

Reliable-Viable

“Fractalization, as a cognitive and supportive model for the understanding and explaining of the Economics-Politics binomial, slowly begins to reveal both the mysterious confluence between being reliable and being viable (simultaneously and non-contradictory), as well as the influence of transforming the state of rationality by levels of substantiation, meaning one represented by the mechanism of wealth and another by the level of the organism of power.”

Today's crisis has revealed that for economic theory, apart from its fundamental inconsistencies, living side by side with political ideologies can only spell failure. Us, the ones from the European Orient, we are somewhat entitled to declare – based on our direct experience with ideology-creating contexts – that in the Economics-Politics functional relationship the winning games are as such because ... Society loses. Sure, the economy loses first, even in both of its guises: that as a theory (Economics) and that as an activity (the economy).

What really comes off as shocking is that the loss – of consistency (in the case of Economics) and of substance (in the case of the economy) – is unrelated to the quality of the dominant economic vision. Being rigorous, something such as this does not exist because, essentially, what we call dominant economic vision is proven to be the Economics-Politics mixture, in which the control function for the effects is held by Politics. Otherwise there is no alternate reason for the economy to be considered – in spite of fundamentalist perceptions – a product which does not sell but under the brand of Politics, coming to be exactly what we believe it should not be: Political Economics.

Translating the explanation of this knowledge in the field of significations of fractal theory, we could argue that the functional entity resulting from the confluence of the two instruments for the operationalization of the societal is composed out of one third Economics (with conceptual and actional content) and two thirds Politics. In the projected arrangement the homothetic relations are respected regardless of form and scale.

What is construed as a potential for bifurcation (towards either failure or win) in the mix area resides in the control of the segment (either linear, of perimeter or of volume) disputed at the confluence between the one third of Economics and the two thirds of Politics. Two situations can be observed here: on the one hand, the case of the prevalence of the propensity towards economic rationality, where the trend is for the moderation of a little over one half of the double measure of the Politics segment, thereby reducing the risk of crisis and launching into an upward trend; on the other hand, the case where the expectations of Politics weigh heavier, where rationality is often defied and the one third of the confluence belonging to Economics is being altered, even in its integrity.

The state of permanent tension, illustrated by the trends in the area of confluence, has explanations belonging to different perspectives, to which specific procedures of action are being attached. They indicate that the control of the mechanisms of wealth matter for Economics (at the value of a third of a viable entity) and the function for the control of power takes precedence for Politics (at the value of two thirds of the resulting societal entity). The reunion of the two functions is inconsistent, because the possibility of compromise is excluded, and the result can only be of either one nature or the other. In fractal language, Economics has the function of generating the rule for covering the territory of Society with the homothetic dimension specific to the state of rationality, while

Politics has the function of generating an internal structure of the Social according to the rule of fluctuating arrangements, with no internal homothecy in the Mandelbrotian sense. And for this reason the double target is proven to be a one-way highway to failure.

The mechanical solution to covering the Social is the very raw failure which we experience as generalized crisis, when Politics forcefully pushes it way towards achieving its goal. It achieves, though, this counter-performance by minimizing the reliable manifestation of the specific segment of Economics. The solution is to restart the dynamics in the Economics-Politics area of confluence. For this, the function of Economics is to enlarge the space of rationality over at least half of the fractal dimension with which Politics intersects the area of confluence. Which means that Economics has to functionalize its own segment and, at the same time, in order to achieve the viability of the confluence it has to control – based on socially-tested efficiency criteria – the most part of the dimension of Power.

The fine tuning between the two levels of action in the area of confluence (which, obviously, is also a noise interval) pertains to the awareness to the link between the physical entities and the biological entities (between artifacts and human nature in the field of Economics and between decisions and inter-subjectivity in the spectrum of Politics). But it also pertains to the fact that the mechanisms of wealth and power put together tend to eliminate the societal goals of both Economics and of Politics.

The most important issue for this explicative model inspired from the theory of fractals is that the area of confluence between Economics and Politics has to be characterized, at some point, by a mechanism for managing the tensional movements of influence. It's evident that something like this must exist when the final goal belongs to a different level in the configuration of reality, where the reliable sense transcends into viable, because we're talking about a complex, dynamic and open system, which is the human society. In such systems the fracturing (not as much methodological but operational) has catastrophic consequences. Fractalization as a support for understanding and explaining gradually reveals both the mysterious confluence between being reliable and being viable (simultaneously and non-contradictory), as well as the influences of transforming the state of rationality by levels of substantiation, meaning one represented by the mechanism of wealth and the other represented by the organism of power.

The fractalization of the Economics-Politics functional complex demands for it to be understood as a perimeter of the field of action, where the societal entity which contextualizes the tensional trends is permanently being configured, through interpolations and extrapolations (which in the end are nothing but consensual arrangements). This eminently rational perspective protects us from compromising the reliability of fundamental mechanisms and from altering the viability of the societal organism. Thus, the fractalization of the Economics-Politics post-Enlightenment super-territory distinguishes the demarcation line of the horizon of the understanding of the compromise between conflicting states in the dynamics of societal systems and, at the same time, points to the level in between whose limits the explanation is coherent and unavoidably consistent.

The Reliable-Viable transformational consequence of the tensional dynamic in the Economics-Politics area of fractal confluence is the sole natural resource which neutralizes the toxic effects of the crises which open-close the cycles of modernity.

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The de Larosière Report Regarding the new Structure of European System of Financial Supervision

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Abstract. *The aim of this study is to present the new architecture of the European financial supervision the necessity of which had been brought into sharp focus by its deficiencies in the current financial crisis. The study presents through the prism of the report edited by the de Larosière Group the main generating elements of the financial crisis, the deficiencies of the risk management, of corporate governance regulations, the lack in applying the regulation framework and in supervision regarding risk management.*

Keywords: micro- and macro-prudential supervision; European Systemic Risk Council; European System of Financial Supervision; financial crisis; stress test.

JEL Codes: E44, E52, E58, F33.

REL Codes: 8J, 11C.

1. Introduction

The current financial crisis has brought into sharp focus the weaknesses of the European System of Financial Supervision, showing the fragmented financial supervision in EU countries, in conditions in which the financial markets dynamically developed their cross-border activities at the same time with the integration of these markets.

The European reform of financial market supervision is based on the evolutions' concept, according to which the Lamfalussy structure of the supervision committees organized at level 3, realize a significant convergence in financial supervision at EU level. Some supervisory convergence was achieved, but this wasn't sufficiently adequate to treat the current financial crisis at global level and to minimize the efficiency of the macro-prudential supervision (Commission of the European Communities, 2009b).

There are many studies in the literature (Borio, 2005, Brunnermeier et al., 2009) which argument that the current financial crisis showed the need of capital allocations (beside the consolidate supervision of the individual institutions) to realize a macro-prudential approach, thus decreasing the systemic risk.

According to Tumpel-Gugerell (2009) the self-regulation is not sufficient for financial markets and institutions which have a systemic importance (they might influence the stability of the financial system).

The risks may affect the stability of the financial system, which derives from the high degree of market concentration, from interdependencies between the financial institutions and the components of the financial system (Trumpel-Gugerell, 2009), as it can be seen in the case of Lehman Brothers' default and the impact of this upon AIG and Bear Stearns.

At the same time, in the context of the current crisis it was proved that the big financial-banking groups were able to exceed its effects only with the support of the states, this effect correlated with the high impact of the crisis' effects on the other entities of the economy accentuating that maintaining the financial stability is in the public interest.

In these conditions the de Larosi re Group is mandated to analyze, to advice on and make recommendations to:

- the way the supervision of the European financial markets should be organized to ensure the prudential soundness of the financial institutions, the orderly functioning of markets and to protect the interest of depositors and investors,
- how to strengthen the control to achieve financial stability, to elaborate early warning mechanisms and risk management at European level,

- how European authorities should cooperate with other states to maintain the financial stability.

The de Larosière Group examined the allocation of tasks and responsibilities at national level of EU countries as well as European level, and on 25th February 2009 published the report “High-level group of financial supervision in the EU” (de Larosière et al., 2009), which in four chapters recommended 31 measures to create the new European Financial Supervisory Architecture.

2. The de Larosière Report

As consequence of the economic-financial crisis in 2007-2008 time period, in October 2008 the President of the European Commission, José Manuel Barroso, requested Jaques de Larosière (former governor of the Bank of France, former member of the Delors Commission, former director of the IMF) to set up the High-Level Group on Supervision formed by eight internationally recognized independent specialists (Leszek Balcerowicz, former finance minister of Poland, former president of the National Bank of Poland; Callum Mc Carthy, former chairman of the Financial Services Authority; Rainer Masera, Chief Executive Officer of the Group Sanpaolo IMI; Lars Nyberg, Deputy Governor of Sveriges Riksbank, member of Basel Committee on Banking Supervision; Otmar Issing, former member of the Executive Board of the European Central Bank; Onno Ruding, former Minister of Finance of The Netherlands, former Director of Citicorp; José Pérez Fernandez, former member of the Executive Commission of Bank of Spain) to make proposals and recommendations to European financial markets supervision and regulation.

The report, published in February 2009, has four chapters:

1. Causes of the financial crisis
2. Policy and regulatory repair
3. EU supervisory repair
4. Global repair (de Larosière et al., 2009).

The report presents between the main generating and actuating elements of the financial crisis the deficiencies of risk management, of corporate governance regulations, lack in applying the regulation framework and in supervision regarding risk management.

The first chapter, entitled “*Causes of the financial crisis*”, emphasizes the relation between the factors which led to financial crisis, from which many have complex character.

Table 1

Main factors leading to the current financial crisis

Macroeconomic factors	I.e., ample liquidity, low interest rates of the monetary policy, no tight monetary policy-particularly in the US, accumulation of huge global imbalances, mis-priced risks, significant fund transfers.
Risk management	The lack of transparency in important segments of financial markets – even within financial institutions – led to the build up of the "shadow" banking system and of the originate-to-distribute model of derivative and sophisticated products unknown for the destination public.
Credit Rating Agencies	Dramatically increased number of mispriced structured financial products, conflicts of interests.
Corporate governance	Bad quality of the firm's management and shareholders, inadequate remuneration and incentive schemes.
Regulation, supervision	Pro-cyclical approach, utilization of the mark-to-market valuation method, deficiency in the regulation of the derivative products, inadequate analysis of macro-prudential risks.
Weaknesses of the international financial institutions	IMF, FSF, G20 and inadequate management of these institutions.

Source: de Larosi re et al., 2009.

The macro-prudential supervision is not a new concept; according to Borio (2005, p. 10) is an old idea, the Bank of International Settlements in the seventies makes reference to the need of a systematic approach to supervision and regulation.

Eminent specialists (Borio, 2005, Borio, White, 2004, Crockett, 2000) presented the lack of the macro-prudential component in the regulatory and supervisory processes at European level.

The macro-prudential supervision represents an approach which provides the stability of the financial system, limiting the risks at system level, while the micro-prudential supervision limits the risks of individual institutions. The macro-prudential approach at financial system level starts from the precondition that the aggregate risk depends on the collective behavior of the financial system's institutions (Borio, 2003).

According to Crockett (2000), Borio (2003) and Chull (2006), the characteristics and differences between these approaches refers to the objective, the implementation method, the risk characteristics, the exposure to systemic risk, the instruments and the principal goal.

The *second chapter*, entitled "*Policy and regulatory repair*", emphasizes the importance of the macro-prudential supervision in the monitoring and evaluation of the potential distresses of the financial stability.

Table 2

Macro-prudential supervision	
Macroeconomic and macro-prudential analysis	Avoiding the too loose monetary policies, the necessity of the study of the creation of financial bubbles, initiating a strict monetary policy in condition of unsustainable increase of the capitals and loans.
The Basel II capital adequacy regulation reform	Increasing the level and strengthening the structure of the adequate capital, anti-cyclic approach, provisioning approach, limiting and measuring the liquidity risk, a more severe regulation of the off-balance sheet elements, the common definition of equity.
Credit Rating Agencies	The new structure at European level, "European Securities and Markets Authority", will supervise the activity of these agencies reconsidering their role in financial system, the reform of the securities valuation mode.
The accounting system	Affirmation of the coordination capacity of International Accounting Standard Board (IASB), the extension of the mark-to-market principle, the development of the securities evaluation methods.
Insurance	The implementation of Solvency II, the aggregate insurance at group level.
Supervisory and sanctioning powers	At European level there should be strengthened the effects of the effective sanctions.
The "parallel banking system"	Appropriate regulation must be extended, in a proportionate manner, to all firms or entities conducting financial activities which may have a systemic impact, it must be introduced the obligatory publication of the informational framework regarding hedge funds, private equity companies, over-the-counter markets and it must be regulated the behavior of the managers of these institutions.
Securitised products and derivatives markets	The simplification and standardization of the derivatives, the creation at European level of a central clearing house for over-the-counter credit-default swaps (CDS).
Investment funds	Must be consolidated the regulations in this field at European level, principally regarding the depositors.

Source: de Larosière et al., 2009.

The report takes attitude regarding the uniform regulation at European level and emphasize those fields where these desiderates didn't realize yet, namely in fields of corporate governance or of the remuneration system. The management of the financial crisis turned to be inefficient, therefore the report proposes the creation of a transparent and credible framework of the crisis by each EU country in a uniform way, taking into account the same instruments and procedures. The legal and juridical obstacles at country level must be eliminated and the depositors' protection procedures be standardized. In order to share the cross-border crisis effects, it must be elaborated a uniform regulatory and supervisory framework of the system.

The current crisis demonstrated that the sophisticated methods of banking risk management, promoted by the Basel II, proved their limits, especially those regarding the CRD IV (Capital Requirements Directive), while the measures refers to:

1. The leverage ratio – ensure the measurement and the limitation of the unsustainable increase of the balance sheet of credit institutions,
2. Dynamic provisioning – which rise during expansions and allow them under certain circumstances to be drawn down in recessions,
3. Liquidity coverage ratio – records the measure in which very liquid assets of a credit institution cover the cash outflows in stress conditions during a month,
4. Net stable funding ratio – shows the situation in which the balance sheet increasing is realized in a disproportional way according to some insufficiently stable liabilities.

