experts that are married will obtain a higher N2 score than those who are not.**

Historically, **religion** has always been associated with morality and the right behavior of individuals. Therefore it has been the center of research for authors such as Farrell and Gresham (1985), Hunt and Vitell (1986), Pargament et. al (1988), Lazarus and Stress (1984), Thomas (1997), Wimalasiri (2001), Alston (1971), Keasy (1974) and Wimalasiri et. al. (1996), who have determined that religious respondents are more developed when it comes to moral judgment. In the current study there has been no discrimination between the religious orientations, but between respondents who are practicing and those who are not practicing their religious orientation. The sixth hypothesis is: **H6. Public procurement experts that are religious practitioners will obtain a higher N2 score than those who are non-practitioners.**

The implementation of ethical codes should, in theory and according to the literature, such as Weeks and Nantel (1992), help with the development of moral judgment. The seventh hypothesis is: **H7. Public procurement experts that are active in organizations that subscribe to code of ethics will obtain a higher N2 score than those who are active in organizations which have not implemented such a code.**

Taking part in courses of ethics tends to have the same effects as the implementation of ethical codes. Therefore the eighth hypothesis is: **H8. The public**

procurement experts who took part in courses of ethics will obtain a higher N2 score than those who did not.

Knowledge about the content of the good practice guide published by the National Authority for Regulating and Monitoring Public Procurements in Romania (A.N.R.M.A.P.) is important because it is the only official document that gives advice on good practices to the public procurement experts in Romania. The ninth hypothesis is H9. The public procurement experts that know the content of the good practice guide published by A.N.R.M.A.P. to a large extent will obtain a higher N2 score than the rest of the respondents.

The behavior of superiors and of the coworkers exercises the power of example on the way public procurement experts morally develop. The perception of the respondents on the behavior of superiors and coworkers is taken into consideration and not the actual behavior, something that would be impossible to quantify at this stage. Perception is essential, being stronger than the actual reality and associated to it the phenomenon of imitation can be identified. Therefore the last two hypotheses, built on the work of Brenner and Molander (1977) and Yukl, Guinan and Sottolano (1995) are: H10. The stronger the perception that superiors have an ethical behavior, the more respondents will consider them as examples and H11. The stronger the perception that coworkers have an ethical behavior, the more respondents will consider them as examples.

6. METHODOLOGY

6.1. Sample characteristics

The respondents of the current study and of the future research are composed of public procurement experts that have a CNFPA certification from The Ministry of Education of Romania and are active in the N-E region of the country. The first characteristic of the population is the fact that in order to obtain the certification it is necessary to graduate college and obtain the diploma.

The DIT-2 was implemented between January and May 2013 on 103 public procurement experts active in the N-E region of Romania. 34 questionnaires were handed personally and 69 were sent via email. The response rate was low at only 33%, giving us 36 questionnaires to use in the research. After removing the uncompleted questionnaires 29 ones remained. The validity checks have led to the elimination of 3 more recordings, giving us a final of 26 valid recordings on which

the data analysis was done. The first conclusion is that the DIT, due to its complexity, is much easier to administrate face to face, the response rate by email being under 5%. Taking into consideration that the total population is very small, future research will administer the DIT instrument with respondents face-to-face.

The structure of the population can be seen in Table 2. It can be observed that the two sexes are evenly divided and that the percentage of younger respondents is larger. Also, it can be observed that the majority of public procurement experts in Romania have a high educational level.

Table 2 *Descriptive statistics of the sample*

Variable	Recorded level			
	<i>lower than 30 years</i>	<i>between 31 and 40 years</i>	<i>between 41 and 50 years</i>	<i>between 51 and 60 years</i>
Age	42,3%	34,6%	19,2%	3,8%
Gender	Male		Female	
	46,2%		53,8%	
Educational level	College	Masters		Doctoral studies
	34,6%	53,8%		11,5%
Type of organization	Public		Private	
	30,8%		69,2%	

6.2. Data analysis

Because the determination of the N2 score is rather new and there are a limited number of researches based on it, it was considered important to also determine the P-score and compare it to other researches. The mean of the P-score for my research is 27.46. In his research, done on 266 Australian students and practitioners in the field of management, Wimalasiri (2001) determined a mean for the P-score of 27. Holland (2011), in his research done on British students, has determined a P-score between 21 and 24. In a research done on over 2000 students, Babeau and Thoma (2003), have identified a P-score mean of 32.32. In reference to this last research, Jagger and Strain (2007), have determined a P-score mean of only 23. In Asia, Wimalasiri et. al. (1996) have researched 157 students and managers and obtained a mean for the P-score between 24.5 and 30.35. Therefore the mean for the P-score from this study fits the global trend.

Regarding the mean of the N2 score, the present study has generated a mean of 28. In the research done by Rest, the mean of the N2 score is between 40 and 50. At the same time, in his research, Holland (2011) has recorded a mean of the N2 score between 21 and 24. Bebeau and Thoma (2003) obtained a mean of the N2 score of 35.67. There is a discussion about obtaining a higher score on American respondents, the so called American bias, a fact that has not been proven to this

moment. Taking all this into consideration, especially the good results of the P-score, the results of the current research appear to fit the data results from previous researches.

A first conclusion from analyzing the N2 score and from the fact that the mean is close to the median, is the fact that the distribution is symmetrical. A second conclusion, derived from analyzing the N2 score, is that the range is very wide, a value of 42.02. This indicates that the sample is highly dispersed, therefore showing the different levels of moral judgment recorded in this study. These conclusions are derived from Table 3 and Figure 1.

Table 3 *Descriptive statistics for the N2 score*

N2 score	
Mean	27.9940
Median	28.8043
Std. Deviation	11.9997
Range	42.02

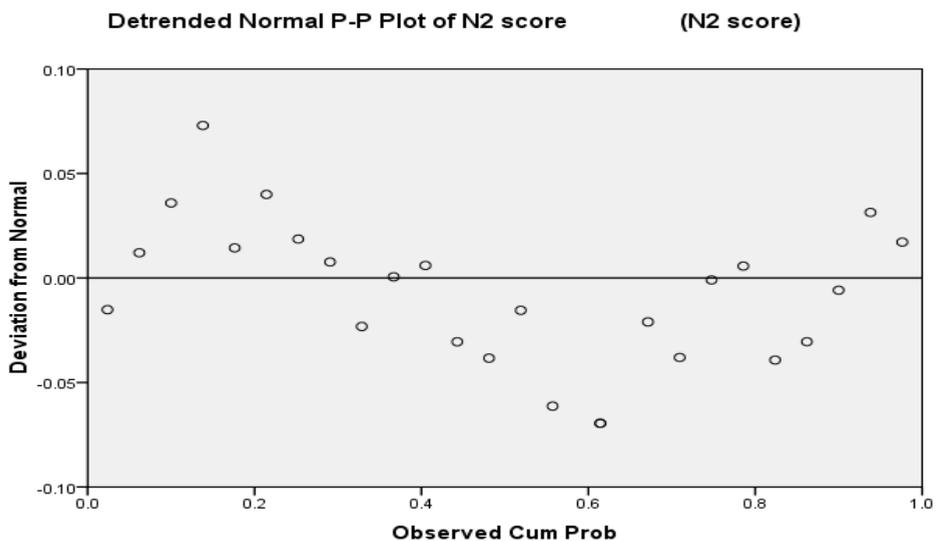


Figure 1 *P-P plots for the N2 score*

6.3. Results

The hypotheses were tested using the Independent Samples T-Test, ANOVA, and correlations depending on the format of the demographic item. As Rest (1979) himself has suggested, a significance level of 0.05 has been set for all hypotheses.

The hypothesis regarding age: **H1. There is a positive relationship between age and DIT score**, has been tested with the Independent Samples T-Test, the N2 score as a test variable and age, organized on two groups, less than 30 years and over 31 years, as a grouping variable. Taking into consideration the generated value of the 2 tailed Sig of 0.256, the result is the rejection of the hypothesis. There is no significant difference between the N2 score of the two groups.

The hypothesis **H2. Gender has no direct impact on the development of moral judgment of public procurement experts**, was also tested with the Independent Samples T-Test, the N2 score as a test variable and gender as a grouping variable. The 2 tailed Sig was recorded at 0.531, which means that the null hypothesis is rejected and the research one is validated.

The hypothesis concerning the degree of education: **H3. Public procurement experts with a higher degree of education will obtain a higher N2 score**, has been tested with One Way ANOVA, generating a Sig. of 0.31, which results in the rejection of the test hypothesis.

The hypothesis: **H4. There is a positive relationship between income level and DIT score** has been tested with the Independent Samples T-Test, the N2 score as a test variable and income, organized on two groups, income under 2000 lei and over 2001 lei, as a grouping variable. The 2 tailed Sig has recorded a value of 0.723 which means that the research hypothesis is rejected.

The hypothesis **H5. Public procurement experts that are married will obtain a higher N2 score than those who are not**, has been tested with the Independent Samples T-Test, the N2 score as a test variable and marital status, organized on two groups, married and not married, as a grouping variable. The 2 tailed Sig generated a value of 0.042, which indicates a significant difference between the two groups, but the research hypothesis is rejected because of the negative value recorded by the t index.

The hypothesis regarding religion: **H6. Public procurement experts that are religious practitioners will obtain a higher N2 score than those who are non-practitioners**, has been tested with the Independent Samples T-Test, the N2 score as a test variable and practicing religion, organized on two groups, practitioners and non-practitioners, as a grouping variable. The 2 tailed Sig has a value of 0.002, which indicates a significant difference between the two groups,

but the research hypothesis is rejected because of the negative value recorded by the t index.

The hypotheses: **H7. Public procurement experts that are active in organizations that subscribe to code of ethics will obtain a higher N2 score than those who are active in organizations which have not implemented such a code** and **H8. The public procurement experts who took part in courses of ethics will obtain a higher N2 score than those who did not** were both tested with the Independent Samples T-Test, the N2 score as a test variable and the answers yes and no in a grouping variable. Both hypotheses have been rejected, the first generated a 2 tailed Sig of 0.068 and the second a 2 tailed Sig of 0.252.

The hypothesis **H9. The public procurement experts that know the content of the good practice guide published by A.N.R.M.A.P. to a large extend will obtain a higher N2 score then the rest of the respondents** has been rejected after being tested using correlations and generating a Sig of 0.344.

The hypothesis regarding the behavior of superiors: **H10. The stronger the perception that superiors have an ethical behavior, the more respondents will consider them as examples** has been tested using correlations and generated a Sig of 0.000 and a Pearson correlation of 0.785. The hypothesis is confirmed and there is a very strong correlation between the two variables.

The hypothesis: **H11. The stronger the perception that coworkers have an ethical behavior, the more respondents will consider them as examples** has been tested using correlations and generated a Sig of 0.000 and a Pearson correlation of 0.747. The hypothesis is confirmed and there is a very strong correlation between the two variables.

7. DISCUSSIONS AND CONCLUSIONS

Regarding age, there were 42.3% public procurement experts younger than 30 years of age and 57.7% older than 31 years, offering an equal grouping of the sample. Even though the hypothesis was rejected concluding that age does not have an impact on the development of moral judgment, there are studies such as Browning and Zabriskie (1983) and Elm and Nichols (1990) that indicated that younger respondents will obtain higher scores than older ones. In this research, the mean of the N2 score for respondents younger than 30 years was 31.17 and for respondents over 31 years it was 25.66. Future research is needed on a larger scale in order to determine more solid results.

Regarding the gender of the respondents, 12 were men and 14 were women. The mean of the N2 score for men was 29.62 and for women 26.59. Taking into consideration the rejection of the null hypothesis, it can be concluded that there is a 53% chance that gender does not have an impact on the development of moral judgment in the case of public procurement experts in Romania. The same conclusion was obtained by authors such as Hegarty and Sims (1979), McNichols and Zimmerer (1985), Serwinek (1992), McCuddy and Perry (1996), Wimalasiri et al. (1996), Babeau and Brebeck (1987) and Thoma (1989). There can be concluded that in the modern society the barriers between genders have completely disappeared, the development of moral judgment being similar.

There is only a 31.2% that the degree of education impacts the development of moral judgment. The first problem with the item concerning the degree of education is that the first level is the graduation of a college, a mandatory condition in order to obtain your public procurement diploma. Even so the 9 respondents that graduated only college have obtained a mean of the N2 score of 23.77, and the 14 respondents that obtained their masters diploma obtained a mean of the N2 score of 31.35, a significant difference. Unfortunately, the low number of doctoral graduates, only 3, who have obtained a mean of 24.96, has led to the impossibility of checking the hypothesis in fair conditions. It can be concluded that there is the need for a larger sample in which more doctoral graduates should be included. At the same time, the research of Lysonski and Gaidis (1991) should be taken into consideration. They have concluded that the degree of education does not influence the development of moral judgment. Another aspect that has to be taken into consideration is the fact that the authors that have found a relationship between the degree of education and the development of moral judgment have had at least high-school graduates in their sample. The difference between high-school and college can impact the core of this relationship.

Regarding the level of income it has been determined that it does not impact the development of moral judgment. 14 respondents had an income level of 2000 lei or lower and 12 participants had an income over 2001 lei. The means of the N2 score were very close, 27.19 for the respondents with an income under 2000 lei and 28.92 for the respondents with an income over 2001 lei. It can be concluded that the level of income has no impact in the development of public procurement experts in Romania.

The marital status has been determined as an influence on the variation of the N2 score, thus impacting the development of moral judgment. The results point to a

reverse situation than it was initially stated. Therefore, respondents that are not married are more developed when it comes to moral judgment than respondents that are married. Therefore the 15 married participants have a mean of the N2 score of 23.94, while the 11 respondents that are not married have a mean of the N2 score of 33.51. The difference is notable, and the results can be assigned to the impact that family has on the development of moral judgment. The respondents could project the image of their family in solving the dilemmas proposed by the DIT.

The religious practice of the public procurement experts has determined a quite surprising result, the difference between the two groups is significant, but the mean of the N2 score obtained by the 16 respondent that are practicing religion, of 22.64, is much lower than the one of the 10 respondents that are non-practitioners, of 36.55. It can be concluded that respondents that are non-practitioners are more developed in terms of moral judgment. The phenomenon is even more interesting when taking into consideration that Romania is a state in which the majority of people declare themselves as practitioners.

Regarding the implementation of ethical codes and courses of ethics, it can be observed that only 3 respondents have ever participated in a course/seminar of ethics. The very low participation shows the lack of an organizational culture oriented towards organizing such courses in particular and towards ethics in general. At the same time, this low percentage shows the need for a larger sample. The situation is similar in the case of ethical codes, a percentage of 31% of the respondents don't even know if in their organization a code of ethics is implemented. The research of Chonko and Hunt (1985) is relevant, because they concluded that the existence of ethical codes is useless without a proper implementation and without a strong organizational culture oriented towards ethics.

Regarding the knowledge of the content of the good practice guide published by the National Authority for Regulating and Monitoring Public Procurements of Romania, it can be concluded that it does not influence the development of moral judgment of the public procurement experts. It can clearly be stated that the simple existence of a code will not generate mutations in the development of moral judgment.

Regarding the perception that the respondents have on the behavior of superiors and co-workers it can be concluded that the stronger the perception is that the behavior of superiors and co-workers is an ethical one, the more they will be a model to follow for the respondents. Public procurement experts seek to work in an ethical environment and be led by ethical leaders. It can be concluded that this is a trend of normality in a society where ethics is not a subject of interest. The bases of

moral judgment are there but the culture of ethics and instruments are not implemented as they should inside the organization.

8. LIMITATIONS AND DIRECTIONS FOR FUTURE RESEARCH

A first obvious limitation of the research is the small sample size tested. This research in the form of a pre-test, prefigures my doctoral thesis and an article done on a larger sample of 120 respondents or more. The number of respondents will remain low in comparisons to other researches because the total population is very small. From testing the hypothesis the need for a larger sample is obvious and it will lead to the further validation of this pre-test and its results.

Another limitation is the fact that this research is the first attempt to implement the DIT in Romania. Therefore, a comparison of the mean for the P-score and N2 score with researches done in this country or region is inexistent. In the USA for example there is a national standard and researchers can compare their own research with the national levels.

The critics of the DIT instrument always invoke the fact that it measures the way respondents think and not their behavior per se and that the theory of morality has to incorporate an insight on the behavioristic component. The analysis on the behavior of public procurement experts would take a very long period of time and more important the respondents shouldn't know they are being tested, a fact that in itself raises ethical problems. The test effect can generate totally biased results in observing behaviors and the method itself is very hard to implement.

Finally, the problem of the so called American bias should be addressed. The fact that respondents from the United States obtain higher scores of the P-score and N2 score than the rest of the world may suggest a cultural bias. A solution to this problem would be to create moral dilemmas based on industry or region-specific research, a fact also suggested by Rest (1999). Taking into consideration the fact that this research is singular in the Romanian environment, it is important to apply the DIT in its purest form in order to get a base line. Future research done on a larger sample will offer more solid results. At the same time, region-specific moral dilemmas will be developed. It is important to have a comparison base for future researches in order to present the highest validity possible.

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CONSPICUOUS CONSUMPTION: AN EMPIRICAL INVESTIGATION OF FACTORS AFFECTING HOUSEHOLDS' BEHAVIOUR IN ALBANIA

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Abstract: *Conspicuous consumption differs from the usual consumption of many goods because it satisfies not only material needs, but also social needs such as prestige or status. This paper discusses one interesting little-known aspect of the phenomenon: the determinant factors, drawing upon relevant analyses from different fields. The impact that these “global” or “local” factors (gender, age, education, etc.) have on the level of conspicuous consumption of an Albanian family is analyzed, using data from the 2008 Albanian Living Standards Measurement Survey (LSMS). Gender and education seems to be the most important factors.*

Keywords: *Albania, Conspicuous consumption, Household expenditures, LSMS 2008.*

JEL Classification: *D03, D12, Z13*

1. INTRODUCTION

To be, or to be seen, that is the question...

The term *conspicuous consumption* is familiar to most economists, marketers, sociologists and psychologists and it has also become part of everyday language. This term is often used in a vague descriptive sense to refer to any non utilitarian forms of consumption, or simply to that which is judged extravagant, luxurious, or wasteful. (Campbell, 1995) Even though, the number of scientific studies conducted in this field is still relatively low, maybe due to the interdisciplinary character of the topic. The study of such a phenomenon may be a subject of common interest, especially in a developing country like Albania. Developing countries may have a relatively higher level of conspicuous consumption, because of extreme inequalities

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in income. The relatively frequent appearance of such behaviour in the Balkans in general, seems to confirm this idea. Thus, it sounds particularly fascinating to investigate reasons, factors and other aspects concerning this behaviour. This may help to better understand the coexistence of the impossibility to fulfill sometimes even the basic needs and the insistence to buy extremely expensive products simply to show off, on the other side.

The concept studied here has its origins in the work of Thorstein Bunde Veblen (1857–1929), a Norwegian-American economist and sociologist, one of the founders of institutional economics. He wrote his *The Theory of the Leisure Class* more than one hundred years ago (1899), based entirely on observation. Even though, it still represents a powerful critique of the neoclassical theory of consumption. It contrasts the neoclassical approach, which assumes the individual's maximization of utility according to exogenous preferences, by developing an evolutionary framework in which there are also social factors. Thus, preferences are determined socially depending on the positions of individuals in the social hierarchy. (Trigg, 2001) Veblen is one of the first theorists who argued that consumption is actually a process of socialization and goods have a function as markers of social class. (Patsiaouras, 2010) He argues that “wealthy individuals often consume highly conspicuous goods and services in order to advertise their wealth, thereby achieving greater social status”. (Bagwell, 1996) He named this kind of unnecessary and unproductive expenditures, as *conspicuous consumption*. Hence, he ignores that even those from the lowest scales of the hierarchy can also engage in conspicuous consumption. Therefore, conspicuous consumption is seen mistakenly as an exclusive instrument for the rich. Finally, even after a closed reading and analysis of the different arguments given in *The Theory of the Leisure Class*, the formulation of Veblen's most famous concept is not sufficiently clear to permit any general agreement on its definition. (Campbell, 1995)

Reformulating arguments given by Veblen, conspicuous consumption can be defined as the consumption of goods and services that is motivated mainly by secondary (conspicuous) utility, i.e. utility deriving by evidence or social confirmation of the consumer's relative ability to pay. (Basmann, 1988) Consumers make their decisions to buy and consume “conspicuous” goods, paying attention not only to the material needs that these products can satisfy, but also to social needs such as prestige. (Amaldoss & Jain, 2005b; Butnaru, 2008) Hence, individuals (not only the rich ones, but also middle class and working class members) involve in a competitive race for gaining status or prestige. Examining

modern relevant literature, Scheetz defines conspicuous consumption to be any consumption which purpose is that of showing off wealth to others when the good is publicly consumed, “ranging from applying an expensive lipstick in public to driving an expensive car”. (Scheetz, 2004) So, the concept created by Veblen, is generally seen by researchers (mainly economists) as a process or means to achieve or maintain status and other social benefits, mainly through the consumption of luxury goods. It is still almost impossible to give an exhaustive definition of it, maybe due to the mix nature of the phenomenon, which brings the need of multidisciplinary analysis combining viewpoints from economics, marketing, sociology, psychology and even biology. “Consumer behaviour is often too complex to be handled by economics alone and, if done, may severely limit the scope of findings.” (Chaudhuri & Majumdar, 2006)

2. MAIN FACTORS INFLUENCING ON CONSPICUOUS CONSUMPTION

A 2008’s study conducted using USA representative data on consumption, show that Blacks and Hispanics spend larger shares of their total expenditure on conspicuous goods (clothing, jewellery, and cars) than do comparable Whites. (Charles, Hurst & Roussanov, 2008) The observed differences are relatively constant over time and economically large. Another similar study used South African household data and found that non-White households spend relatively more (30 to 50 percent more) on visible consumption than do comparable White ones. (Kaus, 2010) In both cases, this implies lower spending on other consumption categories, especially on health and medical services and education. The reasons of these racial differences can be found in the discrimination and the marginal position of non-White individuals, even in several modern societies. Thus, this is a case of conspicuous consumption playing the role of compensatory consumption for non-White individuals.

Gender is another factor that may affect the level of conspicuous consumption, in two different and dualist ways. As mentioned above, conducted experiments demonstrate that the motivation to conspicuously consume and display, in a mating context, is evident among men. (Sundie et al., 2011) While conspicuous consumption may serve as a mating strategy for men, mating conditions are irrelevant for women. Hence, we should find relatively higher levels of this consumption among men. On the other hand, due to the stronger social links between women, conspicuous

consumption as a means of social signalling must be more present among them. (Amaldoss & Jain, 2005a)

Shukla suggests (based mainly on a survey conducted with customers of the BMW, Mercedes Benz and Lexus dealerships) that middle-aged consumers, like the youth segment, are a significant target group that needs to be studied, in the area of conspicuous consumption. Middle-aged individuals have relatively higher incomes, a more stable career and a higher access to credit and debit resources, which give them higher capacities to pay for conspicuous consumption. (Shukla, 2008) Levels of conspicuous consumption should also be higher among young and middle-aged consumer, due to the higher propensity to engage in social and sexual signalling. Even education may have a similar influence on the levels of conspicuous consumption. Higher levels of education generally bring higher access to financial resources and a stronger need to signal the achieved wealth, status, prestige, etc. (Amaldoss & Jain, 2005b) Examples coming from the cosmetics market confirm this idea, with the demand for conspicuous cosmetics that increases with price for college educated individuals and a normal downward-sloping demand curve for the ones who have not graduated. Thus, we should observe relatively higher levels of conspicuous consumption accompanying higher levels of education.