The *third chapter*, entitled “*EU supervisory repair*”, presents the new framework architecture for supervision, as follows:

Table 3

The new framework architecture for supervision

The creation of the European Systemic Risk Council (ESRC) in order to organize the macro-prudential supervision	Set up under the auspices and with the logistical support of the ECB and the European Commission, its task will be to form judgements and make recommendations on macro-prudential policy, issue risk warnings, compare observations on macroeconomic and prudential developments and give direction on these issues. The responsibility for realizing the macro-prudential supervision is allocated to the central banks from the EU countries, which have, in present too, the main responsibilities regarding the financial and monetary stability, including the Governors of the 27 central banks, the President of the ECB and the vice-president of the ECB in the administration of the ESRC, besides the national authorities which are responsible for micro-prudential supervision. The set up of ESRC will resolve one of the fundamental problems emphasized by the crisis, namely the vulnerability of the financial system to systemic risk. At international level, ESRC will collaborate with IMF, FSF and BIS.
Establishment of a new <i>European System of Financial Supervision</i> (ESFS), which transforms the level 3 committees in European Authorities	At EU level the macro-prudential supervision will be accomplished by the three European Supervisory Authorities (<i>European Banking Authority-EBA</i> -, <i>European Insurance and Occupational Pensions Authority-EIOPA</i> -, <i>European Securities Authority-ESA</i>), which will be transformed in juridical person with enlarged competences in addition to those existing at level 3. They will contribute to the development of a unique set of harmonized rules, to ameliorate the supervision of the cross-border institutions elaborating some common requirements and approaches in field of supervision and will contribute to resolve litigation between national supervisory authorities.

	<p>The main responsibilities of ESFS are:</p> <ul style="list-style-type: none"> -to ensure a common set of core harmonized rules based on some criteria which will be announced in the community legislation, -to ensure a consistent application of EU rules, -to determine how to ensure a common supervisory culture, including ensuring colleges of supervisors develop successfully and consistently, -to determine how to grant full supervisory powers for certain institutions with pan-European activities, with investigation responsibilities, on-site inspections and decisions regarding supervision, -to ensure a coordinate reaction in crisis situation through the facilitation of the collaboration and the information change between the competent authorities, verifying the reliability of the information, which helps to define and implement the adequate decisions, -to license and to supervise the credit rating agencies and the post-trading infrastructures, -to collect macro-prudential information through the aggregation of pertinent micro-prudential information in order to create an European centralized database which will be administrated by the European supervisory authorities, -to assume an international role making technical agreements with international organizations and with the administration of the third countries from the same level, as well as through the European Commission assistance in taking equivalent decisions regarding the supervisory regimes of the third countries, -safeguarded measures through creating an exercised framework of the exhaustively and in detail presented components in the applicable sectorial legislation, conform to the Treaty of Lisbon.
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Source: de Larosière et al., 2009.

ESFS will run in two stages:

1. Stage 1 (2009-2010): preparing for a European System of Financial Supervision
2. Stage 2 (2011-2012): establishing the European System of Financial Supervision.

The functioning of the ESFS should be reviewed no later than three years after its entry into force regarding the evaluation of the efficiency and the efficacy of the activities, and if it is the case making proposals by merging the banking supervisory authority with insurance supervisory authority, forming a new Financial Stability Authority, while the Supervisory Authority of Securities to have competencies in the field of markets and business activities on every three segment of the financial market.

The Executive Committee proposed by the Report is formed by the advocacy of the three European supervisory authorities and of the European

Commission, whereas the Supervisory Council of each European supervisory authority is formed by the representants of the European supervisory authorities, of the national supervisory authorities, observers of European Committee and ESRC, and a representant of the national supervisory authority.

The last chapter of the Report, “*Global Repair*”, emphasizes the reformulation of the responsibilities regarding the rule harmonization at global level, proposing as responsible authority the Financial Stability Forum (FSF) to prevent the future major crisis. FSF should collaborate with IMF in order to strengthen the capacity to finance the current account deficit and providing additional funds to IMF. It is also presented the importance of a coherent organization of EU representativeness in the new financial architecture of the global economy (FSB, 2009).

In frame of macro-prudential supervision and control, IMF has the responsibility to elaborate an early warning system of the financial stability at global level as well as to elaborate and present the international risk map and the credit registry evidence.

All of the IMF member countries have to attend the FSAP stress test programme, this activity has to be coordinated by the Committee of European Banking Supervisors (CEBS) at European level.

3. The role of the European Committee and the reform of the financial supervision based the recommendations of the de Larosi re Report

Based on the recommendations of the de Larosi re Report, the European Committee in fall of the year 2009 adopted a set of rules, being actively involved in rebuilding the confidence in financial institutions.

There were made actions to improve efficient crisis management at European scale, a priority and a consequence of the current economic conditions, of the growing complexity of the financial products and of the integration level of the common market. The European authorities’ reform actions can be divided in prudential rules and in supervisory system architecture change initiatives.

Based on this Report, the Commission of the European Communities (2009b) proposed the reform of the European financial supervisory framework, which will have two pillars.

Pillar I - European Systemic Risk Council (ESRC) responsible for monitoring and the evaluation of the potential risks of the financial stability which results from macroeconomic evolutions and from the financial system as whole (macro-prudential supervision). The macro-prudential reform has the aim to increase the integration of financial markets through the implication of

central banks of the EU countries and it has a double role: on one hand, to analyse the significant informations regarding the macroeconomy and to analyse the macro-prudential evolutions of the national financial systems' components, and, on the other hand, to issue macro-prudential risk warnings and to send these to the corresponding authorities.

The set up of ESRC emphasizes the fact that the current supervisory framework doesn't accentuate enough the macro-prudential analysis, being fragmented and being effectuated by different authorities at different levels, and the fact that don't exist mechanisms which could guarantee that the warnings and the recommendations regarding the macro-prudential risks are transposed in certain actions.

According to the recommendations made by Report, this organism is formed by the president and vice-president of ECB, by the presidents of the national central banks and by the presidents of the three European supervisory authorities.

Smaghi (2009) considers that the macro-prudential approach should have two main tasks: on one hand, to monitor and analyse the systemic risk, and, on the other hand, to limit the identified risks, which need specific instruments. In the systemic risk monitoring and analyzing, it has to be taken into account that the analysis has to comprehend all the components of the financial system, such as markets, institutions, infrastructures, as well as their interactions between the financial system and the economy as whole, and, not the last, the continuous evolution of the markets and the innovation in the financial system.

The identified risk limitation raises the aggregate risk limitation problem and the problem of the negative externalities, the specific set of measures done by the competent authorities in order to avoid the cyclicity and to limit the contagion in case of some disfunctionality appearance at institution's level or at a certain financial market component's level.

Pillar II – the European System of Financial Supervisors (ESFS) is formed by the national financial supervisory authorities, which will work in partnership with the new European supervisory authorities (European Banking Authority – EBA, European Insurance and Occupational Pensions Authority – EIOPA, European Securities Authority – ESA) to ensure the financial stability at the level of the individual financial companies and to protect the customers of the financial services.

The new network is set up on common responsibilities with reciprocal consolidation, combining the financial institutions' supervision at national level with centralization of certain attributes at European level.

The implementation of both pillars of the new supervisory system is essential for some important synergies, for reciprocal consolidation with impact

on the financial stability and to ensure an integrated micro- and macro-prudential supervisory framework.

In field of the macro-prudential supervision, the European Committee sets up the European Systemic Risk Council (ESRC) as a new independent group responsible for the financial stability ensurement through the European level macro-prudential supervision, as it was proposed in the third chapter of the de Larosi re Report. The European Committee adopted 2006/48/EC and 2006/49/EC directive change proposals, as it follows (Commission of the European Communities, 2009a):

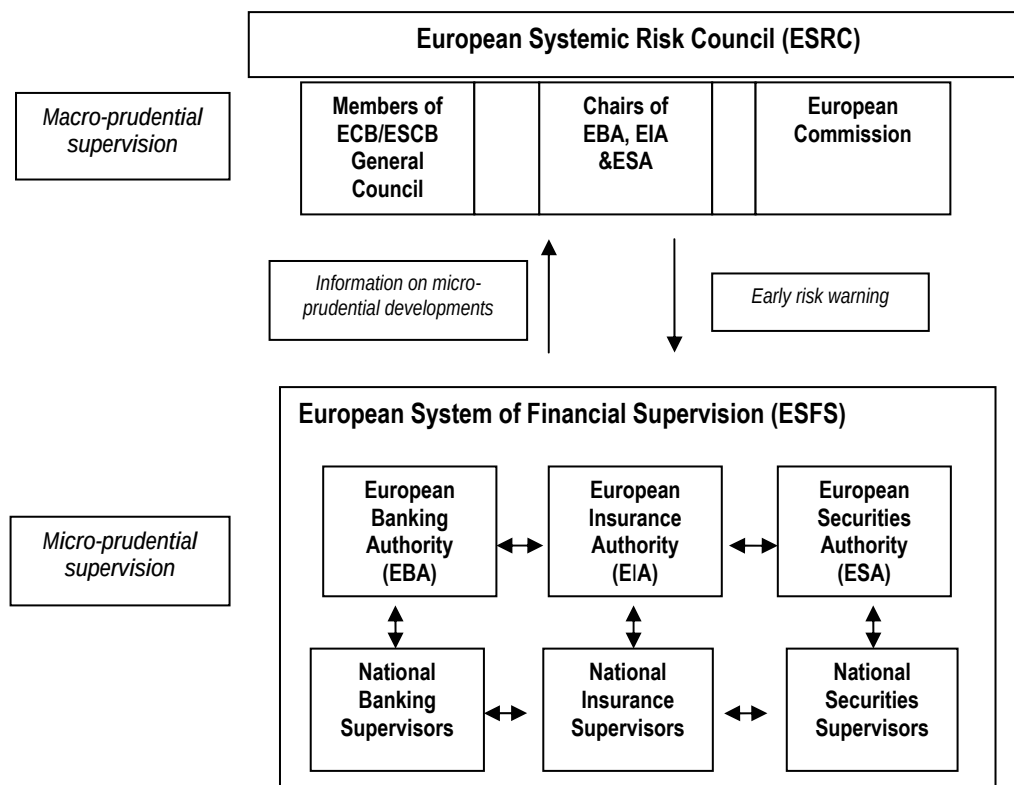
1. additional capital requirements for resecuritization operations, which represent sophisticated financial instruments which expose the financial institutions to significant and some times hardly evaluable risks,
2. additional capital requirements for the trading portfolio, change aiming the associated risks evaluation methods, in order to reflect the potential risks resulted from the market evolutions,
3. supervisory disclosure regarding the securitized exposures, in order to increase the transparency and to understand the risk profile of the financial institutions,
4. the remuneration policies and practices of the financial institutions, with the possibility to sanction those which encourage or reward the excessive risk assumption.

Nowadays, at EU level it was discussed the possibility to modify the additional capital requirements for foreign currency denominated residential credits, which should be applied to those credits for which the report between the value of the credits and the value of the collateral exceeds a certain level, which indicate irresponsible credit practices, elimination of national options, in order to avoid the differences in European regulations at member state level, as well as the dynamic provisioning of the expected losses, based on all these, the financial institutions should create provisons for expected credit losses in favourable, economic growth periods, and in unfavourable periods these provisions should be used to cover the reported losses. The dynamic provisioning should be applied to balance sheet elements, as well as to off-balance sheet elements, to be applied at individual and aggregate level based on a common methodology.

Accordingly, the Basel II Capital Accord needs a fundamental review, which should offer the possibility of increasing gradually the minimum capital requirements, of strengthening the rules for risk management, of tightening norms on liquidity management and the elimination(to reduce the) of the pro-cyclical effect.

The implementation of the pillar 2 supposes the development of some methods for an adequate capital level evaluation for other risks than those regulated in pillar 1.

The supervisory activity in the framework of pillar 2 implies a tight collaboration with the supervised structures, which supposes from the credit rating agencies the implementation/establishment of the Internal Capital Adequacy Assessment Process (ICAAP), as a part of the management, of the strategy planification, of the performance monitoring processes, while from the authorities implies the evaluation of the ICAAP and of the requirements from pillar 1. The main objective is the protection of the European financial institutions from similar situations to fall 2008, this project was delivered to ECOFIN and finally liabled to approbation of the European Parliament.



Source: de Larosière, 2009, p. 57.

Figure 1. The framework of the European institutional structure

4. Stress test exercise of the European banking system

CEBS in cooperation with the ECB and the European Commission had created two stress scenarios (benchmark and adverse) concentrating on the credit risk and on the market risk, while the results were evaluated within the prism of the Tier 1 capital ratio indicator (CEBS, 2010).

The exercise has been carried out on the basis of the consolidated year-end 2009 data, the scenarios have been applied over a period of two years, 2010 and 2011. This exercise was adumbrated starting from the European Commission forecasts and it makes adjustments for the last macroeconomic evolutions.

The macroeconomic scenarios were aggregated by each supervisory authority of the participant countries, and for each scenario CEBS and ECB gave the economic specific parameters as well as a set of risk parameters.

The representativity of the sample was ensured by 91 included banks from 20 EU countries. The 91 banks represent 65% of the total assets of the EU banking sector as a whole. The sample has been built by including banks, in descending order of size, so as to cover at least 50% of the respective national banking sector, as expressed in terms of total assets.

The benchmark macroeconomic scenario assumes a mild recovery from the severe downturn of 2008-2009 (for the EU-27 the scenario assumes a +1.0% growth of GDP in 2010 and +1.7% in 2011). At the same time, the unemployment rate remains high for some countries, owing to the lagged effects of the past activity slowdown. The inflation rate is assumed to be contained and stable overall. There are however a number of countries where inflation declines or increases significantly, reflecting their cyclical positions or fiscal policy measures.

In addition to a global confidence shock, that affects demand worldwide, the adverse scenario envisages an EU-specific shock to the yield-curve, originating from a postulated aggravation of the sovereign debt crisis. The impact is differentiated across countries, taking into account their characteristics.

The adverse scenario assumes that the GDP would remain at the same level in 2010 and would decline by -0.4% in 2011 in EU-27. The unemployment rate is much higher than in 2009, while the inflation rate is significantly lower in 2011.

For the purposes of the market risk evaluation, a set of stressed market parameters was applied to the trading book positions. The parameters developed for the market risk stress test are in-line with the macro-economic scenarios, and therefore could be considered as directional, meaning that depending upon

the size and direction of their exposures, banks were able to make gains on certain portfolios, thereby reducing the overall amount of stress coming from the market parameters. The value of the haircuts for valuation losses in the trading book and of reference probabilities of default (PDs) and loss given defaults (LGDs) change both on account of the changes in the macro-economic scenario and of the introduction of the sovereign shock.