Finally, there is an interesting relationship between advertising and conspicuous consumption. A recent research paper formalizes the idea that advertising creates the possibility of conspicuous consumption, because it is a source of the signalling power of brands. (Krähmer, 2005) Advertisements inform the public of brand names and render them a signalling device. In a price competition framework, the research shows that advertising increases consumers' willingness to pay for these products. But this can lead the firm selling to the "conspicuous consumer" to increase its expending on advertising. The later serve as an incentive to further increase levels of consume, and so forth... Extravert consumers seem to reinforce this effect with their brand passion and brand evangelism. (Kautish, 2010)

3. CONSPICUOUS CONSUMPTION OF THE ALBANIAN HOUSEHOLDS

The following study is based on data coming from the Living Standard Measurement Survey Albania 2008 (LSMS), conducted by the Albanian Institute of Statistics (INSTAT). A similar sampling procedure to the one in LSMS 2005 (The World Bank, 2006) was carried out. It was considered a stratified two stage

cluster sampling design in which the Primary Sampling Units (PSUs) were represented by the census Enumeration Areas (EAs), while the Second Stage Sampling units (SSUs) were the households (denoted as HUs). The EAs were stratified according to geographic criteria:

- Large geographic areas: “*Mountain Area*”, “*Coastal Area*” and “*Central Area*” and their belonging to “*Urban*” area (big towns), “*Other Urban*” areas (i.e. small towns) and “*Rural*” areas.
- Tirana was considered as a separate stratum.

The LSMS final sample consisted of 3,600 households; 8 households selected for each of the 450 EAs selected at the first stage of the sampling. The selection of the EAs within each stratum was carried out by means of a Probability Proportional to Size (PPS) design; the measure of size was represented by the number of households living within each EA. The second stage units were selected by means of systematic sampling. In particular, within each selected PSU, 12 HUs were initially selected, 8 of them formed the base sample while the remaining 4 were considered as available substitutes. The selection of the new sample of 450 EAs has been carried out using the frame of EAs resulting from the Population Census at the end of editing stage. Before selecting the sample of PSUs, EAs from Tirana and Durrës have been quickly updated (quick counts) to take into account the migration flows.

3.1 Estimation of the econometric model

It is rather difficult to find in the relevant literature a clearly specified model showing the impact of different factors on the level of ostentatious consumption. On the other side, drawing upon this literature it is very easy to find theoretical explanations about these factors (some of them mentioned above) and their influence. Trying to include all these factors as variables, the main model upon which the study is based is a model of multiple linear regressions, whose equation is presented below:

$$\begin{aligned} concons = & \beta_1 hhszize + \beta_2 stratum + \beta_3 totcons + \beta_4 malehead + \beta_5 age15_25 \\ & + \beta_6 highdip + \beta_7 malehdip + u \quad (1) \end{aligned}$$

In this equation, *concons* and *totcons* refer respectively to conspicuous consumption of luxury goods and household total consumption during a month, in Albanian Leks (ALL). Ostentatious consumption is calculated as the sum of consumption in these categories: domestic services (paid staff in private service such as child care, babysitting, cooks, cleaners, drivers, gardeners, etc); pet food,

pet supplies and services; entertainment (cinema, theatres, opera houses, concert halls, circuses, amusement parks, sports events, gym or fitness centre admission, etc.); sports and hobby equipment, toys of all kinds, and their repair (including musical instruments, video games, cassettes and CDs, gardening plants and supplies for ornamental gardens and balconies, etc.); excursion and holiday (including travel expenses and lodging), excluding school excursions; gifts/payments to relatives (not living in household) and to nonrelatives; donations to church/mosque/non-profit institution; gambling and lottery losses. Variables named *hhsiz*, *age15_25* and *stratum* respectively show the number of members in the household (household size), the number of members aged 15-25 years and the stratum in which the household is included. The variable *stratum* takes the value 1 (for households included in the coastal area), 2 (for households in the central area), 3 (for the mountain area) and 4 (for Tirana, which is considered a separate stratum). The *malehead* variable is the dummy variable for the gender of the head of the household and *highdip* refers to his highest diploma attained in school. In the case of gender, the variable name illustrates the situation in which it takes the value 1 (the head of the household is a male), while the opposite case is described by the value 0. The *highdip* variable is equal to 0 (no diploma attained), 1 (primary 4 years), 2 (primary 8/9 years), 3 (secondary general), 4 (vocational 2-3 years), 5 (vocational 4/5 years), 6 (university in Albania), 7 (university abroad), 8 (post-graduate in Albania) and 9 (post-graduate abroad). The variable *malehdip* is the interaction term of gender and education of the head of the household (given by $malehead \times highdip$). Finally, the term u (error term) includes all other (unobserved) factors which have any kind of influence on the dependent variable.

The level-level form (linear specification) has been used, instead of the log-level form (semi-logarithmic specification). There are several reasons that make this the most appropriate choice. First, when y (in our case, conspicuous consumption) has not always positive values, the models including $\ln(y)$ (in our case, *Inconcons*) as the dependent variable cannot be used, even though they satisfy the classical linear model (CLM) assumptions better than models that use the level form of this variable. Secondly, applying the logarithmic or semi-logarithmic specification to these data brings to different regressions in which most of the

explanatory variables are statistically insignificant.¹ It should be noted the use of a regression through the origin (without the intercept term β_0). This choice is due to the fact that it is meaningless a $\beta_0 \neq 0$ level of conspicuous consumption in a household whose total consume is equal to zero! Moreover, it is meaningless to analyze a household with zero members ($hhs\text{size} = 0$). It should be also noted the inclusion of the interaction term of gender and education of the household head (malehdip) due to a possible correlative relation between the two characteristics.

Using the households data collected, we estimate the main model for the sample with the OLS method. The result of processing such data is this regression:

$$\begin{aligned} \text{concons} = & -1161.488 \text{ hhs\text{size}} + 670.014 \text{ stratum} + 0.044 \text{ totcons} \\ & - 7888.178 \text{ malehead} + 1167.855 \text{ age15_25} - 1987.396 \text{ highdip} \\ & + 1716.371 \text{ malehdip} + u \quad (2) \end{aligned}$$

We can use the F-test statistic $F=143.840$ ($\text{sig}=0.000 < 0.001$) in the corresponding ANOVA table to test the overall statistical significance of the regression. The regression is statistically significant even at very low significance levels (e.g. 0.1%). Anyway, the coefficient of determination $R^2=0.228$ in the corresponding Model Summary table shows that only 22.8% of the variance of *concons* is explained by the independent variables (a relatively low proportion).

Heteroscedasticity testing: Referring to the **Gluser**² test, testing the null hypothesis of homoscedasticity:

$$H_0: \text{Var}(u | \text{hhs\text{size}}, \text{stratum}, \text{totcons}, \text{malehead}, \text{age15_25}, \text{highdip}, \text{malehdip}) = \sigma^2$$

is replaced by testing the equivalent null hypothesis:

$$H_0: \beta_{\text{hhs\text{size}}} = \beta_{\text{stratum}} = \beta_{\text{totcons}} = \beta_{\text{malehead}} = \beta_{\text{age15_25}} = \beta_{\text{highdip}} = \beta_{\text{malehdip}} = 0$$

in a regression with $|\hat{u}|$ as the dependent variable (\hat{u} shows the errors in the OLS estimation of the main model of the multiple linear regression (2)) and the same independent variables as regression (2):

$$|\hat{u}| = \beta_1 \text{ hhs\text{size}} + \beta_2 \text{ stratum} + \beta_3 \text{ totcons} + \beta_4 \text{ malehead} + \beta_5 \text{ age15_25} + \beta_6 \text{ highdip} + \beta_7 \text{ malehdip} + \text{error} \quad (3)$$

In our case, $\text{res_1abs} = |\hat{u}|$ is the dependent variable, as shown in the corresponding output Regression 2. We can refer to the *p-value* (*sig*) in this output,

¹ See for example Annex 2, illustrating the semi-logarithmic specification.

² See Annex 3

to test the mentioned hypothesis. The value $sig=0.077>0.05$ shows we cannot reject the null hypothesis of homoscedasticity.

Even with the **Breusch-Pagan**³ test, in which regression (3) is replaced by:

$$\hat{u}^2 = \beta_1 hhs\text{ize} + \beta_2 stratum + \beta_3 totcons + \beta_4 malehead + \beta_5 age15_25 + \beta_6 highdip + \beta_7 malehdip + error \quad (4)$$

we cannot reject the null hypothesis of homoscedasticity. In this case, $res_1sq = \hat{u}^2$ (as shown in Regression 1) and we get a value of $sig=0.073>0.05$. Hence, we cannot reject the null hypothesis of homoscedasticity using any of the mentioned tests (they don't show significant evidences of heteroscedasticity).

3.2 Model analysis

Using the data in the Coefficients table in Annex 1, we can interpret the OLS estimators in regression (2) as follows:

hhsize ($\hat{\beta}_1 = -1161.488$, $se = 262.688$, $\hat{b}_1 = -0.199$, $t = -4.422$, $sig = .000 < 0.001$) is statistically significant, even at low significance levels. An increase by one unit in *hhsize* leads to a decrease by 1161.488 ALL in the monthly conspicuous consumption level, *ceteris paribus*. Hence, *hhsize* is economically very significant, too. Concluding, larger households spend less (on average) in conspicuous goods, maybe due to a greater necessity to fulfill more basic needs.

age15_25 ($\hat{\beta}_5 = 1167.855$, $se = 444.176$, $\hat{b}_5 = 0.059$, $t = 2.629$, $sig = .009 < 0.01$) is statistically significant, at the conventional significance level of 1%. If *age15_25* increases by one unit, the conspicuous consumption level increases by 1167.855 ALL, *ceteris paribus*. Thus, *age15_25* is also economically very significant. In accordance with what is said in the theoretical literature, households having more young members spend (on average) more on conspicuous goods.

stratum ($\hat{\beta}_2 = 670.014$, $se = 349.078$, $\hat{b}_2 = 0.068$, $t = 1.919$, $sig = 0.055 < 0.1$) is not statistically significant at a significance level of 5%, but it is significant at the 10% level and also at any other significance level above 5.5%. Households in Tirana have (on average) higher levels of conspicuous consumption compared to those located elsewhere. So, the level of conspicuous consumption of a household in Tirana (*stratum* = 4) is on average 670.014 ALL higher than the corresponding level of a household in the mountain area (*stratum* = 3), 1340.028 ALL higher than

³ See Annex 3

the one of a household in the central area (*stratum* = 2) and 2010.042 ALL higher compared to a household in the coastal area (*stratum* = 1), *ceteris paribus*. These figures show that *stratum* is economically very significant. This is consistent with the theoretical argument that in large urban areas, the surrounding environment promotes a higher level of ostentatious consumption. What is surprising is that the data indicate declining levels of conspicuous consumption, moving from mountain areas in the central area and then on the coastal one, which seems rather strange considering the Albanian society reality.

totcons ($\hat{\beta}_3 = 0.044$, $se = 0.002$, $\hat{b}_3 = 0.847$, $t = 26.523$, $sig = 0.000 < 0.001$) is statistically significant, even at low significance levels. An increase by 100 units (ALL) in *totcons* causes an increase by only 4.4 ALL in the monthly conspicuous consumption level, *ceteris paribus*. Hence, *totcons* is not economically significant, because on average only 4.4% of an increase in the total consumption of an Albanian family would go to conspicuously consume. Such a low value is normal considering the low development level of the country, but contrary to the general perception even among Albanians themselves.

malehead ($\hat{\beta}_4 = -7888.178$, $se = 1386.195$, $\hat{b}_4 = -0.296$, $t = -5.691$, $sig = 0.000 < 0.001$) is statistically significant, even at low significance levels. At a given level of *highdip*, the conspicuous consumption level in the households with a male household head (*malehead* = 1) differs on average by $(-7888.178 + 1716.371 \text{ highdip})$ ALL from the one of female-head households, *ceteris paribus*. For example, the monthly consumption of conspicuous goods of a household, the male household head of which has a secondary general diploma attained (*highdip* = 3) is by 2739.065 ALL lower $(-7888.178 + 1716.371 \times 3 = -2739.065)$, compared to a household with a female household head who has the same education level, *ceteris paribus*. It should be noted that higher levels of education leads to smaller differences between the two household types and even to the inversion of such differences at the highest levels. In accordance with the theoretical literature that emphasizes the relatively stronger social links between women, households headed by a female spend more (on average) in ostentatious goods (at least, at not high levels of education). Concluding, *malehead* is also economically significant.

highdip ($\hat{\beta}_6 = -1987.396$, $se = 495.474$, $\hat{b}_6 = -0.265$, $t = -4.011$, $sig = 0.000 < 0.001$) is statistically significant, even at low significance levels. An increase by one unit in *highdip* (a diploma located just one degree higher in the 1-9 scale

previously explained) causes a 271.025 ALL decrease ($-1987.396 + 1716.371 = -271.025$) in the conspicuous consumption level, in the case of a male household head, *ceteris paribus*. In the opposite case, the consequence of the one unit increase in *highdip* is a 1987.396 ALL decrease in conspicuous consumption, *ceteris paribus*. Hence, *highdip* is economically significant and the negative effect of education is stronger for women. It should be noted that the results contradict the theoretical viewpoint which argues that education is an incentive for the “desire for uniqueness” and consequently for ostentatious consumption. This may be attributed to a greater “consciousness” of the economic situation and a stronger “self-control” among the highly educated individuals, behavioural aspects not previously studied in the relevant literature.

malehdip ($\hat{\beta}_7 = 1716.371$, $se = 538.219$, $\hat{b}_7 = 0.220$, $t = 3.189$, $sig = 0.001 < 0.01$) is statistically significant at a significance level of 1%. This interaction term is economically significant, too.

Thus, the results of the model analysis are generally in accordance with expectations. An important conclusion is that the consumption of conspicuous goods is a small share of the total consumption of Albanian households. Gender and education of the household head are the factors which have the greater effects on the level of ostentatious consumption, at least among the influencing factors studied here.

4. CONCLUSIONS

Conspicuous consumption is generally seen by researchers as a process or means to achieve or maintain status and other social benefits, mainly through the consumption of luxury goods. It is still almost impossible to give an exhaustive definition of it, maybe due to the interdisciplinary character of the phenomenon, which brings the need of multidisciplinary analysis combining viewpoints in economics, marketing, sociology, psychology and even biology.

Conspicuous consumption is essentially an instrument of signalling. Individuals use it to signal sexual or social relevant characteristics to others. It can also be a matter of self-fulfilment or just serve as a means to fill social voids. It is because of this, that marginal groups spend relatively more on conspicuous consumption. Higher levels of education should generally bring higher levels of this consumption, due to a higher access to financial resources and a stronger need

to signal social characteristics. Similarly, levels of conspicuous consumption should also be higher among young and middle-aged consumers, due to the higher propensity to engage in social and sexual signalling. Women play an important role in the field of conspicuous consumption. It seems that their “presence” is important both for their part as direct consumers and as an incentive for the opposite gender to conspicuously consume. There is an interesting relationship between advertising and conspicuous consumption. The former increases consumers’ willingness to conspicuously consume. This can lead the firm to increase its expending on advertising and therefore to cause a further increase in the level of conspicuous consumption, and so forth...

The consumption of conspicuous goods is a small share of the total consumption of Albanian households. On average, only 4.4% of an increase in the total consumption of an Albanian family would go to conspicuously consume. Gender and education of the household head are the factors which have the greater effects on the level of ostentatious consumption, at least among the influencing factors studied in our model. Households headed by a female spend more (on average) in ostentatious goods (at least, at not high levels of education). Education has a negative impact on conspicuous consumption and its effect is greater among women. Larger households spend less (on average) in ostentatious consumption, maybe due to a greater necessity to fulfil their needs for “normal” products. Households having more young members spend (on average) more on conspicuous goods. Finally, households in Tirana have (on average) higher levels of conspicuous consumption compared to those located elsewhere.

Limitations and possible directions in upcoming research: In the presented model, the choice of components of a household consumption included in the category of conspicuous consumption is somewhat subjective. This is due to the difficulties of determining what is actually “conspicuous”, since in any case individuals tend not to admit they are involved in such behaviour. In this context, bringing analysis at the level of individual consumption is an interesting problem to be addressed in future research. Furthermore, in this study we analyze only factors affecting ostentatious consumption, without examining in detail the reasons behind such behaviour and its consequences, which are important both at a microeconomic and macroeconomic level.

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ANNEXES

Annex 1

Regression

Variables Entered/Removed(b,c)

Model	Variables Entered	Variables Removed	Method
1	malehdip, age15_25, stratum, totcons, hhsze, malehead, highdip(a)	.	Enter

- a All requested variables entered.
- b Dependent Variable: concons
- c Linear Regression through the Origin

Model Summary(c,d)

Model	R	R Square(a)	Adjusted R Square	Std. Error of the Estimate
1	.478(b)	.228	.226	22151.02715

- a For regression through the origin (the no-intercept model), R Square measures the proportion of the variability in the dependent variable about the origin explained by regression. This CANNOT be compared to R Square for models which include an intercept.
- b Predictors: malehdip, age15_25, stratum, totcons, hhsze, malehead, highdip
- c Dependent Variable: concons
- d Linear Regression through the Origin

ANOVA (c,d)

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	494044624047.601	7	70577803435.372	143.840	.000(a)
	Residual	1672687224355.175	3409	490668003.624		
	Total	2166731848402.776(b)	3416			

- a Predictors: malehdip, age15_25, stratum, totcons, hhsze, malehead, highdip
- b This total sum of squares is not corrected for the constant because the constant is zero for regression through the origin.
- c Dependent Variable: concons
- d Linear Regression through the Origin

Coefficients(a,b)

Model		Unstandardized Coefficients		Standardized Coefficients	t		Sig.
		B	Std. Error	Beta	B	Std. Error	
1	hhsze	-1161.488	262.688	-.199	-4.422	.000	
	stratum	670.014	349.078	.068	1.919	.055	
	totcons	.044	.002	.847	26.523	.000	
	malehead	-7888.178	1386.195	-.296	-5.691	.000	
	age15_25	1167.855	444.176	.059	2.629	.009	
	highdip	-1987.396	495.474	-.265	-4.011	.000	
	malehdip	1716.371	538.219	.220	3.189	.001	

- a Dependent Variable: concons
- b Linear Regression through the Origin

Residuals Statistics(a,b)

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	-14867.5449	150031.1719	5992.1918	10428.42846	3416
Residual	-138840.57813	473697.15625	-170.33142	22130.90375	3416
Std. Predicted Value	-2.000	13.812	.000	1.000	3416
Std. Residual	-6.268	21.385	-.008	.999	3416

- a Dependent Variable: concons
- b Linear Regression through the Origin

Annex 2**Regression****Variables Entered/Removed(b,c)**

Model	Variables Entered	Variables Removed	Method
1	highdip, age15_25, totcons, stratum, malehead, hhsized, malehdip(a)	.	Enter

a All requested variables entered.

b Dependent Variable: logconcons

c Linear Regression through the Origin

Model Summary

Model	R	R Square(a)	Adjusted R Square	Std. Error of the Estimate
1	.682(b)	.466	.464	3.90039

a For regression through the origin (the no-intercept model), R Square measures the proportion of the variability in the dependent variable about the origin explained by regression. This CANNOT be compared to R Square for models which include an intercept.

b Predictors: highdip, age15_25, totcons, stratum, malehead, hhsized, malehdip

ANOVA(c,d)

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	45179.363	7	6454.195	424.255	.000(a)
	Residual	51861.130	3409	15.213		
	Total	97040.492(b)	3416			

a Predictors: highdip, age15_25, totcons, stratum, malehead, hhsized, malehdip

b This total sum of squares is not corrected for the constant because the constant is zero for regression through the origin.

c Dependent Variable: logconcons

d Linear Regression through the Origin

Coefficients(a,b)

Model		Unstandardized Coefficients		Standardized Coefficients	t		Sig.
		B	Std. Error	Beta	B	Std. Error	
1	stratum	-.187	.061	-.090	-3.036		.002
	totcons	4.65E-006	.000	.425	16.005		.000
	hhsized	.026	.046	.021	.552		.581
	age15_25	.023	.078	.005	.293		.770
	malehead	1.757	.244	.312	7.197		.000
	malehdip	-.483	.095	-.292	-5.093		.000
	highdip	.513	.087	.323	5.875		.000

a Dependent Variable: logconcons

b Linear Regression through the Origin

Annex 3**Regression 1 (B-P)****Variables Entered/Removed(b,c)**

Model	Variables Entered	Variables Removed	Method
1	malehdip, age15_25, stratum, totcons, hhsized, malehead, highdip(a)	.	Enter

a All requested variables entered.

b Dependent Variable: res_1sq

c Linear Regression through the Origin

Model Summary

Model	R	R Square(a)	Adjusted R Square	Std. Error of the Estimate
1	.303(b)	.092	.090	5005048950.81514

- a For regression through the origin (the no-intercept model), R Square measures the proportion of the variability in the dependent variable about the origin explained by regression. This CANNOT be compared to R Square for models which include an intercept.
- b Predictors: malehdip, age15_25, stratum, totcons, hhszize, malehead, highdip

ANOVA(c,d)

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	864861968514524000 0000.000	7	123551709787789200000 0.000	79.321	.073(a)
	Residual	853972056351901000 00000.000	3409	25050515000055770000.0 00		
	Total	940458253203354000 00000.000(b)	3416			

- a Predictors: malehdip, age15_25, stratum, totcons, hhszize, malehead, highdip
- b This total sum of squares is not corrected for the constant because the constant is zero for regression through the origin.
- c Dependent Variable: res_1sq
- d Linear Regression through the Origin

Coefficients(a,b)

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta	B	Std. Error
1	hhszize	-172623091.964	59354648.587	-.142	-2.908	.004
	stratum	120474148.074	78874589.065	.059	1.527	.127
	totcons	6362.995	372.471	.591	17.083	.000
	malehead	-1383784017.469	313212378.841	-.250	-4.418	.000
	age15_25	-225491504.935	100362115.877	-.054	-2.247	.025
	highdip	-342520226.631	111952783.293	-.220	-3.060	.002
	malehdip	251801218.216	121611216.289	.155	2.071	.038

- a Dependent Variable: res_1sq
- b Linear Regression through the Origin

Regression 2 (Gluser)

Variables Entered/Removed(b,c)

Model	Variables Entered	Variables Removed	Method
1	malehdip, age15_25, stratum, totcons, hhszize, malehead, highdip(a)	.	Enter

- a All requested variables entered.
- b Dependent Variable: res_1abs
- c Linear Regression through the Origin

Model Summary

Model	R	R Square(a)	Adjusted R Square	Std. Error of the Estimate
1	.647(b)	.418	.417	16893.65216