The main characteristics of the sovereign shock modeling consist of the applying of some adjustments upon the trading portfolio value and of excluding, hypothetically, the possibility of government default.

The macroeconomic scenario and the sovereign shock induce a change in PDs and LGDs for the household and corporate sector, given that higher long-term government bond yields also imply higher borrowing costs for the private sector, which in turn imply higher PDs and LGDs for the non-sovereign exposures.

The government support measures introduced in the course of the financial crisis to support banks in difficulties as well as to maintain funding to the real economy can be classified into four broad categories:

1. capital increases, through equity shares or hybrid instruments provided by governments,
2. guarantees of banks' assets provided by governments,
3. guarantees of liabilities or funding guarantees as well as liquidity provided by governments,
4. liquidity support measures introduced by central banks.

The exercise takes into consideration only the capital support measures and asset guarantees received by the institutions in the sample by 1 July 2010. In this period 34 banks in the sample benefited from capital increases with a total injected capital amounting to 169.6 bn €, and 20 banks in the sample benefited from asset guarantees. The analysis suggests that the overwhelming majority of the government support measures agreed between banks and governments have a useful life extending beyond the horizon of the exercise and an eventually cancellation of these will be made only in the conditions in which the capital subscribed will be replaced by capital influx from private investors.

The aggregate results of the stress test suggest a rather strong resilience for the EU banking system as a whole and may appear reassuring for the banks in the exercise, being positively influenced by the partaken government support by some participant banks.

Looking at the banks failing to meet the exercise threshold of 6% Tier 1 capital adequacy as a results of the macro-economic and sovereign shock, seven banks have an overall shortfall of 3.4 bn €, compared to the 388.46 bn € of

surplus capital (above the 6% threshold) for the entire sample of 91 banks. Those banks which didn't reach this level were requested to propose a plan which will be implemented together with the supervisory authorities.

In the banchmark scenario, the Tier 1 capital ratio increase in the considered two year time period, since the profit capitalization before the shock, whereas the government support is approximately 1.2 percentage point of the aggregate Tier 1 capital ratio.

The effects of the macroeconomic shocks are influencing the numerator of the Tier 1 capital ratio through the profit changes as well as the denominator through the changes of the risk-weighted assets.

According to CEBS, the aggregate stability of net interest income and net fees and commissions lead to somewhat positive outlook regarding the evolution of pre-impairment income. This could be explained by the fact that the macro scenarios assumed differentiated shocks across countries; therefore the P&L is diversely impacted. The fact that the assumption of an increase and a flattening of the yield curve may have immediate positive effects on earnings, especially for institutions operating in a variable rate environment for their retail business, which allows passing on to customers most of the increases in interest rates.

Taking into account the specific circumstances from the financial markets, CEBS sustains the transparency of this exercise, publishing the aggregated results and views this stress test exercise as a positive development and as a step forward in the convergence of the stress test practice.

The stress test exercise of the Romanian banking system conducted by NBR was harmonized with the European exercise, taking into account the specific elements of the Romanian banking system, according to the current macroeconomic framework, there were considered two macroeconomic scenarios on a two year time horizon, 2010 and 2011 (NBR, 2010).

The results of this test indicate an increased resistance of the Romanian banking sector, whereas the level of the Tier 1 capital ratio is situated over the average of the group from which the credit institution takes part, which demonstrates again the rosbustness of the banking sector.

5. Conclusions

The current financial crisis emphasize the weaknesses of the regulatory and supervisory framework which conducts to a reform process at the level of European authorities, as well as at the national level, reconsidering the capital requirements for banks, with a view to diminishing pro-cyclical effects (capital buffer), reducing the liquidity risk by imposing quantitative restrictions on

banks' liquid assets and financing sources, in order to foster financial institutions' anti-cyclical behaviour (LCR – the liquidity coverage ratio and NSFR – the net stable funding ratio), harmonising the regulations on financial reporting (IFRS), applicating a special treatment to systemically important financial institutions, legislative harmonization on supervision, by ensuring a similar implementation manner across each member state and regulating and supervising the rating agencies.

In order to have in place an efficient legislative framework for managing crisis with national and/or cross-border character, it is necessary to proceed to the reformation of early intervention measures, of bank resolution measures, as well as of the insolvency proceedings of financial institutions.

The set up of the new European supervision architecture, based on two pillars, ensure a progressional process for rendering the European supervision system more efficient, integrated and sustainable.

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Public Integrity, Economic Freedom and Governance Performance. A Comparative Study for the EU Member States and Acceding Countries

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Abstract. *The studies concerning the impact of corruption on the effectiveness of governance are numerous, valorising profound approaches, based on criteria and standards related to good governance, organizational behaviour. The concepts and mechanisms specific for econometrics and statistics provide the quantitative support for qualitative analyses, substantiating public policies, in view to assure effectiveness in performance measurement. For EU Member States and acceding countries, the level of development and social organization determines specific ethical behaviours. In this context, the current paper aims a comparative economic and social evaluation of the correlations between corruption, performance and economic freedom in the states mentioned, following the various significant stages of the EU enlargement. The working hypotheses turn into consideration the following issues:*

- *Corruption holds national specific character and the statistic, econometric or sociologic analyses reveal that it is stable during time.*
- *The climate of economic freedom and the intensity of corruption influence powerfully the economic performance.*
- *The EU membership, "seniority" in EU, regional context determine different attitudes and perceptions on the corruption phenomena.*

- *For the newer EU states or the acceding countries, the strategies of integrity have mimetic character and the National Integrity Systems have structured powerful connections aimed at determining an action focused on public integrity.*

In the analyses achieved, the EU is approached globally, at least from statistic point of view, and the conclusions aim situations specific to the groups of states that have been or will be the beneficiaries of the EU enlargement. The quantitative analyses use both own results of the researches carried out by the authors and public results of World Bank or Heritage Foundation, as well as results of authorities responsible for national statistics. The paper uses the theoretical framework described by authors in other papers with similar topic. For the current paper, the distinction consists in the correlation of the analyses with the stages of the EU enlargement.

Keywords: public integrity; corruption; governance performance; economic freedom.

JEL Code: H11.

REL Code: 13C, 13K.

I. The governance performance

I.1. A systemic framework

The issue of governance performance is more and more present in the field literature. Regarded as a finality of a complex public management process, the governance performance, we refer either to the central, or to the local government, acquires systemic characteristics and, according to their level, the governors establish the feedback that is carried out through new public decisions meant to lead towards a performance improvement.

The concerns for a systemic modelling of the public management can be met both when the issue of the public administration comes out (Pierre, 1995) and, lately, the public management reform (Pollitt, Bouckaert, 2000, p. 39). A brief presentation of some systemic models used in the public management of the local development is also made by Matei (2008). Referring to the performance oriented managerial reforms, Pollitt (1995, 1998, p. 154) shows that, for the public sector “the organisations must redirect in order to focus more on results. These have to take into account the costs, to measure the outputs, to assess the effects and to use all this information in a systemic process of feedback and continuous improvement”.

The most relevant and recent point of view respecting the systemic approach of the public sector performance is presented by Bouckaert and Halligan (2008, pp. 11-34). Following a logical sequence of building a complex systemic model of the public sector performance, the mentioned authors described micro, meso and macro models, integrated or individual, that can deliver the proper framework for understanding and study thoroughly the specified concept. The result of this measure is a complex system, with mixed architecture that includes more cycles of intermediary feedback and that integrates “four positions on managing performance: Performance Administration, Management of Performance, Performance Management and Performance Governance” (Bouckaert, Halligan, 2008, p. 82) In this context, the governance performance can be seen as a subsystem of the public sector performance or, more, of the managerial performance. The specific of the governance performance is also that of being a result of the interaction between public economic systems and that of the public management. Thus, the fundamental concepts as the public intervention, public decision, optimisation, and so on, become adjacent and determinant for the level of the governance performance.

I.2. Present approaches

Bouckaert and Halligan (2008) make an international comparison related to “managing performance”. The statistical ratios and/or connections between management and performance, in the context of the public sector, become determinant both for the understanding of the processes of performance management, and for the governance performance.

The general approach framework of this issue is delivered by the New Public Management (Hood, 1995) or by “reinventing government” (Osborne, Gaebler, 1992).

A broad and generic definition of performance-based public management is taking/allocating responsibility for the performance of the system and being accountable for its results.

Hannagan (2008), referring to the performance management in an organisation, states that “the term *performance management* means different practices to different managers but usually includes the following elements:

- The organisation has shared objectives, or a mission statement or corporate objectives, which it communicates to its employees;
- Individual performance management targets are set related to the organisational objectives;
- A regular, formal review is carried out to monitor progress toward the objectives;
- The review process is used to identify training needs, career development and possible rewards;
- The effectiveness of the whole process is evaluated against the overall performance of the organisation”. (Hannagan, 2008, p. 294)

Important and constant concerns this time with regard to the performance of the public sector can be also found in the UN Public Administration Programme⁽¹⁾, which in the 2005 and 2008 reports presents both the public sector performance (WPSR, 2005), and the issue of the public governance (WPSR, 2008). Thus, WPSR (2005) focuses upon the way in which the human potential will be transformed in order to improve the performance of the public sector. The general context in which the stated issue is approached is characterised, on one hand, by the complexity of the policy making processes and of the public strategies and, on the other hand, by the deterioration of the human resources capacities of accomplishing these functions. The aspects set forth render difficult, for many states, the application of the national objectives and strategies for increasing the governance performance through poverty and corruption reduction, promoting the sustainable human development as it is underlined in the Millennium Development Goals (MDGs).⁽²⁾

WPRS (2008) emphasizes the role of the civic engagement in the public governance process. By presenting several case studies, it is being emphasised, in a real manner, the role of the different practices in consolidating the governance capacity through transparency and responsibility. In this context, the relations between the power and the civil society organisations are tackled, as well as the necessity of adopting methodologies and strategies proper for each state's condition for a successful civic engagement in the public governance.

The mentioned technical support is also offered by the analysis made by Willmore (2005).

The World Bank has achieved comprehensive theoretical and experimental studies in the last decades. In view of our study, the papers of Kaufman, Kraay and Zoido-Lobaton (2009), as well as the previous ones approaching the so called "governance matters" are relevant. The above papers comprise "six new aggregate measures capturing various dimensions of governance that provide new evidence of a strong causal relationship from better governance to better development outcomes".

The six indicators correspond to six basic governance concepts: voice and accountability, political instability and violence, government effectiveness, regulatory burden, rule of law and graft.

1.3. An empirical support of analysis for governance performance in the EU

The current study cannot aim an exhaustive approach of governance performance in the EU. Our vision and approach are restrictive and use GDP per capita as single indicator.

27 EU Member States as well as four acceding states (Croatia, Turkey, Macedonia and Iceland) represent the target group that will be discussed.

Annex 1 presents GDP per capita during 1999–2009.

The evolution of the EU enlargement had different effects concerning GDP per capita at EU level.

Two major conclusions may be extracted from the data presented. Firstly, for all states, especially those that accessed since 2004, GDP per capita has been in a visible growth, the moment of accession to the EU representing a "jump", fact that also influenced the economic results.

On the other hand, in statistic view, the level of GDP per capita at EU level has decreased however related to the one recorded by EU-15.

Table 1 presents the GDP theoretical levels in three hypostases of the EU – EU-15, EU-25, EU-27 – and in the fourth hypostasis, taking also into consideration the possible enlargement EU-31.

Table 1

**GDP per capita in various hypostases of the EU enlargement
(GDP per capita in US dollars, current market prices)**

Year	EU-15	EU-25	EU-27	EU-31
1999	23561.04	21573.86	20651.15	19980.11
2000	25182.18	23026.31	22021.95	20249.90
2001	26432.02	24186.94	23143.83	21154.85
2002	27357.70	25077.84	23999.20	21903.67
2003	27886.45	25617.36	24529.98	22379.20
2004	29078.42	26774.81	25655.64	23516.24
2005	30258.85	27899.54	26724.20	24597.28
2006	31839.61	29405.52	28174.45	26005.50
2007	33463.06	30975.34	29697.74	27420.04
2008	34001.78	31625.75	30324.57	28036.06
2009	33871.86	31592.45	30259.90	27666.11

Analysing the correlations and influences of the groups of representative states in the four hypostases presented (Annex 2), one may remark that in spite of the decrease of GDP per capita, the correlations are powerfully comprised between 0.886 (between EU25_15_GDP and EU31_27_GDP) and 1. Therefore, the trend of economic growth is similar for the states analysed.

I.4. The integrity, as a governance principle in the public sector

Along with the UN concerns there are also the ones of the World Bank, dedicating numerous studies both to the researches regarding the Governance Indices and the Public Sector Governance. The concern of the present paper is situated at the meeting point of the two mentioned topics. Worth to be mentioned, from the point of view of the World Bank, there are the governance principles in the public sector, which are referring to:

- Responsibility – according to which the public authority is responsible for the decisions and promotes mechanisms that ensure the application of public management high standards;
- Transparency/openness – that expresses the public authority capacity regarding the roles and responsibilities assumed, as well as the decision-making procedures and the power exercise;
- Integrity – with reference to the public and personal, impartial, ethical action, and in the interest of the public authority;
- Stewardship – imposing the use of each opportunity for developing the public assets;
- Efficiency – ensuring the best use of resources in order to accomplish the organisation's objectives;
- Leadership – applied through a commitment for good governance.⁽³⁾

All these principles lead to a public governance approach that would allow obtaining some superior results, in terms of efficiency and with a high performance.⁽⁴⁾

In the view presented in the above papers, the public sector governance includes: "...the set of responsibilities and practices, policies and procedures, exercised by an agency's executive, to provide strategic direction, to ensure that the objectives are achieved, to manage risks and use resources responsibly and with accountability".⁽⁵⁾ We used this approach of the concept of public sector governance giving the practical approach manner and turning account of the possible connections with the second part of the paper referring to integrity and economic freedom. The State Services Authority (SSA) from Australia addresses the issue in the same manner, accentuating the public integrity among the main pillars of integrity, assuming the "promotion of high integrity and conduct standards in the public sector".⁽⁶⁾ Similar stands took the Association of Chartered Certified Accountants (ACCA), emphasising the fact that "the governance can also cover the behaviour standards, the organisational structures and the processes".⁽⁷⁾

At the same time, OECD states that "good, effective public governance helps to strengthen democracy and human rights, promote economic prosperity and social cohesion, reduce poverty, enhance environmental protection and the sustainable use of natural resources, and deepen confidence in government and public administration".⁽⁸⁾ The real issue of public integrity was developed by OECD, in 2009, at a global forum organised with regard to "building integrity in government".⁽⁹⁾

II. The corruption, integrity and economic freedoms

As it was also shown in the 1st chapter of the present paper, there are several indices of the governance performance. We will keep in mind as indices, as Prohnițchi (2003) does too, the Gross Domestic Product (GDP) percapita, as well as the economic freedom (IEF). The mentioned author reaffirms the conclusions of the World Bank or Transparency International, according to which "the poorer the country and the more reduced is the economic freedom, the more corrupt is its bureaucratic and political system". The present study perspective determines us to take into account many organisations' analysis based on the conclusion that the "concern about the negative social and economic impact of corruption has grown rapidly in both emerging and advanced democracies" (Akai et al., 2005).

The conclusion is also supported by the World Bank which identifies the concept “as the single greatest obstacle to economic and social development. It undermines development by distorting the rule of law and weakening the institutional foundation on which economic growth depends”⁽¹⁰⁾. A similar position is that of the International Monetary Fund, which states that “many of the causes of corruption are economic in nature, and so are its consequences – poor governance clearly is detrimental to economic activity and welfare”.⁽¹¹⁾

The development of theoretical and empirical studies has not always focused on connection between corruption and economic performance.

Worth mentioning here are the comments made by Rose-Ackerman (2005, p. 3) with regard to the conclusions expressed by different specialists and analysts of the corruption issue.

Mauro (1995, 1998) demonstrates that the high corruption levels are associated with low investment levels as part of GDP.

The corruption indices are extremely isolated from the bureaucratic efficiency, as for example the level of bureaucracy and judicious quality. As a consequence, Mauro was incapable of measuring the marginal effect of each of these measures. By putting together the separated indices in a measure of bureaucratic efficiency (on a scale from one to ten): “if Bangladesh, with a score of 4.7, would have improved the integrity and the bureaucratic efficiency at Uruguay’s level, 6.8, its investment rate would increase with approximately five percentage points and the annual growth rate of GDP would increase with almost half of a percentage point” (Mauro, 1998). Also, Mauro proves that the extremely corrupted countries tend to under-invest in human capital, spending less on education. Mauro argues that this fact happens because the education delivers less work opportunities for corruption than other types of capital-intensive public expenditures.

Ades and Di Tella (1997) state that an aggressive industrial policy could be motivated, on a certain extent, by the corrupt gains made available by that policy. In such cases, the positive direct effect of the policy could be underlined by its role in the increase of corruption, thus discouraging the investments. Their empirical results demonstrate that, in presence of corruption, the positive influence of the industrial policy is reduced to a half.

Also, for public integrity we end up choosing the corruption perception index (TI) computed by Transparency International in the last decade, for the South-Eastern Europe states⁽¹²⁾, as well as the KKM index (control of corruption) computed by the World Bank, for the same sample and period, as aggregated and individual governance index. The two used indices express, in different ways, the perception upon the way in which the public power exercise

has an impact upon the private sector profit, including both the narrow and the wide corruption form, as well as “capturing” the states by the elites and the personal interests.

II.1. Corruption and governance

One of the fundamental papers presenting the indissoluble link between the corruption and the governance is that of Rose-Ackerman (2005, pp. 89-111) that eloquently proves how the high level of corruption limits the investment and the economic growth and leads to the government’s inefficiency.

For the developing countries, as well as for those being in transition from socialism, the risk is higher. The mentioned author identifies the corruption phenomenon as a complex one of economic, cultural and political nature⁽¹³⁾.

Also, a series of classical papers must be mentioned, having as object the identification of causes and mechanisms of corruption transmission inside an economic and social system, from which we mention: Krueger (1974), Rose-Ackerman (1975), Mauro (1995), Tanzi (1998), etc. In the field literature four categories of factors are identified, which directly influence the corruption in a system: historical factors, social and cultural factors and economic factors. In the political and juridical factors category we include the quality of the political system, the features of the juridical system (Leite, Weidmann, 1999), especially the legislation and the institutions specialised in the fight against corruption, the quality of the democratic system, the features of the electoral system in a country, the features of the administrative system, the degree of administrative decentralisation in a country etc. A series of studies, i.e. La Porta (1999) and Treisman (2000), accentuate the influence of the traditions and historical factors upon the level of corruption in a country and the features of the mechanisms of its development and transmission. The social and cultural factors have a special role in accentuating the corruption features in a country (La Porta, 1999, Treisman, 2000, Alesina, 2003). Equally, the religious factor plays an important part in spreading the corruption on a social system level. The economic factors, as well as the openness level of the economy (Dreher, 2003, Treisman, 2000, Wei, 2001), the size of the public sector (Tanzi, 1998, Treisman, 2000), the salaries’ level in the public sector (van Rijckeghem, Weber, 1997) etc. directly influence the corruption level in a country.

Another important aspect when studying corruption is choosing the most appropriate econometric models for estimating its effects upon some sectors of activities. From the most important research directions that target the estimation of corruption’s effects upon the economic and social environment, we mention:

- (i) Measuring the corruption effect upon the economic growth (Mauro, 1995, Abed, Davoodi, 2000, Krueger, 1974);
- (ii) The corruption's effects upon the development of some sectors of national economies (Tanzi, 1998, Wei, 2001);
- (iii) The effects of the decentralisation process upon the level and the mechanisms of corruption transmission in a system (Shah, 2006) etc.;
- (iv) The consequences of corruption upon the financing systems of some activity sectors, like the military one, Gupta (2001), the salaries in the public sectors (van Rijckeghem, Weber, 1997).

For the states in South-Eastern Europe, with special reference to Romania, we remark the papers of Andrei, Matei and Rosca (2009), as well as Andrei, Matei, Stancu and Andrei (2009), approaching the effects of corruption in the public administration systems, education or health, formulating econometric models for evaluating performance in the public sector.

II.2. Public integrity systems

The first chapter of the paper approached the relation between integrity and performance of governance. The National Integrity System (NIS) represents an important instrument for promoting public integrity.⁽¹⁴⁾

In Transparency International (TI) conception, the National Integrity Systems (NIS) comprise “key institutions, laws and practices (the “pillars”) that contribute to integrity, transparency and accountability in a society.”⁽¹⁵⁾

The perspectives of the analysis and modelling the corruption phenomena, aimed by our paper, are supported by the country studies that provide both an overview on NIS, the indicators for measuring the subsequent progresses from those countries, as well as a basis of comparisons among states.

The above mentioned country study asserts: “when it functions correctly, NIS fights against corruption as part of a broader fight against the abuse of power, breaking the law and fraud under all its forms”.

II.2.1. Stages in developing the National Integrity System in Romania

1990–1998

- The period coincides with the first half of the transition period;
- The main exponents of the national public integrity were the Parliament and Government, that did not elaborate a public policy to promote the public integrity;
- The Judiciary had no capacity to adjust the deficiencies of the other two powers in the state;

- The social perception on the public pillars reveals a high degree of corruption, just in the interior of most of the public integrity pillars;
- The civil society was not concerned with corruption, focusing on ensuring the basic requirements of democracy, rule of law and respect for human rights;
- The international institutions were concerned about the economic and democratic reforms.

1999–2004

- The second stage coincides with the beginning of the negotiations of accession into the European Union;
- The international agencies have expressed their interest towards the Romanian public integrity system (programmes were initiated and political pressures were exerted for reforms);
- The main pillars of integrity – the Executive and Legislative – have realised the seriousness of the national corruption level;
- In 2001, the Government elaborated a National Anticorruption Strategy and the National Anticorruption Prosecutor's Office was set up;
- Other NIS pillars were strengthened, such as Ombudsman or Court of Audit;
- The progresses have determined Romania to become NATO member and to close the negotiations for accession into the European Union;
- The other pillars: Parliament, justice, police have not recorded progresses;
- The civil society was focused on the fight against corruption, adding on the public agenda law drafts, essential for public integrity;
- The public policies designed to ensure the cooperation between pillars were inconsistent, proving a low capacity of implementation and reduced political will.

2005–2007

- The third period coincides with signing the Treaty of Romania Accession into the European Union;
- The main political criteria were fulfilled;
- Romania should implement effectively EU standards in the area of justice concerning corruption level, competition and control in customs.

2007 – present

- Getting thorough knowledge about European standards, instruments and practices about strengthening public integrity as indicator of efficient governance.

The stages undergone by Romania in order to develop its own integrity system are present, with certain features in most states analysed in the actual paper.

II.3. Integrity framework

The concerns of various public bodies, institutions and authorities, universities or outstanding specialists have shaped a model for ethics framework in the public sector⁽¹⁶⁾. Adapting this framework to the general topic of public integrity, we obtain a logical causal relation between integrity and performance of governance.

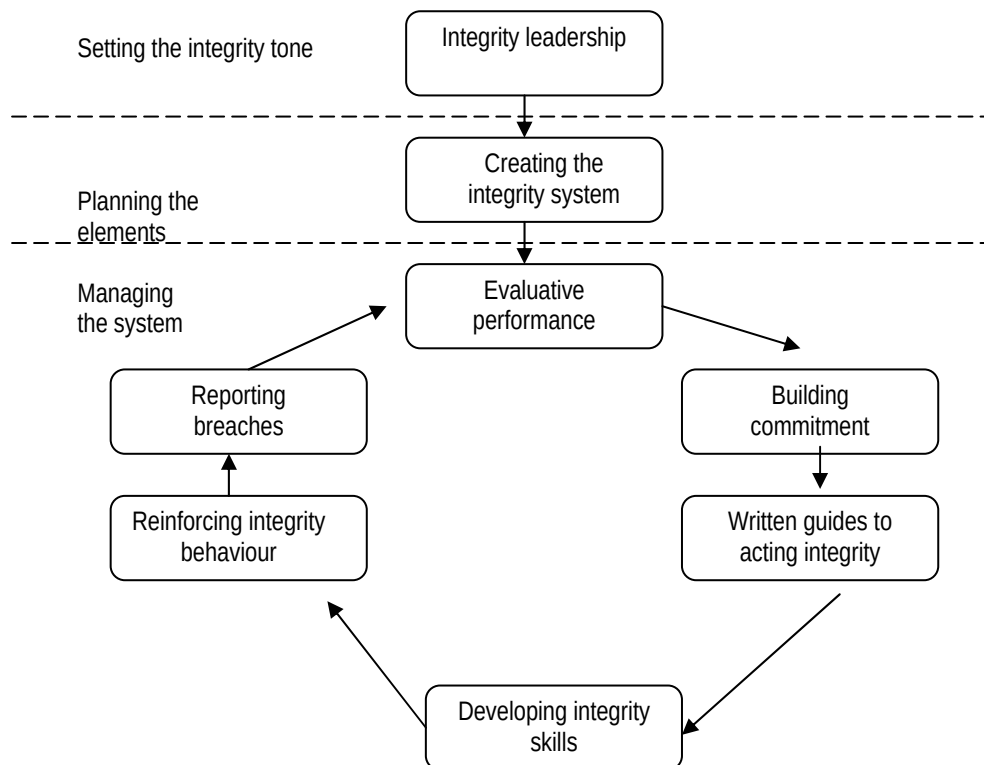


Figure 1. *Integrity Framework*

The Integrity Framework comprises in fact three subsystems concerning: integrity leadership, creating the integrity system and managing the integrity system. We add the integrity resource kit, referring to take the integrity challenge, to develop integrity skills and implement the kit.

II.4. An empirical support concerning the analysis of corruption in the EU

The empirical study uses the coefficient of control of corruption turned into account by the World Bank in view of assessing the governance performance (KKM). The analysed time horizon is 1999-2008 and it approaches the EU evolution in its last three stages – EU-15, EU-25 and EU-27 – as well as a virtual one – EU-31.

Annex 3 presents the general results for each state and the aggregated results at the EU level.

Relevant conclusions derive from the analysis of Table 2.

Table 2

**Index of control of corruption – KKM – in different hypostases
of the EU evolution**

Year	EU-15	EU-25	EU-27	EU-31
2000	1.62	1.45	1.35	1.14
2002	1.56	1.38	1.28	1.05
2003	1.57	1.40	1.30	1.10
2004	1.50	1.33	1.24	1.06
2005	1.42	1.26	1.18	1.02
2006	1.42	1.25	1.17	1.02
2007	1.40	1.23	1.15	1.00
2008	1.37	1.22	1.14	1.00

As the EU enlarges, the index of corruption is lower, demonstrating a trend of growth for the corruption phenomenon. The influences may be emphasised clearer if we analyse the statistic correlations of the aggregated variables (see Annex 4).

The inverse powerful correlations are due to the group of acceding states (described by the variable EU31_27_KKM), reaching -838 (related to EU-15), -810 (related to EU-25), -798 (related to EU-27) or -565 (related to EU-31). At the same time, we also remark inverse correlations related to the evolution of corruption, specific for the states that accessed after 2004 and the acceding states, but the cause seems to be the same group, previously identified.

II.5. Economic freedom

According to the assertions of Heritage Foundation, the economic freedom represents the individual's right to control his/her work and property. In an economically free society, the individuals have the freedom to work, produce, consume and invest in any way, being protected and not constrained by the state. In order to determine the global indicator of economic freedom (IEF), Heritage Foundation uses ten specific indicators, evaluated on fields such as: business, trade, taxation, government size, monetary freedom, investment, finance, right to property, freedom from corruption, labour.

Altman (2007) analyses the impact of economic freedom, including its various components, on the global economic performance of a country. The author states that some specific indicators of IEF are positively correlated to higher levels of GDP per capita, while other indicators are in the opposite situation.

Hall and Lawson (2008, p. 3) conclude concerning Altman's approaches (2007, pp. 1-20): „Altman's simple correlations add nothing to the on-going and important discussion about the role of economic freedom in contributing to aggregate economic performance”.

The specialised literature emphasises connections between the economic freedom and corruption. Graeff and Mehlkop (2003) investigate the impact of various components of the economic freedom on corruption. Also, in this case, the results confirm the fact that certain fields of economic freedom discourage corruption – financial and monetary freedom, freedom of affairs- while others favour corruption – dimension of government.