- a For regression through the origin (the no-intercept model), R Square measures the proportion of the variability in the dependent variable about the origin explained by regression. This CANNOT be compared to R Square for models which include an intercept.
- b Predictors: malehdip, age15_25, stratum, totcons, hhszize, malehead, highdip

ANOVA(c,d)

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	699774021461.972	7	99967717351.710	50.278	.077(a)
	Residual	972913202893.204	3409	285395483.395		
	Total	1672687224355.176(b)	3416			

a Predictors: malehdip, age15_25, stratum, totcons, hhszize, malehead, highdip

b This total sum of squares is not corrected for the constant because the constant is zero for regression through the origin.

c Dependent Variable: res_1abs

d Linear Regression through the Origin

Coefficients(a,b)

Model		Unstandardized Coefficients		Standardized Coefficients	t		Sig.
		B	Std. Error	Beta	B	Std. Error	
1	hhszize	-834.842	200.341	-.163	-4.167	.000	
	stratum	744.070	266.227	.086	2.795	.005	
	totcons	.046	.001	1.008	36.396	.000	
	malehead	-7104.550	1057.193	-.304	-6.720	.000	
	age15_25	-979.076	338.754	-.056	-2.890	.004	
	highdip	-1580.487	377.877	-.240	-4.183	.000	
	malehdip	1282.298	410.477	.187	3.124	.002	

a Dependent Variable: res_1abs

b Linear Regression through the Origin



DO EXCHANGE RATE REGIMES MATTER FOR BANK PERFORMANCE? THE CASE OF NON-EUROZONE EU MEMBERS

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Abstract: *This paper examines the effect of the exchange rate regimes on bank performance across 15 EU member countries outside the Eurozone for the period from 2001 to 2010. The period chosen allows the study of the regime relevance before and during the recent international financial crisis. The results suggest that the rigid exchange rate regimes may have a positive effect on the banks' performance during the pre-adoption of the Euro. The adoption of the common currency should not determine a reversal of the performance effect. The results are not robust for all the performance measures employed. Moreover, the exchange rate regimes seem irrelevant for the bank performance during the financial turmoils.*

Keywords: *Banking, Performance, Financial crisis, Non-Eurozone countries*

JEL Classifications: *G21, C14*

1. INTRODUCTION

The debate about the Euro adoption has continued to develop even after 15 years since the Eurozone was created. Before the international financial crisis that hit Europe in 2008, countries from Central and Eastern Europe set ambitious targets and were struggling to fulfill the nominal convergence criteria for Euro adoption. And all the targets were followed despite evident structural imbalances that were rising. After 2008 countries like Czech Republic, Poland or Romania discovered that they cannot force the Euro adoption as the economic and social price is too high. They should follow sustainable policies and adjustments and decided to postpone the Euro adoption deadline to some vague or undefined future

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moment. And the Greece case is the most appropriate illustration of the effects of this hurry. These events confirmed the reluctance of UK or Denmark that negotiated an *opting-out* condition when the Euro introduction was decided.

As the recent international financial crisis exhibited, the exchange rate seems to remain an important adjustment instrument for countries which are able to use it. On the other hand, the exchange rate choice has important consequences at the microeconomic level, on individuals, companies, financial intermediaries etc. Costs and revenues are influenced by the exchange rate fluctuations that finally determine the financial performance.

The academic and business interest in bank performance determinants generated a wide literature. The objective of this paper is to determine how exchange rate regimes impact on banks' performance. The exchange rates fluctuation may generate important revenues for banks (from FX trading), but in the same time they are a source of risk that may erode the returns.

That is, a more flexible exchange rate regime may have a wider impact on bank performance and a more rigid regime a lower impact. Thus it is important to show if and how a particular choice of the exchange rate regime may influence the bank performance indicators. Moreover, all the EU countries (with the above mentioned exceptions) will finally have to adopt the Euro and thus the most rigid form of the fixed regime – the currency union. Will this affect the banks' performance in the countries that today are outside the Eurozone? Well, we may determine that by studying the fixed regime case which, even if is not equivalent to the currency union, it is however a very rigid policy arrangement.

The loss risk from exchange rate fluctuations is more obvious during financial crises and the bank performance may be influenced differently by the exchange rate regime before and during a financial crisis. We approached this perspective in the current research.

Although we found some related literature to our research topic, this particular subject - the impact of exchange rate regime on bank performance - hasn't been approached. Prior research in this area considered the impact of exchange rate risk (Gounopoulos et al., 2013) or exchange rate volatility (Owoeye and Ogunmakin, 2013) on bank performance.

Our empirical model allows us to estimate the exchange rate regime effect on bank performance while controlling for other determinants: bank or industry specific factors or macroeconomic variables. There are various performance measures employed in the literature, starting from profitability ratios to composite

indexes and we selected three proxies. The period accounted in this research is from 2001 to 2010 for a sample of banks from EU countries that are or were outside the Eurozone.

The rest of the paper is organized as follows: Section 2 describes a short literature review on banks' profitability determinants and on previous findings; Section 3 explains the methodological approach adopted and shortly describes the data; Section 4 discusses the empirical results. Finally, the conclusions are given in Section 5.

2. LITERATURE REVIEW

2.1 Variables selection

There are various performance measures in the literature, but the profitability ratios are more commonly used: the return on equity (ROE), computed as a ratio of the net profit to equity and the return on assets (ROA), computed as a ratio of the net profit to the total bank assets. As an alternative measure, we will use the net interest margin (NIM), computed as a ratio of the difference between interest income and interest expense to the total assets of the bank. While ROE is the most important for the shareholders, as it expresses the net return of the capital invested by them, ROA is considered a measure of management efficiency. ROA takes into account the risks derived from the leverage, thus is preferred by some authors (Berger and Humphrey, 1997; De Young and Rice, 2004; Athanasoglou et al., 2006). However, Goddard et al. (2004) considers that the relevance of ROA is affected by the existence of the off-balance-sheet assets that are not considered in computing this measure, but represent an important source of profit for EU banks. Bourke (1989) is one of the first who investigated bank profitability determinants and used as dependent variables the net profit before taxes against total capital ratio and net profit before taxes against total assets ratio. Demircuc-Kunt and Huizinga (1999) consider the NIM as a measure of the efficiency of financial intermediation.

The literature splits the bank profitability determinants in three groups: bank specific factors, banking industry specific factors and macroeconomic factors. The first are internal factors, while the last two are external to the bank. The internal factors that influence profitability include bank size, financial structure, credit risk, liquidity risk, business mix etc. The market concentration is an industry specific factor. In the empirical literature, macroeconomic determinants of bank profitability include interest rates, inflation, monetary policy, exchange rate

regimes, fiscal policy, GDP growth, financial structure, banking sector development, stock market development etc.

The main focus of this research paper is to determine how exchange rate regimes impact on banks' performance. The revenues of the banks may be significantly influenced by the foreign exchange trading. High exchange rate volatilities may be a source of important income that enhances the profitability, but in the same time may be a source of risk that generates losses and diminishes the bank performance. That is, a more flexible exchange rate regime may have a wider impact on bank performance and a more rigid regime a lower impact – the sign is uncertain.

Other macroeconomic factors that we included in our research are the inflation and economic growth. The inflation rate has a positive effect if it is anticipated – it generates the loan interest rates increase and additional operating income; the unanticipated inflation may increase the financing costs and decrease the bank performance. The economic growth (GDP per capita growth) increases the bank activity, both customer deposits and loans granted. More income from the interest margin positively impacts on bank profitability (Sufian and Chong, 2008).

Kosmidou (2008) and Athanasoglou et al. (2006) identify the bank size, measured as the natural logarithm of total bank assets, as a bank specific factor with an unclear effect on performance. The large organizations are often affected by rigidities that may decrease the performance, but in the same time greater size may generate economies of scale and an increase of performance.

The capital adequacy ratio (the ratio of equity to total assets) is a measure of the financial structure that shows the capacity of the bank to cover losses (Hassan and Bashir, 2003). A higher solvency reduces the leverage effect, may increase the financing costs and consequently reduce the performance (Akbas, 2012), but in the same time it reduces the risks taken by the bank and may improve the performance (Athanasoglou et al., 2006).

The credit risk may be measured by the ratio of loan loss reserves to gross or net loans granted by banks. It shows the possibility of loss due to the debtor's default and is expected to influence negatively the bank performance (Mansur et al., 1993).

The ratio of loans to customer deposits may be a measure of the liquidity risk, which shows the possibility of the bank to meet its obligations despite some difficult situations that may occur. A high liquidity decreases the risks of failure, reduces the cost of financing and consequently may have a positive effect on

profitability. In the same time, liquid assets bring low returns, which negatively affect the profitability (Alexiou and Sofoklis, 2009).

The management efficiency may be proxied by the cost to income ratio. A negative effect is expected because high operating costs relatively to bank incomes will lower the bank profits (Akbas, 2012).

As mentioned at the beginning of this section, European banks have off-balance-sheet assets that represent an important source of income, thus have a positive influence on the profitability (Alexiou and Sofoklis, 2009). The ratio of other operating income to the average bank assets is an appropriate measure of this performance determinant.

We employ a single industry specific factor, namely the market concentration measured by the Herfindhal-Hirschman Index (HHI) (Sufian and Chong, 2008). HHI is computed as the sum of the squares of the market share of banks and, thus, gives greater weight to the entities with larger shares. The effect on bank profitability (ROE and ROA) is uncertain, as the literature does not provide consistent evidence on the relationship between the two variables (Moore, 1998; Pilloff et al., 2002).

Table 1 summarizes the variables used in this paper and their expected effect on bank performance.

Table 1 *Variables description*

Symbol	Variables	Proxy	Expected effect (+/-)
<i>Dependent Variables</i>			
ROA	Return on Average Assets	Net profit/ Average Assets	
ROE	Return on Average Equity	Net profit/ Average Common Stock Equity	
NIM	Net Interest Margin	(Interest income - Interest expense)/Average Assets	
<i>Independent Variables</i>			
<i>Exchange rate regimes</i>			
fixed	Fixed exchange rate	Fixed exchange rate dummy	+/-
intermediate	Intermediate exchange rate	Intermediate exchange rate dummy	+/-
<i>Other macroeconomic factors:</i>			
inflation	Inflation	Inflation, GDP deflator (annual %)	+/-
growth	Economic Growth	GDP per capita growth (annual %)	+
<i>Bank specific factors (internal):</i>			
size	Bank Size	Logarithm of Total Assets (log)	+/-
adequacy	Capital Adequacy	Equity / Total Assets	+/-
crisk	Credit Risk	Impaired Loans(NPLs)/ Gross Loans	-
efficiency	Management Efficiency	Cost to Income Ratio	-
lrisk	Liquidity Risk	Loans/ Customer Deposits	-

Symbol	Variables	Proxy	Expected effect (+/-)
busmix	Business Mix indicator	Oth Op Inc / Avg Assets	+
<i>Banking system specific factors (external):</i>			
hhi	Market Concentration	Herfindhal-Hirschman Index	+/-

2.2 Some previous findings

There is a plethora of studies that investigate bank performance determinants. Molyneux and Thornton (1992), assessing the profitability of banks in 18 European countries during the period from 1986 to 1989, found a significant positive association between the return on equity and the level of interest rates, bank concentration and government ownership. Molyneux and Thornton (1992) and Demirgüç-Kunt and Huizinga (1999) demonstrate that high interest rate is significantly associated with higher bank profitability. On the contrary, Naceur (2003) found a negative relationship between interest rates and bank profitability. Demirgüç-Kunt and Huizinga (2001) suggest that there is a positive relationship between inflation and bank profitability. Their results indicated that bank profits are lower in market-based financial systems than in bank-based systems. Athanasoglou et al (2006) found that inflation has a strong effect on profitability while banks' profits are not significantly affected by real GDP per capita fluctuations. Their study is on South Eastern European region over the period from 1998 to 2002. Demirgüç-Kunt and Huizinga (1999, 2001) show that corporate income tax has a significantly positive impact on bank profitability in developing and developed countries alike, and banking sector development has a significantly negative impact. Several papers (Rose and Rose, 1979; Gilbert and Rasche, 1980; Demirgüç-Kunt and Huizinga, 1999) identified required reserves and liquidity ratios to be the major tools of monetary policy that significantly influence bank profitability. Andries et al. (2012) examine the pre-crisis and the crisis situation in the CEE countries and discover that the best-performing banks during the recent financial crisis had significantly more core equity capital and were more focused on traditional banking activities.