At the same time, Rose-Ackerman (1997) remarks the possibility to increase corruption when obstacles are imposed in free development of economy. Eiras (2003) carries out a complex analysis, referring to ethics, corruption and economic freedom. The conclusions of the author⁽¹⁷⁾ reveal relations between the economic freedom and corruption on the formal and informal economic activities. Informal economy, direct effect of the corruption phenomena, will have a higher weight in GDP as long as the economic freedom disappears. „On average, the size of the informal economy in economically non-free and repressed economies is almost three times higher than the size of the informal economy in free economies and almost double than the size of the informal economy in mostly free economies”.

The following charts are illustrative in the study mentioned, showing “the relationship between economic freedom and the level of corruption in 95 countries around the world. Figure 2 shows a strong correlation between these two factors. As economic freedom vanishes, corruption flourishes. On average,

as shown in Figure 3, the level of perceived morality – as a contrast to corruption – in economically free countries is almost four times higher than the level of perceived morality in the public sector in mostly non-free or repressed economies, and almost 60 percent greater than in mostly free economies”. (Eiras, 2003)

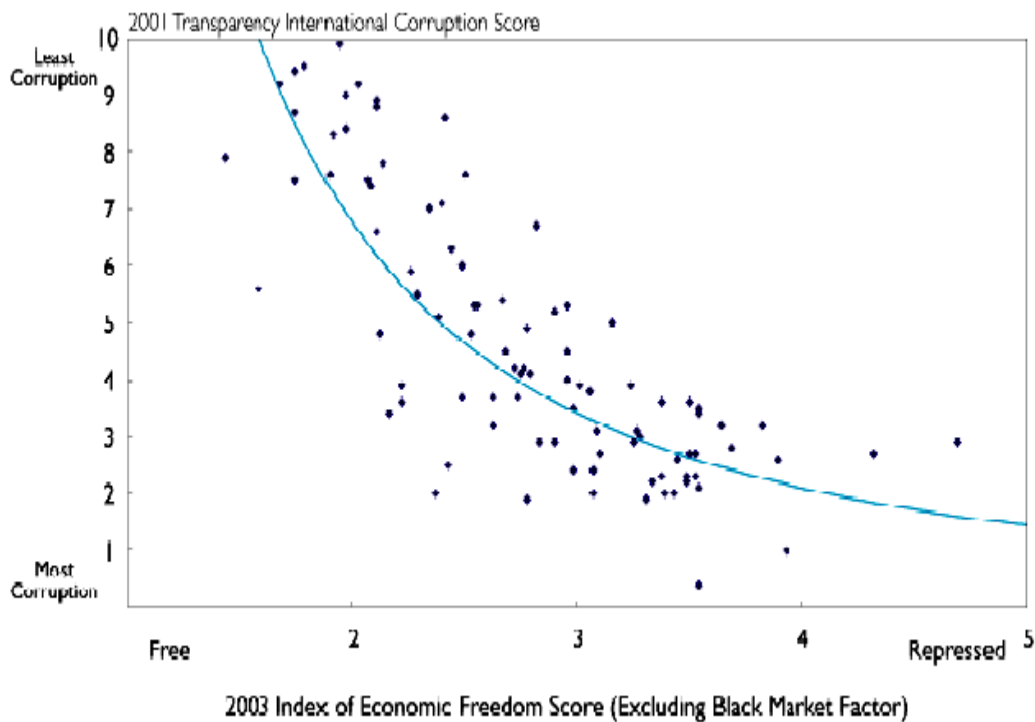


Figure 2. *Economic freedom and corruption*

Sources: Gerald P. O’Driscoll, Jr., Edwin J. Feulner, and Mary Anastasia O’Grady, *2003 Index of Economic Freedom* (Washington, D.C.: The Heritage Foundation and Dow Jones & Company, Inc., 2003); Transparency International, *The Corruption Perception Index 2001 and 2000*, Berlin, Germany, 2001 and 2000, available at <http://www.transparency.org/cpi/2001.htm> and <http://www.transparency.org/cpi/2000.htm>

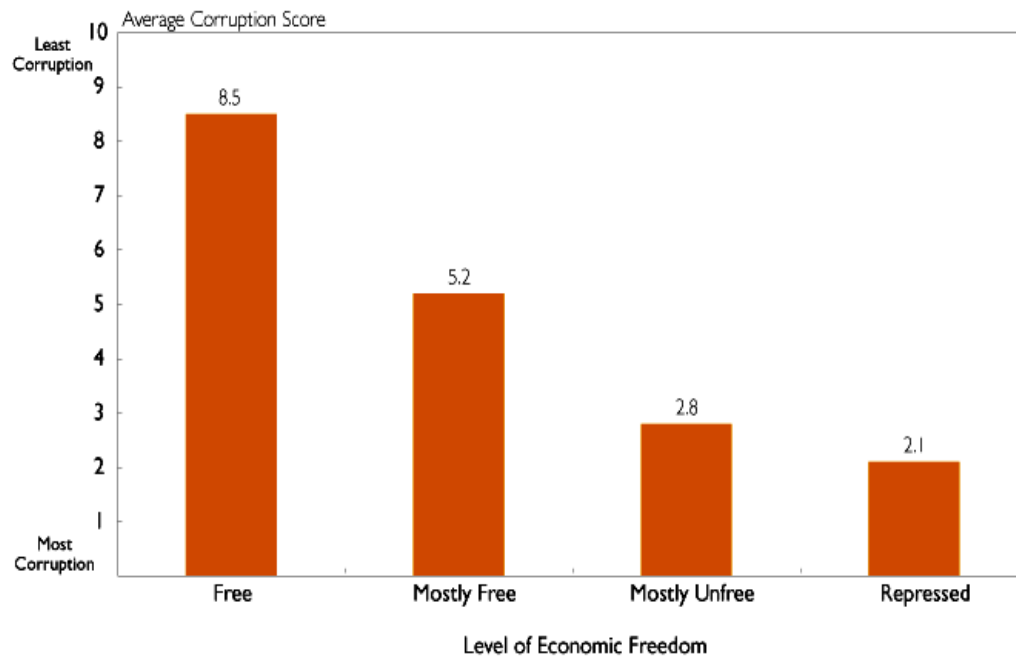


Figure 3. *Economic freedom and corruption*

Sources: Gerald P. O'Driscoll, Jr., Edwin J. Feulner, and Mary Anastasia O'Grady, 2003 *Index of Economic Freedom* (Washington, D.C.: The Heritage Foundation and Dow Jones & Company, Inc., 2003); Transparency International, *The Corruption Perception Index 2001 and 2000*, Berlin, Germany, 2001 and 2000, available at <http://www.transparency.org/cpi/2001.htm> and <http://www.transparency.org/cpi/2000.htm>

Mushfiq and Dean (2007) achieve similar studies with the study proposed in the current paper, using an econometric model applied in a panel of 60 countries, including the economic freedom as independent variable.

II.6. An empirical support for the analysis of the economic freedom in the EU

The presented empirical analysis uses the Index of Economic Freedom (IEF), calculated and published by The Heritage Foundation and The Wall Street Journal.

The analysed time horizon is 1999-2008 and, as in the previous empirical analyses, it approaches the evolution of the economic freedom in the EU in the significant stages of enlargement.

Annex 5 presents the general results for each state and the aggregated results at the EU level or groups of states in the EU or acceding countries.

Relevant conclusions concerning the IEF evolution related to the EU enlargement result from Table 3.

Table 3

Index of economic freedom – IEF – for different stages of the EU enlargement

Year	EU-15	EU-25	EU-27	EU-31
1999	7.46	7.28	7.15	6.96
2000	7.25	7.10	6.98	6.76
2001	7.23	7.10	7.01	6.80
2002	7.41	7.26	7.18	7.01
2003	7.44	7.35	7.26	7.11
2004	7.48	7.40	7.34	7.20
2005	7.43	7.36	7.31	7.18
2006	7.43	7.36	7.33	7.21
2007	7.00	6.91	6.86	6.75
2008	6.94	6.88	6.85	6.79

Also in this case, as the EU enlarges, the index of economic freedom is lower at global level, stabilising the EU global economy in the areas: “moderately free”, respectively “mostly free”.

Obviously, the presented analysis has a global statistic nature, in the European economy coexisting economies with a high index of economic freedom (UK (7.65-8.25), NL (7.50 – 8.04), IE (7.75 – 8.25)) with the economies with a very low index of economic freedom (RO (4.98 – 6.79), PL (5.95 – 6.78)).

Annex 4 reveals an analysis on groups of states, related to the present and future stages of enlargement.

The correlations in Annex 6 highlight low inverse correlations between the group of states accessed in 2007 (EU27_25_IEF) and EU-15, as well as positive correlations, but very low correlations between the acceding states (EU31_27_IEF) and EU-15.

III. An empirical comparative study

The theoretical framework briefly presented in the first two chapters of the paper again substantiates the idea of some mutual determinations between public integrity, corruption and governance performance.

As revealed by the previous chapters, the empirical study focuses on 27 EU Member States, as well as the four acceding states to the EU (Croatia, Turkey, Macedonia and Iceland).

The analysed period is 1999 – 2008 and the results regarding the used indices belong to the World Bank, Global Integrity or Heritage Foundation.

The analysis targets the three significant stages in the evolution of the EU enlargement – EU-15, EU-25 and EU-27 – as well as a possible future stage where the four acceding states will be involved – EU-31.

As stated, from the indices of governmental performance we took into consideration the Gross Domestic Product per capita (GDP) and the Index of Economic Freedom (IEF).

The qualitative data are presented in Annex 1 for GDP per capita and Annex 5 for IEF. In statistical processing, we apply log GDP so that the statistic analyses use data of the same order of dimension.

III.1. Linear regressions

The analyses reveal that the single interesting regressions in view of the current study are those using GDP as dependent variables and IEF and KKM as independent variables. In order to emphasise statistically the influence of the European integration process on public integrity, we introduced an independent variable “dummy”, called EU, awarding the following values for each state during the analysed period:

$$EU = \begin{cases} 1, & \text{if the respective state is EU Member State} \\ 0, & \text{in the opposite case.} \end{cases}$$

EU variable introduced in the above regressions will underline quantitatively the influence of the integration process on the indicator concerning the control of corruption, KKM.

For KKM, we obtain:

$$EU15_KKM = 9.323 - 1.738 \text{ Log } EU15_GDP - 0.01 \text{ EU15_IEF} + \varepsilon_1 \quad (\text{III.1})$$

$$EU25_KKM = 8.406 - 1.570 \text{ Log } EU25_GDP - 0.018 \text{ EU25_IEF} + \varepsilon_2 \quad (\text{III.2})$$

$$EU27_KKM = 7.472 - 1.395 \text{ Log } EU27_GDP - 0.012 \text{ EU27_IEF} + \varepsilon_3 \quad (\text{III.3})$$

$$EU31_KKM = 4.533 - 0.793 \text{ Log } EU31_GDP - 0.001 \text{ EU31_IEF} + \varepsilon_4 \quad (\text{III.4})$$

The four relations show different dependencies for each stage of enlargement. As it is natural, GDP per capita has the greatest influence, being well known the fact that the level of public integrity depends decisively on the living standard.

At the same time, the relations (III.1) - (III.4) demonstrate IEF low influence on the public integrity as its coefficients in the equations of regression are very small.

Eventual contradictions in the evolutions of some parameters are due to the low level of the series of data, triggering low levels of significance.

The introduction of the EU variable, previously defined, will change significantly the dependencies between the analysed variables and will increase the levels of significance of the coefficients.

Thus, we shall obtain:

$$\text{EU25_KKM} = 6.191 - 1.053 \text{ Log EU25_GDP} + 0.018 \text{ EU25_IEF} - 0.360 \text{ EU} + \varepsilon_5$$

(0.004) (0.014) (0.705) (0.103)

(III.5)

$$\text{EU27_KKM} = 5.856 - 0.977 \text{ Log EU27_GDP} - 0.011 \text{ EU27_IEF} - 0.269 \text{ EU} + \varepsilon_6$$

(0.005) (0.024) (0.801) (0.205)

(III.6)

IV. Conclusions

The paper presents a new approach for public integrity in view of the influence of the indices concerning GDP and economic freedom. The further developments might take in consideration both enlargement of the area of analysis, comprising longer periods, and introducing new indices for governmental performance.

At the same time, even in the conditions of the current study, other relevant regressions could be determined.

The modalities for determining the variables EU-15, EU-25, EU-27, respectively EU-31 trigger the idea of using other types of regressions in view to better reveal the different variations and influences of enlargement on the European governance performance and public integrity.

Notes

- (1) See <http://unpan1.un.org/intradoc/groups/public/documents/UN/UNPAN.pdf>
- (2) A more detailed presentation of these aspects can be found in the UN Millennium Declaration, <http://222.un.org/millenniumgoals/bkgd.shtml>
- (3) See ANAO, (2003), "Public Sector Governance", Volumes 1&2: Better Practice Guide, Commonwealth of Australia, Canberra, p. 2.
- (4) For details and explanations can be seen also Australia Public Service Commission, (2005), "Foundations of Governance in the Australian Public Service", Commonwealth of Australia, Canberra, <http://www.apsc.gov.au/foundations/>
- (5) ANAO and Department of the Prime Minister and Cabinet, (2006), "Implementation of Programme and Policy Initiatives: Making Implementation Matter, Better Practice Guide, Commonwealth of Australia, Canberra, p. 13, <http://www.anao.gov.au/uploads/documents/>"
- (6) See "Public Sector Standards Commissioner (PSSC), Ethics framework", <http://www.ssa.vic.gov.au/>
- (7) See <http://www.accaglobal.com/.../activities/subjects/publicsector/governance/>
- (8) See OECD, (2009), "Public Governance and Management", <http://www.oecd.org>, pp.1.
- (9) Details regarding the recent concerns of OECD about promoting governance integrity can be found, for example, in "Building a Clearer World: Tools and Good Practices for Fostering a Culture of Integrity" (2009), Paris, <http://www.oecd.publicgovernanceforum.org/>, or "OECD Recommendation on Enhancing Integrity in Public Procurement", (2008), <http://www.oecd.org/document/...html>.
- (10) See <http://www.worldbank.org/>
- (11) See <http://www.imf.org/external/pubs/ft/issues6/>
- (12) See <http://www.transparency.org/>.
- (13) See more details in Rose-Ackerman, S., (2005), "Corruption and Government Causes, Consequences and Reform", part I, chapters 1-5, pp. 7-89.
- (14) The broad description of the relations between public integrity and corruption concerning the South-Eastern European states is presented in Matei, A., (2008), "Corruption, Transparency and Quality. Comparative Approaches and Judiciary Support; Themis Project "Transformation of the Role of the Judiciary within a European Integrated Context", Bibliothèque de Droit Public Européen, vol LXXXV, Esperia Publications Ltd, London, pp. 127-142.
- (15) According "National Integrity System. Country Study. Romania 2005, Transparency International Romania, p. 1.
- (16) See "State Services Authority: Supporting Government Serving Victorians – Ethics Framework", <http://www.ssa.vic.gov.au/.../EthicsFramework>.
- (17) Ana Isabel Eiras in Senior Policy Analyst for International Economies in the Center for International Trade and Economies at the Heritage Foundation.

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Annex 1. Evolution of GDP per capita for the EU Member States and acceding states

AT_GDP	BE_GDP	BG_GDP	CY_GDP	DK_GDP	EE_GDP	FI_GDP	FR_GDP	DE_GDP	EL_GDP	IE_GDP	IT_GDP	LV_GDP	LT_GDP	LU_GDP
20.011,00	25.299,00	5.865,00	18.938,00	26.926,00	9.205,00	23.686,00	23.628,00	25.142,00	17.032,00	25.909,00	24.196,00	7.807,00	8.598,00	48.857,00
28.736,00	27.540,00	6.082,00	19.374,00	28.789,00	9.863,00	25.638,00	25.243,00	25.919,00	18.389,00	28.643,00	25.565,00	8.024,00	8.598,00	53.315,00
28.806,00	28.435,00	6.731,00	19.809,00	29.445,00	10.082,00	26.637,00	26.651,00	26.862,00	19.934,00	30.518,00	27.134,00	8.457,00	9.039,00	53.921,00
30.231,00	29.946,00	7.195,00	19.374,00	30.756,00	10.958,00	27.560,00	27.777,00	27.587,00	21.598,00	33.047,00	26.804,00	8.891,00	9.700,00	57.546,00
31.094,00	30.146,00	7.427,00	19.374,00	30.441,00	11.836,00	27.676,00	27.412,00	28.579,00	22.712,00	34.531,00	27.149,00	9.325,00	10.802,00	60.737,00
32.610,00	31.035,00	7.891,00	19.592,00	32.314,00	12.493,00	29.867,00	28.284,00	29.912,00	24.168,00	36.538,00	27.426,00	9.975,00	11.023,00	65.004,00
33.409,00	32.063,00	7.891,00	19.809,00	33.196,00	14.246,00	30.644,00	29.692,00	31.366,00	24.641,00	38.675,00	28.144,00	10.626,00	11.684,00	68.313,00
35.163,00	33.608,00	8.123,00	19.809,00	34.871,00	14.935,00	32.580,00	30.946,00	32.886,00	26.356,00	41.678,00	29.463,00	11.276,00	12.125,00	76.266,00
37.176,00	35.382,00	8.574,00	20.245,00	35.961,00	15.855,00	34.700,00	32.633,00	34.466,00	28.206,00	44.826,00	30.538,00	12.144,00	13.007,00	82.407,00
37.867,00	35.222,00	9.521,00	20.899,00	36.362,00	15.375,00	35.337,00	32.985,00	35.652,00	28.829,00	41.933,00	30.873,00	12.361,00	13.668,00	83.353,00
37.256,00	35.528,00	9.521,00	21.334,00	35.453,00	14.246,00	33.525,00	32.680,00	35.652,00	29.136,00	40.690,00	30.873,00	10.626,00	11.684,00	80.635,00
MT_GDP	UK_GDP	NL_GDP	PL_GDP	PT_GDP	CZ_GDP	RO_GDP	SK_GDP	SI_GDP	ES_GDP	SE_GDP	HU_GDP	HR_GDP	TR_GDP	MK_GDP
17.616,00	24.249,00	26.933,00	9.996,00	16.113,00	14.312,00	5.780,00	10.403,00	17.728,00	19.824,00	25.801,00	11.260,00	10.820,00	8.046,00	5.870,00
18.269,00	26.041,00	29.371,00	10.555,00	17.067,00	14.975,00	5.780,00	10.962,00	17.509,00	21.295,00	27.726,00	12.099,00	10.820,00	8.724,00	5.870,00
16.964,00	27.585,00	30.796,00	10.953,00	17.804,00	16.178,00	6.225,00	12.058,00	17.509,00	22.597,00	27.971,00	13.563,00	11.041,00	8.178,00	5.435,00
17.181,00	28.888,00	31.943,00	11.563,00	18.447,00	16.872,00	6.445,00	12.970,00	17.947,00	24.067,00	29.004,00	14.755,00	11.482,00	8.217,00	5.435,00
16.964,00	29.862,00	31.716,00	11.990,00	18.799,00	18.000,00	6.891,00	13.603,00	18.166,00	24.759,00	30.076,00	15.412,00	11.924,00	8.316,00	5.653,00
16.746,00	31.741,00	33.221,00	13.020,00	19.178,00	19.311,00	7.558,00	14.681,00	18.822,00	25.968,00	32.078,00	16.308,00	12.366,00	9.595,00	5.870,00
16.964,00	32.684,00	35.111,00	13.786,00	20.656,00	20.366,00	7.781,00	16.175,00	19.041,00	27.377,00	32.298,00	16.952,00	12.587,00	10.841,00	6.087,00
16.746,00	34.137,00	37.150,00	14.842,00	21.656,00	22.012,00	8.448,00	18.020,00	19.260,00	29.580,00	34.456,00	18.008,00	12.587,00	12.074,00	6.522,00
16.746,00	35.543,00	39.333,00	16.111,00	22.806,00	24.063,00	9.337,00	20.079,00	19.479,00	31.650,00	36.632,00	18.748,00	13.249,00	12.798,00	6.957,00
16.529,00	35.855,00	41.453,00	17.875,00	23.162,00	24.595,00	9.337,00	22.081,00	19.916,00	31.744,00	37.309,00	19.272,00	13.911,00	13.342,00	7.391,00
16.964,00	35.855,00	40.216,00	19.253,00	23.162,00	24.595,00	8.566,00	22.081,00	18.822,00	32.052,00	36.697,00	18.971,00	13.249,00	10.841,00	6.957,00

IS_GDP	EU15_GDP	EU25_GDP	EU27_GDP	EU31_GDP	EU25_15_GDP	EU27_15_GDP	EU31_15_GDP	EU31_25_GDP	EU31_27_GDP
28.632,00	23.561,04	21.573,86	20.651,15	18.980,11	11.002,39	9.536,06	8.975,66	7.564,18	8.227,49
28.807,00	25.182,18	23.026,31	22.021,95	20.249,90	11.557,43	9.950,57	9.478,13	8.030,05	8.847,41
30.451,00	26.432,02	24.186,94	23.143,83	21.154,85	12.243,52	10.583,70	9.629,86	7.809,64	8.356,44
31.084,00	27.357,70	25.077,84	23.999,20	21.903,67	12.949,36	11.170,51	9.992,43	7.933,14	8.419,61
30.781,00	27.886,45	25.617,36	24.529,98	22.379,20	13.546,20	11.709,06	10.351,75	8.127,04	8.539,66
33.710,00	29.078,42	26.774,81	25.655,64	23.516,24	14.519,99	12.581,40	11.368,81	9.174,24	9.749,94
35.027,00	30.258,85	27.899,54	26.724,20	24.597,28	15.348,42	13.222,69	12.232,80	10.062,99	10.911,25
35.113,00	31.839,61	29.405,52	28.174,45	26.005,50	16.456,60	14.174,43	13.264,19	11.040,90	12.048,97
36.311,00	33.463,06	30.975,34	29.697,74	27.420,04	17.741,02	15.315,09	14.222,49	11.772,08	12.763,80
36.498,00	34.001,78	31.625,75	30.324,57	28.036,06	18.985,62	16.278,49	15.007,34	12.236,75	13.310,28
36.196,00	33.871,86	31.592,45	30.259,90	27.666,11	19.466,35	16.463,04	14.113,18	10.385,07	10.975,98

Note: The aggregated variables EU-15, EU-25, etc. represent weighted means related to the populations of the Member States or candidate states on 1 January 2009

Annex 2. Correlations of the GDP aggregated variables related to the stages of the EU enlargement

		EU15_GDP	EU25_GDP	EU27_GDP	EU31_GDP	EU25_15_GDP	EU27_15_GDP	EU31_15_GDP	EU31_25_GDP	EU31_27_GDP
EU15_GDP	Pearson Correlation	1	1.000(**)	1.000(**)	.999(**)	.987(**)	.990(**)	.983(**)	.932(**)	.905(**)
	Sig. (2-tailed)		.000	.000	.000	.000	.000	.000	.000	.000
	N	11	11	11	11	11	11	11	11	11
EU25_GDP	Pearson Correlation	1.000(**)	1	1.000(**)	.999(**)	.990(**)	.993(**)	.984(**)	.931(**)	.904(**)
	Sig. (2-tailed)	.000		.000	.000	.000	.000	.000	.000	.000
	N	11	11	11	11	11	11	11	11	11
EU27_GDP	Pearson Correlation	1.000(**)	1.000(**)	1	.999(**)	.990(**)	.993(**)	.985(**)	.932(**)	.905(**)
	Sig. (2-tailed)	.000	.000		.000	.000	.000	.000	.000	.000
	N	11	11	11	11	11	11	11	11	11
EU31_GDP	Pearson Correlation	.999(**)	.999(**)	.999(**)	1	.989(**)	.992(**)	.989(**)	.944(**)	.919(**)
	Sig. (2-tailed)	.000	.000	.000		.000	.000	.000	.000	.000
	N	11	11	11	11	11	11	11	11	11
EU25_15_GDP	Pearson Correlation	.987(**)	.990(**)	.990(**)	.989(**)	1	.999(**)	.982(**)	.915(**)	.886(**)
	Sig. (2-tailed)	.000	.000	.000	.000		.000	.000	.000	.000
	N	11	11	11	11	11	11	11	11	11
EU27_15_GDP	Pearson Correlation	.990(**)	.993(**)	.993(**)	.992(**)	.999(**)	1	.986(**)	.923(**)	.895(**)
	Sig. (2-tailed)	.000	.000	.000	.000	.000		.000	.000	.000
	N	11	11	11	11	11	11	11	11	11
EU31_15_GDP	Pearson Correlation	.983(**)	.984(**)	.985(**)	.989(**)	.982(**)	.986(**)	1	.974(**)	.957(**)
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000		.000	.000
	N	11	11	11	11	11	11	11	11	11
EU31_25_GDP	Pearson Correlation	.932(**)	.931(**)	.932(**)	.944(**)	.915(**)	.923(**)	.974(**)	1	.997(**)
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000		.000
	N	11	11	11	11	11	11	11	11	11
EU31_27_GDP	Pearson Correlation	.905(**)	.904(**)	.905(**)	.919(**)	.886(**)	.895(**)	.957(**)	.997(**)	1
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.000	
	N	11	11	11	11	11	11	11	11	11

** Correlation is significant at the 0.01 level (2-tailed).

**Annex 3. Evolution of the index of control of corruption (KKM)
for the EU Member States and acceding states**

AT_KKM	BE_KKM	BG_KKM	CY_KKM	DK_KKM	EE_KKM	FI_KKM	FR_KKM	DE_KKM	EL_KKM	IE_KKM	IT_KKM	LV_KKM	LT_KKM	LU_KKM	MT_KKM	UK_KKM	
1,850	1,520	-0,140	0,860	2,120	0,660	2,320	1,430	1,970	0,680	1,460	0,890	0,110	0,420	2,040	0,820	2,100	
1,850	1,520	-0,140	0,860	2,120	0,660	2,320	1,430	1,970	0,680	1,460	0,890	0,110	0,420	2,040	0,820	2,100	
1,960	1,600	-0,030	0,960	2,210	0,730	2,450	1,300	1,960	0,490	1,500	0,670	0,110	0,310	2,210	0,820	2,060	
1,960	1,600	-0,030	0,960	2,210	0,730	2,450	1,300	1,960	0,490	1,500	0,670	0,110	0,310	2,210	0,820	2,060	
2,030	1,520	0,020	1,030	2,270	0,850	2,410	1,430	1,970	0,510	1,540	0,620	0,300	0,330	1,870	1,220	2,050	
2,035	1,470	0,193	0,819	2,322	1,003	2,426	1,417	1,877	0,518	1,402	0,489	0,271	0,388	1,978	1,185	1,946	
1,910	1,420	0,080	0,770	2,190	0,980	2,380	1,390	1,850	0,320	1,570	0,250	0,380	0,320	1,820	1,030	1,880	
1,930	1,330	-0,040	0,880	2,350	0,950	2,560	1,460	1,790	0,330	1,610	0,330	0,380	0,200	2,000	1,180	1,870	
1,973	1,392	-0,190	0,888	2,390	0,979	2,579	1,312	1,782	0,211	1,678	0,320	0,344	0,180	2,235	1,193	1,850	
1,822	1,349	-0,170	1,039	2,321	0,938	2,345	1,433	1,773	0,102	1,755	0,129	0,286	0,182	2,024	1,011	1,766	
NL_KKM	PL_KKM	PT_KKM	CZ_KKM	RO_KKM	SK_KKM	SI_KKM	ES_KKM	SE_KKM	HU_KKM	HR_KKM	TR_KKM	MK_KKM	IS_KKM	EU15_KKM	EU25_KKM	EU27_KKM	
2,210	0,560	1,190	0,300	-0,290	0,310	0,850	1,400	2,230	0,770	0,070	-0,240	-0,540	2,270	1,619	1,446	1,347	
2,210	0,560	1,190	0,300	-0,290	0,310	0,850	1,400	2,230	0,770	0,070	-0,240	-0,540	2,270	1,619	1,446	1,347	
2,170	0,360	1,310	0,360	-0,360	0,130	0,870	1,390	2,240	0,640	0,270	-0,460	-0,730	2,240	1,560	1,376	1,280	
2,170	0,360	1,310	0,360	-0,360	0,130	0,870	1,390	2,240	0,640	0,270	-0,460	-0,730	2,240	1,560	1,376	1,280	
2,100	0,410	1,250	0,430	-0,310	0,360	0,910	1,430	2,200	0,680	0,090	-0,210	-0,570	2,440	1,573	1,399	1,304	
2,017	0,213	1,186	0,401	-0,250	0,487	1,069	1,384	2,140	0,752	0,210	-0,130	-0,440	2,360	1,502	1,326	1,241	
1,980	0,210	1,120	0,480	-0,210	0,490	0,930	1,310	2,070	0,670	0,210	0,010	-0,380	2,530	1,422	1,258	1,176	
2,070	0,210	1,060	0,360	-0,140	0,410	1,010	1,140	2,200	0,620	0,090	0,080	-0,320	2,490	1,421	1,252	1,172	
2,278	0,185	1,096	0,284	-0,170	0,306	0,954	1,129	2,360	0,487	0,059	0,090	-0,280	2,625	1,403	1,229	1,147	
2,193	0,376	1,080	0,365	-0,060	0,431	0,952	1,182	2,235	0,549	0,121	0,095	-0,110	2,319	1,368	1,219	1,142	