3. DATA AND METHODOLOGY

In the current paper we use yearly data for the period from 2001 to 2010 for 433 banks from 15 EU member countries that are outside the Eurozone. Besides the countries that were outside the Eurozone for the entire period, we included the countries that adopted the Euro during the accounted period, but only for the interval that preceded the Euro adoption.

The exchange rate regimes data has the IMF Annual Report on Exchange Arrangements and Exchange Restrictions database as primary source. We regrouped the 8 arrangement categories in three broader ones: fixed, intermediate and floating (Table 2). The bank specific variables were downloaded from the Bankscope database, the HHI has the ECB Statistical Data Warehouse as source, while the GDP growth and inflation series are freely available in the World Bank database.

Table 2 *The regrouped exchange rate regime categories*

<i>Classification employed in the current research</i>		
Fixed	Intermediate	Floating
IMF classification		
(1) no separate legal tender	(4) horizontal band	(8) independently floating
(2) currency board arrangement	(5) crawling peg	
(3) other conventional fixed peg	(6) crawling band	
	(7) managed floating without pre-announced path for exchange rates	

Source: IMF (AREAER)

We estimate the following equation:

$$y = \alpha + \beta_1 \text{fixed} + \beta_2 \text{intermediate} + X_1 \gamma_1 + X_2 \gamma_2 + X_3 \gamma_3 + \varepsilon \quad (1)$$

Where:

- Y stands for the dependent variables ROA, ROE or NIM;
- fixed is 1 if the exchange rate regime is fixed in the corresponding year and 0 otherwise;
- intermediate is 1 if the exchange rate regime is intermediate in the corresponding year and 0 otherwise;
- β_i is the exchange rate regime dummy coefficient for fixed ($i=1$) and respectively intermediate regimes ($i=2$);
- X_1 is a vector of bank internal factors;
- X_2 is a vector of banking sector factors;
- X_3 is a vector of macroeconomic variables;
- γ_i is the matrix of variable coefficients;
- ε is the error term.

Our main focus is on the β coefficients, that show the effect of the fixed, respectively the intermediate regime having the floating arrangement as a base. The positive sign of β_1 shows that banks in countries with a fixed exchange rate regime have better performance compared to those in countries with floating regimes and vice versa. The positive sign of β_2 reveals the higher bank performance in countries with intermediate regimes compared to those in countries with floating regimes

(and vice versa). The specification does not compare directly the effects on bank performance of the intermediate versus the fixed regimes.

We apply the regression model for the three performance indicators on the entire sample and on two subsamples, namely the pre-crisis period (2001-2007) and the crisis period (2008-2010) to highlight the possible differences between the two intervals.

We use the Hausman test to select the appropriate estimation method – fixed effects or random effects. By rejecting the null hypothesis (prob=0.000) for all dependent variables, it results that the correct method is estimating the model with fixed effects. We also estimate robust standard errors to ensure that the covariance estimator handles heteroscedasticity of unknown form.

4. RESULTS AND DISCUSSION

The regression results are exhibited in Table 3. The first three columns show the coefficient estimates for the ROE as dependent variable, the columns from 4 to 6 for the ROA as dependent variable, while the results for NIM are summarized in the columns from 7 to 9. In the case of all the dependent variables we run the regression command on three samples, respectively: the entire sample (columns 1, 4 and 7), the pre-crisis subsample (columns 2, 5 and 8) and the international financial crisis subsample (columns 3, 6 and 9).

Table 3 *Estimation results*

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	ROE	ROE pre	ROE crisis	ROA	ROA pre	ROA crisis	NIM	NIM pre	NIM crisis
Fixed	-1.938 (1.634)	2.899 (1.910)	-3.444 (2.342)	0.199* (0.108)	0.486* (0.204)	0.113** (0.0232)	0.597* (0.308)	1.588*** (0.332)	0.0387 (0.366)
Intermediate	-2.545 (1.586)	0.200 (1.123)	-7.916 (6.141)	-0.0644 (0.133)	0.0851 (0.0860)	-0.512 (0.467)	0.965*** (0.118)	1.207*** (0.108)	1.091 (0.497)
Inflation	-0.0217 (0.140)	0.174*** (0.0336)	0.250 (0.237)	-0.0279 (0.0317)	-0.0256 (0.0297)	0.00853 (0.0261)	0.125*** (0.0310)	0.156*** (0.0238)	0.0884* (0.0282)
Growth	1.204*** (0.285)	0.268** (0.0956)	1.375** (0.251)	0.113*** (0.0262)	0.0413** (0.0137)	0.126* (0.0191)	0.0192 (0.0205)	-0.0697** (0.0198)	0.0694 (0.0274)
Size	0.770** (0.237)	0.534* (0.246)	0.748 (0.755)	0.0710** (0.0244)	0.0148 (0.0266)	0.103 (0.0418)	-0.0597** (0.0228)	-0.0180 (0.0359)	-0.0762 (0.0354)
Adequacy	0.278 (0.222)	-0.457*** (0.0737)	0.744*** (0.0383)	0.0462*** (0.00779)	0.0268 (0.0151)	0.0538** (0.0114)	0.136*** (0.00951)	0.144*** (0.0163)	0.134*** (0.0114)
Crisk	-0.522*** (0.143)	-0.127 (0.0702)	-0.660* (0.160)	-0.0357** (0.0132)	0.00165 (0.00922)	-0.0470* (0.0146)	0.0244** (0.00991)	-0.00710 (0.0135)	0.0380* (0.0109)
Efficiency	-0.277*** (0.0330)	-0.277*** (0.0402)	-0.276** (0.0477)	-0.0283*** (0.00632)	-0.0377*** (0.0101)	-0.0252* (0.00777)	-0.0115*** (0.00265)	-0.00142 (0.00332)	-0.0139* (0.00370)
Lrisk	-0.0190** (0.00780)	0.00226 (0.00365)	-0.0358* (0.00938)	-0.00131* (0.000600)	0.0000884 (0.000499)	-0.00276 (0.00116)	-0.00124* (0.000575)	-0.00242*** (0.000445)	0.000683** (0.000146)
Busmix	1.761** (0.683)	4.033*** (0.622)	0.512 (0.502)	0.205*** (0.0493)	0.374*** (0.0472)	0.119* (0.0359)	0.203*** (0.0492)	0.185 (0.134)	0.204** (0.0256)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	ROE	ROE_pre	ROE_crisis	ROA	ROA_pre	ROA_crisis	NIM	NIM_pre	NIM_crisis
HHI	-2.497 (9.569)	1.234 (7.465)	17.08 (13.17)	-1.832 (1.163)	-0.984 (0.559)	-0.783 (2.298)	0.398 (2.277)	-3.496** (1.131)	8.078*** (0.480)
Constant	13.41*** (3.689)	18.64** (6.293)	10.49 (12.60)	1.080 (0.647)	2.324* (1.153)	0.418 (1.059)	2.173*** (0.498)	1.408 (0.959)	2.085 (0.771)
Observations	1210	665	545	1210	665	545	1210	665	545
Adjusted R ²	0.376	0.517	0.410	0.435	0.555	0.440	0.352	0.385	0.384

Robust standard errors in parentheses; * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Only 4 of the 18 estimates of the exchange rate regime coefficients are strongly significant, 3 are weekly significant and all the rest are not statistically significant. At a first view, this may suggest that there's not much difference between the exchange rate arrangements regarding their effect on banks' performance in the non-Eurozone EU countries. However this first observation has to be amended from two perspectives. First, the coefficient significance depends on the performance measures employed. The exchange rate regime choice seems irrelevant when ROE is the dependent variable, while the regimes are more relevant as influence factors for ROA and NIM. Second, the appropriateness of the use of a *de jure* exchange rate classification may be controversial. There is a wide literature on the exchange rate arrangements classifications, which debates the advantages or the drawbacks of different classification systems (see, for example, Klein and Shambaugh, 2010: 29-50).

Table 4 Summary of the estimation results

Regime	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	ROE	ROE_pre	ROE_crisis	ROA	ROA_pre	ROA_crisis	NIM	NIM_pre	NIM_crisis
Fixed	Statistically insignificant	Statistically insignificant	Statistically insignificant	Positive influence	Positive influence	Positive influence	Positive influence	Positive influence	Statistically insignificant
Intermediate	Statistically insignificant	Positive influence	Positive influence	Statistically insignificant					

However, the effect of the exchange rate regimes on the bank performance is positive in all cases when coefficient estimates are statistically significant (Table 4). This suggests that in the specific cases the fixed or the intermediate exchange rate arrangements may be preferable to the floating regimes in order to enhance the bank performance in the sample countries. In the case of the fixed regime, the results are positive and statistically significant in the pre-crisis period for ROA and NIM. This suggests that the lack of the exchange rate risk has a positive influence on the bank performance. This could not be proved for the intermediate regime, as the coefficients

are statistically valid only when NIM is the dependent variable (models 7 and 8). The positive influence of currency regimes on NIM could be explained by the fact that loans became riskier and banks raised the interest rates for loans granted and increased the interest margin. This behavior could suggest that the banking competition was too weak to minimize the interest spread in some EU member countries.

The results for the crisis period only show that the fixed regime had an effect on ROA, but the coefficient is weekly significant. In a period of an important financial crisis as the one that started in Europe in 2008 the uncertainties amplify. The differences between the exchange rate arrangements may become irrelevant as the authorities move their main focus on the financial stability objective. The authorities in countries with floating regimes may intervene on the foreign exchange (FX) market to avoid very large exchange rates movements. The intermediate regime countries may move closer to fixed regimes to fight against investors' FX speculations. A possible currency crisis, with an exit of a country from a fixed regime to an intermediate or even a floating arrangement cannot be excluded.

5. CONCLUSIONS

At a first view, there seems not to be much difference between the exchange rate arrangements regarding their effect on banks' performance in the non-Eurozone EU countries. However, the fixed exchange rate regime had a positive influence on two of three measures of bank performance during the pre-crisis period. This result suggests that the very low exchange rate risk is a stimulus for a higher performance in normal periods. On the other hand, during financial turbulences the exchange rate regime appears to be irrelevant, with one exception. In the case of the fixed regimes, there may appear an increased risk of exit (regime failure). On the other hand the objective of financial stability may determine large interventions of the authorities on the FX markets irrespective of the arrangement that has been adopted.

Although the results are not robust for all the performance measures, from the perspective of the policy makers the adoption of rigid exchange rate arrangements during the pre-adoption of the Euro may be desirable to support the bank performance. The next step, the adoption of the extreme form of the fixed regimes – the currency union, should not determine a reversal of the performance effect unless a financial "storm" starts.

Finally, the possible drawbacks of this research may be the bank performance measures and the exchange rate classification employed.