EU31_KKM	EU31_15_KKM	EU27_15_KKM	EU25_15_KKM	EU31_27_KKM
1,136	0,082	0,308	0,527	-0,220
1,136	0,082	0,308	0,527	-0,220
1,052	-0,058	0,210	0,400	-0,415
1,052	-0,058	0,210	0,400	-0,415
1,103	0,075	0,275	0,471	-0,192
1,059	0,092	0,243	0,391	-0,109
1,021	0,145	0,238	0,384	0,021
1,025	0,161	0,221	0,353	0,080
1,005	0,133	0,167	0,301	0,089
1,002	0,203	0,281	0,426	0,100

Note: The aggregated variables EU-15, EU-25, etc. represent weighted means related to the populations of the Member States or candidate states on 1 January 2009

Annex 4. Correlations of the aggregated variables KKM related to the stages of the EU enlargement

		EU15_KKM	EU25_KKM	EU27_KKM	EU31_KKM	EU31_15_KKM	EU27_15_KKM	EU25_15_KKM	EU31_27_KKM
EU15_KKM	Pearson Correlation	1	.996(**)	.994(**)	.919(**)	-.681(*)	.464	.745(*)	-.838(**)
	Sig. (2-tailed)		.000	.000	.000	.030	.177	.014	.002
	N	10	10	10	10	10	10	10	10
EU25_KKM	Pearson Correlation	.996(**)	1	1.000(**)	.941(**)	-.631	.537	.800(**)	-.810(**)
	Sig. (2-tailed)	.000		.000	.000	.051	.109	.005	.005
	N	10	10	10	10	10	10	10	10
EU27_KKM	Pearson Correlation	.994(**)	1.000(**)	1	.948(**)	-.613	.556	.810(**)	-.798(**)
	Sig. (2-tailed)	.000	.000		.000	.059	.095	.004	.006
	N	10	10	10	10	10	10	10	10
EU31_KKM	Pearson Correlation	.919(**)	.941(**)	.948(**)	1	-.338	.707(*)	.880(**)	-.565
	Sig. (2-tailed)	.000	.000	.000		.340	.022	.001	.089
	N	10	10	10	10	10	10	10	10
EU31_15_KKM	Pearson Correlation	-.681(*)	-.631	-.613	-.338	1	.208	-.143	.952(**)
	Sig. (2-tailed)	.030	.051	.059	.340		.564	.694	.000
	N	10	10	10	10	10	10	10	10
EU27_15_KKM	Pearson Correlation	.464	.537	.556	.707(*)	.208	1	.924(**)	-.102
	Sig. (2-tailed)	.177	.109	.095	.022	.564		.000	.780
	N	10	10	10	10	10	10	10	10
EU25_15_KKM	Pearson Correlation	.745(*)	.800(**)	.810(**)	.880(**)	-.143	.924(**)	1	-.435
	Sig. (2-tailed)	.014	.005	.004	.001	.694	.000		.209
	N	10	10	10	10	10	10	10	10
EU31_27_KKM	Pearson Correlation	-.838(**)	-.810(**)	-.798(**)	-.565	.952(**)	-.102	-.435	1
	Sig. (2-tailed)	.002	.005	.006	.089	.000	.780	.209	
	N	10	10	10	10	10	10	10	10

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

Annex 5. Evolution of the index of economic freedom (IEF) for the EU Member States and acceding states

AT_IEF	BE_IEF	BG_IEF	CY_IEF	DK_IEF	EE_IEF	FI_IEF	FR_IEF	DE_IEF	EL_IEF	IE_IEF	IT_IEF	LV_IEF	LT_IEF	LU_IEF	MT_IEF	UK_IEF
7,360	7,680	5,030	6,220	7,630	7,350	7,500	7,040	7,500	6,640	8,130	7,090	6,690	6,260	7,810	6,450	8,250
7,190	7,360	5,560	6,310	7,430	7,570	7,370	6,720	7,290	6,570	7,930	6,950	6,810	6,370	7,780	6,420	8,110
7,080	7,150	5,870	6,720	7,390	7,620	7,360	6,810	7,290	6,240	7,820	6,940	7,020	6,720	7,760	6,720	8,010
7,630	7,320	6,140	6,850	7,610	7,710	7,610	7,040	7,610	6,980	7,740	6,710	6,870	6,690	7,740	6,480	8,130
7,670	7,260	6,150	6,450	7,630	7,700	7,580	7,180	7,580	6,930	7,860	6,840	6,990	6,950	7,760	7,170	8,080
7,560	7,260	6,500	7,390	7,730	7,920	7,750	7,100	7,650	6,990	8,090	7,030	7,350	7,430	7,640	7,380	8,100
7,590	7,140	6,670	7,320	7,720	7,850	7,630	7,130	7,570	7,030	7,950	7,080	7,440	7,370	7,620	7,390	8,020
7,670	7,180	6,740	7,360	7,740	7,810	7,620	7,430	7,500	7,110	7,980	6,950	7,220	7,380	7,650	7,540	7,890
7,000	7,150	6,290	7,130	7,920	7,780	7,480	6,540	7,120	6,010	8,240	6,250	6,830	7,080	7,520	6,600	7,950
7,160	7,010	6,230	7,090	7,790	7,470	7,380	6,420	7,110	6,270	8,130	6,270	6,620	7,030	7,540	6,720	7,650

NL_IEF	PL_IEF	PT_IEF	CZ_IEF	RO_IEF	SK_IEF	SI_IEF	ES_IEF	SE_IEF	HU_IEF	HR_IEF	TR_IEF	MK_IEF	IS_IEF	EU15_IE_F	EU25_IE_F	EU27_IE_F
8,040	6,190	7,380	6,470	4,990	6,160	6,340	7,290	7,430	6,540	6,260	5,750	5,120	7,760	7,460	7,280	7,146
7,750	5,960	7,270	6,550	4,980	6,490	6,650	7,030	7,150	6,820	6,120	5,280	5,010	7,670	7,249	7,098	6,983
7,670	6,140	7,340	6,450	5,420	6,360	6,600	7,050	7,260	6,810	5,960	5,470	5,460	7,610	7,231	7,098	7,007
7,600	6,090	7,320	6,830	5,720	6,700	5,900	7,440	7,410	7,380	5,990	5,940	5,770	7,730	7,406	7,262	7,179
7,600	6,610	7,470	6,920	5,740	7,300	6,730	7,490	7,190	7,520	6,160	6,120	5,650	7,800	7,438	7,350	7,262
7,680	6,720	7,190	6,990	6,410	7,420	6,740	7,490	7,380	7,410	6,260	6,250	6,080	7,860	7,477	7,400	7,343
7,540	6,750	7,200	6,910	6,460	7,480	6,840	7,320	7,280	7,420	6,350	6,340	6,320	7,730	7,428	7,360	7,311
7,560	6,780	7,190	7,090	6,790	7,520	6,900	7,320	7,280	7,330	6,330	6,420	6,400	7,530	7,429	7,365	7,330
7,680	5,950	6,430	6,850	6,150	6,870	6,060	6,970	7,040	6,720	5,460	6,080	6,110	7,650	7,005	6,906	6,864

EU31_ IEF	EU31_ 15_ IEF	EU27_ 15_ IEF	EU31_ 27_ IEF	EU27_ 25_ IEF	EU25_ 15_ IEF
6,961	5,872	5,947	5,771	5,000	6,319
6,761	5,695	5,968	5,330	5,131	6,296
6,805	5,875	6,151	5,506	5,538	6,392
7,013	6,153	6,309	5,945	5,830	6,498
7,108	6,386	6,587	6,117	5,847	6,878
7,197	6,583	6,831	6,252	6,434	6,987
7,181	6,640	6,861	6,345	6,515	6,997
7,208	6,725	6,955	6,419	6,777	7,025
6,754	6,207	6,324	6,052	6,187	6,378
6,786	6,451	6,518	6,363	6,370	6,576

Note: The aggregated variables EU-15, EU-25, etc. represent weighted means related to the populations of the Member States or candidate states on 1 January 2009

Annex 6. Correlations of IEF for different stages of the EU enlargement

[illegible]

		EU15 IEF	EU25 IEF	EU27 IEF	EU31 IEF	EU31 15 IEF	EU27 15 IEF	EU31 27 IEF	EU27 25 IEF	EU25 15 IEF
EU27_15_IEF	Pearson Correlation	.259	.460	.612	.762(*)	.977(**)	1	.878(**)	.929(**)	.958(**)
	Sig. (2-tailed)	.470	.181	.060	.010	.000		.001	.000	.000
	N	10	10	10	10	10	10	10	10	10
EU31_27_IEF	Pearson Correlation	.058	.244	.398	.609	.960(**)	.878(**)	1	.890(**)	.783(**)
	Sig. (2-tailed)	.874	.496	.254	.062	.000	.001		.001	.007
	N	10	10	10	10	10	10	10	10	10
EU27_25_IEF	Pearson Correlation	-.063	.141	.320	.512	.940(**)	.929(**)	.890(**)	1	.782(**)
	Sig. (2-tailed)	.862	.698	.368	.130	.000	.000	.001		.007
	N	10	10	10	10	10	10	10	10	10
EU25_15_IEF	Pearson Correlation	.484	.663(*)	.779(**)	.881(**)	.910(**)	.958(**)	.783(**)	.782(**)	1
	Sig. (2-tailed)	.156	.037	.008	.001	.000	.000	.007	.007	
	N	10	10	10	10	10	10	10	10	10

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

A Note on Causal Relationship between FDI and Savings in Bangladesh

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Abstract. *This paper aims to investigate the causal relationship between foreign direct investment and gross domestic savings in Bangladesh over a period of 1985-2007. In doing so, Johansen cointegration technique and error correction methods are employed to examine the long run and short run relationship between foreign direct investment and gross domestic savings. To determine the direction of causality, we used innovation accounting approach. Results suggest that there exist bi-directional causal relationship between foreign direct investment and gross domestic savings but the movement is stronger from domestic savings to foreign direct investment. The result also implies complimentary relationship between them and as such, policy makers in Bangladesh need to focus on the determinants of both FDI and domestic savings in order to accelerate its growth.*

Keywords: FDI; Gross domestic savings; causal relationship.

JEL Codes: F21, E2.

REL Codes: 8E, 10F.

Introduction

The phenomenon of foreign direct investment as a manifestation of internationalization and integration of economic life constitutes the basic dictum of our age. FDI is conventionally defined as a form of international inter-firm co-operation that involves significant equity stake and effective management decision power or ownership control of foreign enterprises. FDI is also considered to encompass other broader, heterogeneous non-equity forms of cooperation that involve the supply of tangible and intangible assets by a foreign enterprise to a domestic firm. It serves as a strong mechanism for the promotion and spread of business opportunities throughout the developing and industrialized economies.

That FDI affects growth positively is a well established theoretical and empirical fact. Its impact on growth is expected to be two-fold. First, through capital accumulation in the recipient economy, FDI is expected to enhance growth by encouraging the incorporation of new inputs and foreign technologies in the production function of the recipient economy. Second, through knowledge transfers, FDI is expected to augment the existing stock of knowledge in the recipient economy through labor training and skill acquisition, on the one hand, and through the introduction of alternative management practices and organizational arrangement, on the other. Also it is expected to promote technological upgrading and hence diffusion even without significant physical capital accumulation; is the case of, for instance, start up, marketing and licensing agreements, management contracts and joint incentives in general (De Mello, Sinclair, 1995). As a result, foreign investors may increase productivity in the recipient economy and FDI can be deemed to be a catalyst for domestic investment and technological progress.

The current process of globalization has given considerable importance to trade and capital liberalization. Foreign direct investment (FDI) which is a strong source of exterior finance is also an outcome of capital account liberalization. It not only promotes capital formation but also helps in transferring the productive technology among countries (William, Meleod, 1998). Foreign direct investment can be better explained as an "Investment made in foreign countries by multinational business enterprises in order to control assets as well as to manage production activities in those countries" (Padma, Savant, 1999). Considering the perspective of developing countries, there is a vast literature which focuses on the negative consequences of FDI inflows on a number of macroeconomic variables like economic growth, investment through private sector, productivity of manufacturing, exports, and employment opportunities in the host countries. There are two main approaches

regarding the opposite views with respect to the impact of FDI on the level of economic growth. It has been empirically proved that FDI has a tendency to promote and increase efficiency while enhancing the level of economic growth for example (Shahbaz et al. 2007) in case of Pakistan. Therefore, it is considered that there is positive impact of FDI inflow on economic development. Whereas there is also a belief that FDI inflow might have negative effect on economic growth in developing countries by replacing savings (Chung et al. 1995). The linkage between savings and FDI has been highlighted by Chung et al. (1995) and supported the fact that FDI raises domestic savings. Similarly, Bashier and Bataineh (2007) investigated relationship between FDI & savings and found cointegration between both variables. Furthermore it is concluded that FDI is complementary for national savings in the case of Jordan. Recently, Shahbaz et al. (2008) also find that foreign direct investment and domestic savings are complementary in case of Pakistan.

FDI plays a positive developmental role as mentioned by Chen (1992). Especially in the host countries FDI creates a positive effect on economic growth like Pakistan because it comprises some very important factors like capital, technology management, and market access (Shahbaz, et al. 2007). Bangladesh is a developing country in South Asia. After gaining independence in 1971, achievements of the nation are mentionable in some of the human development fields. However, disappointments are notable in the economic front (Barakat, 2004). The per capita income is one of the lowest in the world (US\$480) and this is still one of the most densely populated countries (850 people per square kilometer) of the world. The Bangladesh Enterprise Institute (BEI)-World Bank Investment Climate report indicates that compared to China, India, and Pakistan, Bangladesh is falling behind in terms of FDI flow. Investment performance of Bangladesh is not satisfactory at all. It is in every respect an under-invested economy.