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AN ASSESSMENT OF E-COMMERCE WEBSITES THROUGH A MOUSE TRACKING INVESTIGATION

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Abstract: *As a fundamental human behavior, gazing can provide important insights into user`s behavior during web browsing. As an emerging interdisciplinary field, consumer neuroscience proposes new research methods in order to understand and analyze the online human behavior. Unlike the traditionally used methods, the neuroscience field brings a technique which lately gained attention - the eye tracking. While measuring the visual behavior of the consumer`s research, these physiological metrics pose both technical and financial constraints. Therefore, the aim of this paper is to investigate the data obtained by analyzing two commerce websites with a user recording service and thus providing an alternative to eye tracking. We investigate the relationship between gaze position and cursor position as analyzed in the human computer interaction literature, providing evidence about the similar patterns observed in both eye and mouse movements. Finally, we analyze the results obtained during the tracking of mouse movements in two commerce websites.*

Keywords: *mouse tracking, cursor, gaze, eye tracking, eye movement, consumer behavior*

JEL Classification: *M310*

1. INTRODUCTION

In recent years, the development of eye tracking equipment has led to a tremendous growth of research not only in psychology but as well as in various fields like consumer neuroscience, marketing research or human computer interaction field. Through this method, researchers interested in human computer interaction can understand and analyze how people process the visual information on a web site, what is appealing to them, what are the stimuli which influence them most and the factors that would improve the online experience. Therefore, tracking the eye movements and analyzing the user`s behavior in their searching process,

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we can obtain objective data concerning the web sites interface and consequently we can proceed to improve the user's online interface by improving the web site design and technical aspects.

One person's eyes are attracted by some points of interest on the web site. While moving between these points in which the person's attention is captured, the brain draws a picture of this process. These pictures are created by five complex models of eye movement (Duchowski, 2007): the saccadic movements, the smooth pursuit, fixation, the vestibular movement and the physiological nistagmus. But, the most relevant movements which are analyzed in the eye tracking research are the saccadic and fixation movements. According to Duchowski (2007), the saccadic movements consist in fast eye movement in the process of fovea's move in the visual field, from one object to other, lasting from 10 to 100 milliseconds. In the same time, Wendel et al. (2008:124) argues that the fixation represents the eye movement in which the retina fixed upon a stationary object of interest, lasting from 200 to 700 milliseconds. During these two movements, the brain interprets the images differently. In fact, we perceive the sequence of the perceived images as a video, as a continuum. Fixations indicate the areas where the attention was captured most. When using the eye tracking devices, we gain detailed information about the time spent on those areas, to measure the workload and the cognitive state of the user. Using this method, we gain important insights into users behavior.

Nevertheless, due to the eye tracking equipment expensiveness, it is difficult to implement it in a certain study. In contrast, we emphasized that the coordinates of the mouse movements can provide relevant data about the users behavior considering that a mean of 76,2 % of the fixated regions were covered by the mouse movements (Rodden et al., 2007).

The use of mouse movement data can be an incipient phase when analyzing the online user behavior but it cannot fully replace an eye tracker. The mouse movement research can only complement the eye tracking studies and represent a predictor of the potentially user behavior and preferences toward certain elements and functions of the considered web sites. From the previous studies we acknowledged that in certain situations, the cursor have the tendency to follow the gaze and in others is does not (Byrne, 1999).

Relying on the results from the previous studies, we will use the mouse movements in order to assess the interface design. These results can be

subsequently completed with other various data obtained from other types of websites analyzers or further with an eye tracking device.

2. AN APPROACH TO THE HUMAN VISUAL ATTENTION

The human visual attention represents a long debated and analyzed phenomenon in various fields, such as psychophysics, computer science or neuroscience. Before developing an analysis of the human visual attention, we should remind that our vision consists of two main areas. The first one is called the foveal vision and it refers to the highest resolution perceived. It represents only a small area of our visual field. The second area is called the peripheral vision which is the opposite of the first one. The peripheral vision has a very small resolution and in spite, it covers a very large area of our visual field. In relation to these considerations, we speak about the overt and the covert attention.

In a certain visual field, we pay attention to one element within it; we move our eyes and focus the object. In this situation, we speak about the overt attention. Whereas the overt attention involves the eye movement, the covert attention deals with the peripheral elements from the visual field, but it pays attention to them without making the movements as in the overt attention.

Moreover, Frintop et al. (2010) explains how our attention is guided. There are two ways in which we pay attention to various elements from the visual field. Thus, our attention is guided bottom-up and top-down. Concerning the bottom-up guidance, we must consider that there are regions of great interest that attract our attention strongly enough that we are not able to perceive other regions. Thus, in this situation, we consider the foveal vision. On the other hand, top-down is driven by various individual differences such as the user's expectations or his goals. When considering these cognitive factors, the user is inclined not to focus but to look around. This means that we use our peripheral vision.

Investigating the visual attention, we can understand the user's behavior. According to Duchowski (2007), this investigation should be made from three perspectives: where, what, how. The first perspective, *where*, assesses that individuals tend to search and see all the elements of the visual field. In this stage, it can be consciously controlled. The eye movements can reveal the voluntary action of the user.

The second perspective, *what*, is related to the foveal vision when the user has the tendency to inspect the region in detail. A website is first perceived

parafoveal or overall. The user will have a general view of the website or of a certain picture. Subsequently, the user will perceive foveal, namely in detail. The user will start from *where* to look further and *what* to examine in detail. (Duchovschi, 2007).

Further, in the third perspective, the focus is on the user's attitude toward the stimulus. *How* will he react? It is important to analyze his reaction to various and ambiguous stimuli. In this stage we have to consider his perceptual waiting.

Velasquez (2013:4) assesses a model beginning with the stimuli perception until the alignment of the foveal vision with the region of interest and the perception. In addition, Djamasbi (2010) involves the Gestalt perspective, in which "one's perception of an object cannot be decomposed into its elementary parts". (Djamasbi, 2010:308) Based on this holistic view, the individual's tendency is to group the elements.

Knowing which visual elements of a website distract or attract the visual attention, could be important in website usability evaluation, content modification or web page design. An appropriate text distribution or web object placement can significantly improve the user's experiences concerning their content understanding and thus, leading lately to bigger conversing rates.

3. MOUSE MOVEMENT AND EYE MOVEMENT

Eye tracking techniques can provide detailed information about the users' behavior when scanning, browsing and reading web pages. This technique can provide various detailed cognitive processing measures such as the fixation numbers, the number of fixated regions, average duration of these fixations and the entire fixation time. According to previous researchers (Anderson, Bothell and Douglass, 2004; Just and Carpenter, 1980; Rayner, 1998), if the brain is busy with processing the fixated information, the eyes will not move to a new region. The entire fixation duration of a certain region represents the total fixation time. It denotes the total cognitive processing engaged during the foveal phase, when the information was fixated.

Nevertheless, the eye tracker is expensive and it entails some limitations such as calibration or having the user tested in a laboratory and not in his natural environment. Research papers in HCI (Human Computer Interaction) field have claimed that the cursor follows the gaze. Chen et al. (2001) concludes that there is 84% chances a region visited by the cursor to be visited by the users' gaze.

Concerning the saccades, namely the sudden mouse movements, the mouse pointer was inside the regions of interest, and it may be possibly used as an instrument which helps the users read and follow the flowing text. In 70% of the cases, the users' gaze was inside the interest regions, except the blank margins of the page.

Moreover, Atterer et al. (2006), used a JavaScript tracking code in order to collect data about the users' mouse movements, mouse clicks, hovers, mouse position coordinates, scroll actions and key press actions. Using this method, they found certain areas of the page that were visited by users or even to find what was the page desired by a user who previously left a page.

In their study, they identified and tested new means of tracking the web sites and web applications. Having the proper means of analysis, they observed how is the user interacting with the system. They speak about implicit and explicit interaction. The explicit interaction happens when the user is aware of his actions and the tasks he makes, for example when he is filling out a form in a web site. Instead, the implicit interaction takes place unconsciously; for example, the user may hesitate to fulfill a task due to his uncertainty. (Atterer et al., 2006)

Moreover, Chen et al. (2001), explored the relationship between gaze and cursor position. They suggested that we can use different methods, inexpensive, in order to observe the errors and the problems that appear in the web sites interfaces. One of them would be the recording of eye and mouse movements and observe different patterns. The results they found imply that a mouse cursor is able to provide us useful information. Describing the regions of the websites, Chen et al. (2001) argues that "eye gaze visited about 50% of regions in average and cursor visited 38%". Thus, they correlated the dwell time of the cursor to how a user will look further at that region. (Chen et al., 2001) We may find useful the information provided by a mouse cursor but even so, if we need concrete data, we should complement it with a precise instrument, such as an eye tracker device.

Further, Rodden et al. (2007) assessed the same relationship between eye movement and mouse movements. Besides this, they described various patterns of eye-mouse coordination. In order to see how closely mouse-cursor movement reflects the eye movement, Rodden et al. (2007) used the same method as in other similar studies (Arroyo et al., 2006; Atterer et al., 2006). "A web proxy server inserted a reference to a piece of JavaScript code at the top of every Google search results page visited". (Rodden et al., 2007) Using this method, they could capture

the user's mouse coordinates, but for tracking the eye movements, they used an eye tracker device from Tobii.

Figure 1 indicates that the number of clicks, the eye fixation duration and the mouse data points are similar. (Rodden and Fu, 2007) We can observe a difference between the mouse pattern and the eye paths. This means that the mouse spent more time in regions like the bottom of the page or the lateral regions of the page. An interesting result of these types of studies is the fact that we can observe different user behaviors.

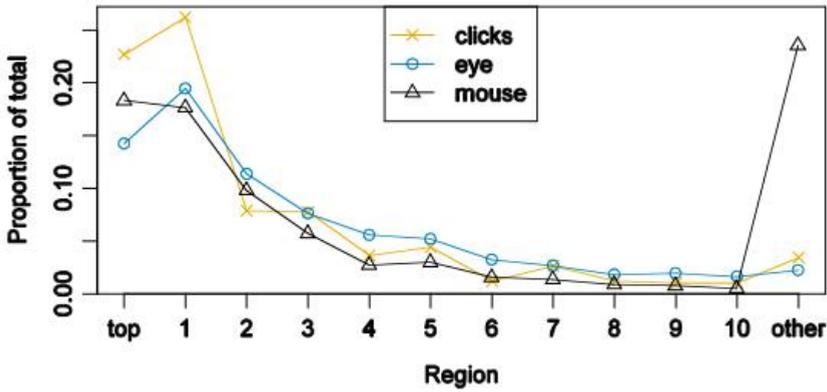


Figure 1 *Distribution of the number of clicks, the eye fixation duration and mouse data points*

Source: Rodden and Fu: 2007: 30

In this study, we observe what we already knew about the common behavior of keeping the mouse in the blank areas of the page, especially in the right part, while we scan the page with the eyes.

Moreover, it is interesting to see similarities between the eye and mouse dwell in the same regions. Rodden et al. (2007) confirms that “eye and mouse were in the same regions for 42,2 % of the mouse data points that had a corresponding eye fixation and this dropped to 60% if the mouse was in the other region”.

All in all, the closest distances between eye and mouse are recorded at the top of the page. This is what Rodden et al. (2007) confirms and what we observed in our study. In his study, the percentage in this case is 70% of the time where the eye and mouse were closest in terms of distance.

As previous studies indicated, mouse movements can provide important data about the regions that the users considered before deciding where to click. Besides

this, the mouse coordinates can show which elements captured attention and if the user found his answers to his problems and queries.

4. MOUSE TRACKING VS. EYE TRACKING

In comparison with the eye tracking studies which use special devices and software to track the user's eyes, mouse tracking analyses follows the mouse movements to correlate them with the eye movements. The most precise results are obtained when the mouse tracking analytics are complemented by the eye tracking. As we have seen above, the previous studies used both methods with a correlation of almost 90%.

All in all, each method has its advantages and disadvantages. We will present them in the following tables.

Table 1 *Mouse Tracking and Eye Tracking advantages*

Mouse tracking	Eye tracking
Inexpensive	Accuracy
The users are not disturbed by the observer	Test the objectives in your laboratory
Natural environment; the users are navigating in their own homes, offices etc	We can observe various behaviors while we test
We can target different users all over the world	We can get concrete answers from the user feedback

Table 2 *Mouse Tracking and Eye Tracking disadvantages*

Mouse tracking	Eye tracking
Less accurate	Expensive
We cannot test precise objectives	Calibration difficulties
We cannot manipulate the environment	Limited number of participants
We cannot obtain verbal feedback from the users	The users may be influenced by the observer and by knowing that they are monitored

Even though the eye tracking technique is more precise and offers rich information into the user's subconscious, the mouse tracking is also important in understanding the user's intentions. Thus, each method offers valuable information. As Rodden et al. (2007) argued each method represents important sources for developing and improving the user interface or the web sites design.

All in all, the possibility of combining the eye tracker device with other traditional eye tracking methods, richer data can be obtained in order to make a better analysis of the user's behavior.

Even though the eye tracker, as an objective measure, records the user's activities directly, it has its limitations such as calibration and financial restrictions.

As a result, it is recommended to be used in combination with other techniques. On this line, one may obtain richer and accurate data.

5. A MOUSE TRACKING ANALYSIS

In this study we have compared two e-commerce websites by analyzing the mouse movement, number of click for each major area of interest and the attention gained by each of the website's areas. These two website are: horses4homes.net and spanishhorsesuk.com. Both websites are trading horses" websites. The first one, horses4homes.net is promoting horses for donation and the other one is promoting top breed horses, especially Spanish horses. We can observe that both websites are from the same area of interest, horse lovers, but the targeted users are different:

- horses4homes.net targets users from Great Britain only, and helps people rehome their horses;
- spanishhorsesuk.com, an international website, targets users that are willing to invest in pure breed horses or equipment.

Further, we can observe in the Table 3 that both websites received a lot of interest, especially horses4homes.net, as people are more interested in rehomed horses:

Table 3 *The number of visits, unique visitors, page views and average visit duration*

Tracking period	horses4homes.net	spanishhorsesuk.com
19/12/2013 - 18/01/2014		
Visits	29.463	1.119
Unique Visitors	15.035	774
Page views	364.031	7.355
Avg. Visit Duration	00:08:02	00:04:36

Source: Google Analytics

In order to analyze how users are using the above websites, we used ClickTale software, which enabled us to trace mouse movements, user clicks, attention and scroll reach. The ClickTale online software offers the possibility to track mouse movements and generates different analytics so they can improve the user experience for a better return of investment (ROI). Using this software we can generate the following data:

- mouse movement heat maps - we can find out where the visitors looked the most; in this way we can find out what sections of our websites need improvement or more focus;
- clicks heat maps - we can find exactly where users clicked on the different areas in the website; we can improve the areas that should be clickable;

- attention heat maps - knowing where users focus more on our websites we can improve those areas for a better user experience;
- scroll-reach heat maps - we can see how far out visitors scroll; in this way we can decide if our pages should be shorter or not and if we have redundant data and useless fields.

Further, we have installed the ClickTale software on both websites and tracked how users moved through pages for over a month. The free plan covers 5000 page views per month, 170 page views per day. This explains why we were limited to this number.

Our main interest is to observe how users move through the homepages and to observe the main areas of interest and the least accessed ones. We acknowledged if the homepage offered what visitors were looking for or what we have to improve in the homepage sections.

Further, in Figure 2, we present the generated heat maps for mouse movement.

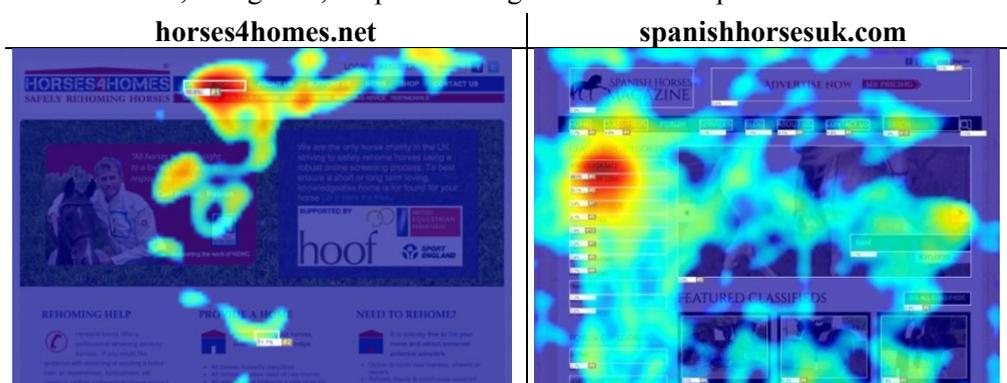


Figure 2 *The ClickTale generated heat maps for horses4homes.net and spanishhorsesuk.com*

Source: www.Clicktale.com, Customer Experience Analytics

In the above heat maps, both websites have user experience (UX) problems but the horses4homes website are higher. First of all, for the horses4homes.net website, 55,6% of visitors went directly to "Browse horses" button from the top menu and another 11,2% click on another link went to the same page as "Browse horses" - this page will display a listing of horses entered on the website for rehoming. For the horses4homes.net website, the homepage did not provide the information visitors looked for: horse entries. This is what a visitor wants to see when they land on the homepage, not some static/promotional copy. In terms of UX, the homepage needs a major rewrite to include what "Browse horses" page does. In this way, we will offer visitors a glimpse of what the website offers and we

can keep them more on our website. By making this improvement, we will substantially increase the chances of rehoming a horse.

The second website, spanishhorsesuk.com proves to have a better homepage in terms of UX, but there are some problems too. This homepage displays a couple of featured horses, which is a major improvement from horses4homes.net. From our mouse movement heat map, we can see that visitors looked at these featured horses and 33% of them clicked to see further details. The same as for horses4homes.net, 48,7% of the visitors clicked on the button that took them to see all horses entered. This button is located in the left hand side of the website.

The homepage of a website is the most important page, because visitors can decide if they will spend more time on your website or leave it. Spanishhorsesuk.com seems to have a better page. Here, we can observe how the areas of interest (AOI) are spread on spanishhorsesuk.com. Visitors are really looking at all areas displayed on the homepage: sidebar, slideshow, banners and featured horses, while on horses4homes.net the main area of interest is the navigation menu. This tells us that people are running away from homepage.

Further, the attention heat maps gave us more details on what regions seemed to be important to visitor. Figure 3 shows which regions captured more their attention.

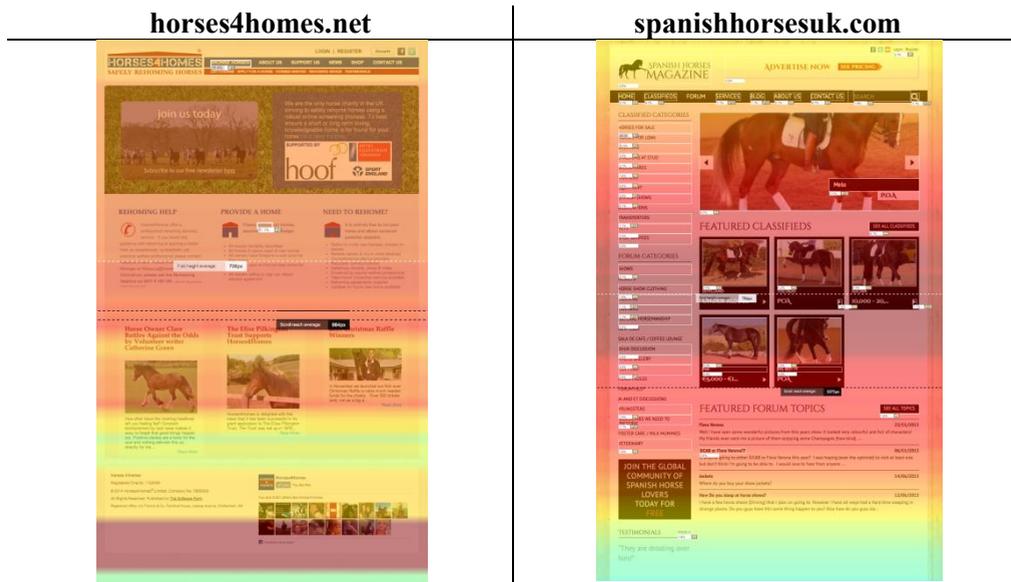


Figure 3 Attention Heat maps

Source: www.Clicktale.com, Customer Experience Analytics

In Figure 3, the two attention heat maps presents clearly that the homepage content for spanishhorsesuk.com website is better organized than the one of

horses4homes.net website. The main focus on spanishhorsesuk.com website is the area where the featured horses are located. The scroll reach average is 1073px, which covers all featured horses, while on horses4homes.net website is 864px.

When visitors reach their interest, that is horse entries, we observe that their mouse movement pattern is the same for both websites.

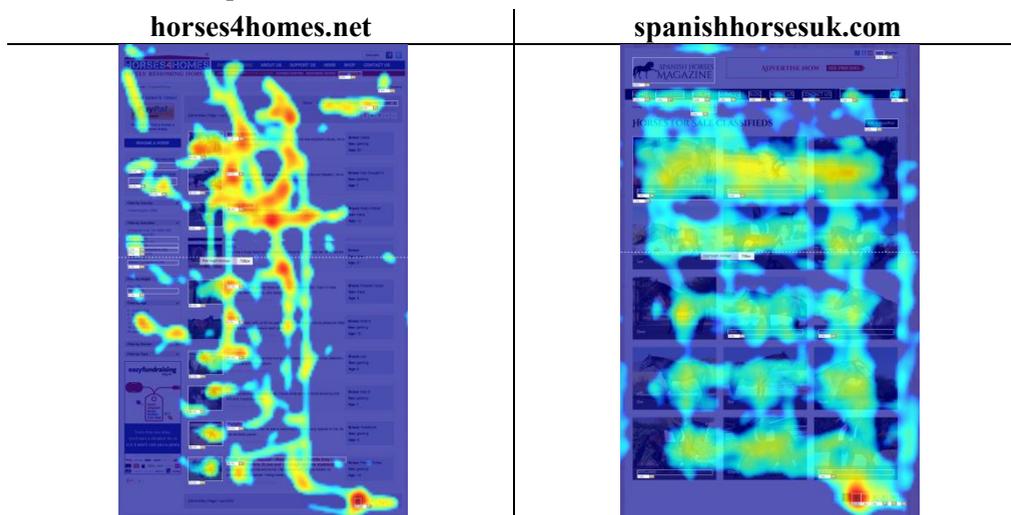


Figure 4 *Mouse Movement Heat maps for horse listing on both websites*

Source: www.Clicktale.com, Customer Experience Analytics

For both websites, on the listing page, users look in detail at all entries, one by one, those who receive more interest are located at the top. Also, we observe that more than 50% of visitors navigate on the second page.

6. CONCLUSION

First, the aim of this study was to investigate the relationship between gaze position and cursor position as analyzed in the human computer interaction (HCI) field, by providing evidence about the similar patterns observed in both the eye and mouse movements.

Second, we proposed an investigation of the data obtained by analyzing two ecommerce websites with a user recording service, thus providing an alternative to eye tracking devices. This study suggested an alternative to the use of eye tracking devices with the condition of using them as a complement to other analyses. We have compared two ecommerce websites by analyzing the mouse movement, number of click for each major area of interest and the attention gained by each of the website's areas. These two website were: horses4homes.net and spanishhorsesuk.com. Both

websites are trading horses. Mouse movements can provide important data about the regions that the users considered before deciding where to click. Besides this, the mouse coordinates can show which elements captured attention and if the user found his answers to his problems and queries.

This paper has an important merit for the future studies when taking into consideration the eye tracking as a complementary element when understanding the consumer behavior. The results can be subsequently completed with other data obtained from different types of websites analyzers or further with an eye tracking device.

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