Furthermore, considering the aspect of comparative advantage it is very clear that FDI is directed towards manufacturing sector and also some of the infrastructure related projects. It can create economies of scale in these types of sectors; in fact a higher level of production can be achieved by means of the linkage effects. Again, it is obvious that when investors earn profit, they instead of remitting abroad reinvest which requires repayment. This situation demands a favorable economic environment in a country which is an underlying factor in building up investor's confidence. Thus this confidence building efforts may ensure the greatest benefit from FDI inflows. In the newly industrialized economies (NIEs), FDI had surged in their early stages in countries like Hong Kong, China, Korea, Singapore, and Taipei, China and then towards ASEAN

countries. In the present global economic situation, FDI played crucial role for the staggering growth of the world's two fastest growing economies. Therefore, overall pace of economic growth, degree of confidence building and FDI inflows together have a positive interrelation

The objective of this paper is to investigate the impact of foreign direct investment on domestic savings, whether FDI affects domestic savings positively or negatively in case of Bangladesh. Although Bangladesh has already undertaken a number of reform measures to attract FDI, it is yet to make any impact on its economy. Corruption, lack of good governance, limited economic opportunities and resources for relatively large population, lack of private-public partnership, inadequate private sector, improper implementation of economic policies with huge corruption are some of the major reasons for rising unemployment trends in the country. The rest of this paper is organized as follows: section II discusses methodological framework and collection of data. Empirical results of the study are explained in section III. Finally, conclusions are drawn in part IV.

II. Methodological framework and data

Vector Auto Regression (VAR) approach is widely used to investigate the dynamics of the relationship between two macroeconomic variables like gross domestic savings and foreign direct investment. The present study employs the Innovation Accounting Technique (Impulse Response Function and Variance Decomposition) that has not been used before to investigate causal relationship between FDI and domestic savings in case of Bangladesh. It attempts to estimate the forecast error variance decomposition that allows inferences to be concluded with the proportion of movements in particular time periods due to its own shocks and shocks arising from other variables in the VAR. By using VAR, one can check the impact of a "shock" in a particular variable to find out the impact on other variables and future values of shocked variables are also included (Methodological background is based on Shahbaz and Khan, 2010).

This advanced approach breaks down the variance of the forecast error for each variable following a "shock" to particular variable that makes possible to identify which variable affects strongly and vis-à-vis its impact. For example, a shock in foreign direct investment leads subsequently to a huge change in gross domestic savings in the estimated VAR approach, but shock in gross domestic savings has only minor or small effect on foreign direct investment, from this exercise, we can infer that foreign direct investment leads to gross domestic savings or uni-directional causality from foreign direct investment to gross domestic savings.

On the other hand, impulse response function investigates the time path of the effects of shocks of independent variables. This approach also determines how each actor responds over time to the first “shocks” in other variables. So these two methods are named as “Innovation Accounting” that allows an intuitive insight into the dynamic relationship between gross domestic savings and foreign direct investment. According to variance decomposition which breaks down the forecast error for gross domestic savings and foreign direct investment, if gross domestic savings explain more of the variance as compared to foreign direct investment, it would be concluded that gross domestic savings granger cause foreign direct investment and vice versa. In the light of the above discussion, one may establish a VAR system that takes following the form:

$$V_t = \sum_{i=1}^k \delta_i V_{t-1} + \eta_t \dots (1)$$

where,

$$V_t = (GDS, FDI),$$

$$\eta_t = \langle \eta_{GDS}, \eta_{FDI} \rangle,$$

$\delta_1 - \delta_k$ are two by two matrices of coefficients and η is a vector of error terms. FDI = foreign direct investment as share of GDP, GDS = gross domestic savings as share of GDP. Annual time series data covering the period (1985-2007) have been used in the study, obtained from various issues of Bangladesh Economic Review.

Table 1

Correlation matrix and descriptive statistics

Variables	Mean	Median	Maximum	Minimum	Skewness	Kurtosis	DS	FDI
DS	2.4631	2.5257	3.0587	1.2781	-0.6785	2.5577	1.0000	0.8573
FDI	-3.2854	-3.8581	0.7466	-6.9867	0.2474	1.6457	0.8573	1.0000

III. Results and discussion

We employed Ng-Perron (2001) test to find the order of integration for variables, foreign direct investment and gross domestic savings for Bangladesh. Table 2 reports that both variables are stationary at 1st difference with constant and trend.

Table 2

Unit root estimation				
Ng-Perron at level				
Variables	MZa	MZt	MSB	MPT
DS	-7.7802	-1.9713	0.2533	11.7148
FDI	-11.1528	-2.3504	0.2107	8.2244
Ng-Perron at 1 st difference				
DS	-28.3003 ^a	-3.7578	0.1327	3.2420
FDI	-25.2660 ^a	-3.5534	0.14064	3.6113

Note: a represents the significance at 1 percent level of significance.

Table 3 shows evidence of the existence of long run liaison between gross domestic savings and foreign direct investment. Johanson cointegration test reveals that there are two cointegrating vectors between the variables. This confirms the existence of long run association for both variables.

Table 3

Lag length selection criteria						
Lag	LogL	LR	FPE	AIC	SC	HQ
0	-47.6564	NA	0.214893	4.1380	4.2362	4.1640
1	-7.5228	70.2339*	0.0106*	1.1269*	1.4214*	1.2050*
2	-3.6631	6.1111	0.0108	1.1385	1.6294	1.2688
3	-1.9236	2.4642	0.0133	1.3269	2.0141	1.5092

Note: * shows selection of lag length.

Table 4

Johanson cointegration test			
Hypothesis	Trace Statistic	0.05 Critical Value	Prob.**
$R = 0$	20.70856	18.39771	0.0234
$R \leq 1$	5.795952	3.841466	0.0161

Note: Prob. Indicates probability value.

Next, the OLS estimates indicate that growth in gross domestic savings attracts more foreign direct investment to Bangladesh significantly. Increase in foreign direct investment also raises the level of gross domestic savings but with less magnitude. Empirical evidence shows that foreign direct investment and domestic saving are not substitutes but are complements in the long run in case Bangladesh.

Regression results:

$$FDI = -12.975 + 3.933DS$$

$$(-11.12) \quad (8.49)$$

$$R\text{-Squared} = 0.7349 \quad \text{Adj-R-Squared} = 0.7247$$

$$DS = 3.076 + 0.187FDI$$

$$(34.52) \quad (8.49)$$

$$R\text{-Squared} = 0.7349 \quad \text{Adj-R-Squared} = 0.7247$$

Table 5 shows how the variables in the forecast error variance can be broken into components that may be attributed to each of our variables in VAR. Through the innovative shocks, the above approach shows the exact explanation regarding their relationship whereas forecast error variance decomposition of unrestricted VAR (3) models are estimated over a 10-year forecast time horizon as shown by Table 5.

From above test, we see that foreign direct investment explains almost 79% of its forecast error variances or is explained through its own innovative shocks. Whereas gross domestic saving shows innovative impact through its own shocks over only 41 %. This shows that growth of gross domestic savings is predominately explained by foreign direct investment or innovative shocks and rest is through its innovative. It may be concluded that current levels of domestic saving influences future growth of savings. Gross domestic savings lead to FDI not more than 20% through its innovative shocks while FDI leads to gross domestic savings by more than 58% through their innovative shocks on each. This phenomenon confirms that there is bi-directional causal relationship between foreign direct investment and gross domestic savings.

Table 5

Variance decomposition percentages		
Percentage of forecast error variation in	Typical shock in	
	FDI	DS
FDI	79.167	20.832
GDS	58.928	41.071

Impulse response function

An impulse response function traces the effect of a one standard deviation shock to one of the innovations on current and future values of endogenous variables through the dynamic structure of vector error correction (VEC). A shock to the n-th variable directly affects the n-th variable itself, and is also transmitted to all of the endogenous variables through the dynamic structure of

VEC. Cholesky fractionalization approach is commonly used to conduct impulse response analysis. Impulse response function is also utilized to investigate the time paths of log of foreign direct investment (FDI) in response to one-unit shock to the log of gross domestic savings (GDS) and vice versa. Figure-1 is the graphical presentation of impulse response function showing how foreign direct investment responds over time to a shock in gross domestic savings and vice versa.

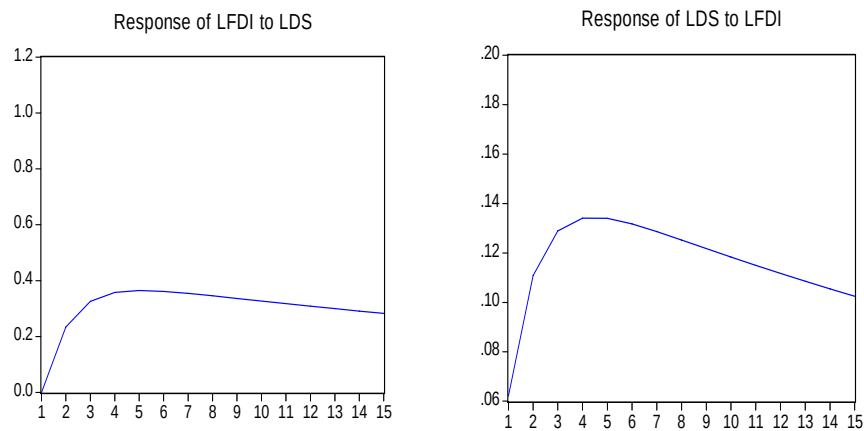


Figure 1. Response to Cholesky one SD Innovations

We now construct the error correction model to test for causal relationship in the short run. The significance of error term provides further confirmation about the long run rapport and their stability. Furthermore, error term shows the return to equilibrium in the case of a shock.

Table 6

Residual-based short run causality					
Dependent Variable	Co-efficient	Inst-values	R-Squared	D.W	F-Statistics
DS	-0.5171	0.0057	0.2677	1.349	9.143
FDI	-0.5635	0.0039	0.2876	1.519	10.094

Table 6 reports OLS estimation results that indicate the significance of both error terms. The coefficients of error terms reveal that there exists bi-variate causality between foreign direct investment and domestic savings for Bangladesh. It also shows that feed-back is stronger from domestic savings to foreign direct investment in the short run with high level of significance. This suggests that in case of Bangladesh, foreign direct investment and domestic savings do have complementary relation both in the short run and in the long run.

IV. Conclusions

This study attempts to investigate the long run relationship between foreign direct investment and gross domestic savings in case of Bangladesh. Johanson cointegration and error correction methods (ECM) are employed. The findings suggest that there exists both long run and short run relationship between foreign direct investment and gross domestic savings in Bangladesh. Innovation accounting approach is applied to determine causal relationship between foreign direct investment and gross domestic savings. Findings suggest that there is bi-directional causal relationship between foreign direct investment and gross domestic savings. The result is true for feedback as well. It may be finally concluded that foreign direct investment and domestic savings are complements. Although Bangladesh has undertaken a number of reform measures to attract FDI, it failed to make any significant progress to this end. Poor infrastructure, political instability, corruption, administrative complexities, poor law and order etc. are some of the key factors that are responsible for this failure.

Policy makers must address these issues to create favorable environment to attract foreign direct investment. Government must improve the growth rate of FDI, not only in its absolute magnitude but also in the relative term. Banking sector should not focus only on how to channel savings to productive projects but also improve growth rate of domestic savings. In order to achieve this, the factors that determine savings in an economy must receive considerable attention.

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The Effectiveness of Fiscal Policy in Combating Economic Crisis. An Analysis Based on the Economic Literature

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Motto: "There are reasons to believe that the war-based multiplier of 0.8 substantially overstates the multiplier that applies to peacetime government purchases...In any event, when I attempted to estimate directly the multiplier associated with peacetime government purchases, I got a number insignificantly different from zero." (Robert Barro, 2009).

Abstract. *The objective of this research is to identify, in the economic literature, the main factors which constrain the transmission of the fiscal shocks to the real economy. The interest in finding the most efficient fiscal stimuli in recovery the economies passing through crisis period has got increased as soon as the expansionary monetary policy promoted by most of the central banks has not generated an increase of the confidence in the private economic agents and, as a consequence, an increase of consumption and of the private investments. Even though it represents the Keynesian solution for recovery the economies which have been affected by the crisis, the fiscal expansion promoted during the recession periods does not generate the same expected positive effects any more (increase of consumption, significant decrease of unemployment, increase of revenues in economy), as they are conditioned by the reaction of the private economic agents to the fiscal stimuli. For example, the decision to decrease taxation may not automatically generate the significant increase of consumption (a condition for spreading the multiplier effect in economy), under the terms of pessimism or of the difficulty to access loans. As a result, the fiscal multipliers tend to be rather proper, and their value decreases more during the deep economic recession periods.*

Keywords: fiscal policy; fiscal multipliers; neo-Keynesian; automatic stabilizers.

JEL Code: E62.

REL Codes: 8K; 8N.

1. Efficiency of fiscal policy, according to the modern macroeconomic approaches

The Keynesian economic theory asserts that the public debts have had a higher impact upon the GDP, if compared to the transfers or to the taxes level, as the latter ones does not generate a direct influence upon the output gap, but they mainly influence the available income and afterwards, to a smaller extent, they influence the level of the private consumption. According to this approach, the multiplier associated with government purchases is less than one, but it is higher for the countries which prove predilection for imports and for the countries which practice a fixed exchange rate. Other streams of economic thinking (such as those related to the reasonable anticipations, to the real business cycle, to the economic institutionalism) deny the importance given to the increase of the public spending in stimulating economy, while the multiplier decreases to zero in time. According to them, the economic agents anticipate the increase of the future taxes in order to cover the budget deficits generated by the public spending, and, on a long-term, the government only replaces the private spending with the public spending, so that there will not be any modifications to the living standard.

The actual macroeconomic schools have developed based on certain assumptions which are specific to the neoclassical economics (prices flexibility) and to Keynes (prices and wages rigidity). According to the first assumption, the fiscal policy will have a lower efficiency, as the output would react to a smaller extent to the expansionary shocks. On the other hand, the fiscal policy generates both short-term and long-term effects, according to the neo-Keynesians.

1. *The new classical economy (Lucas, Sargent)* brings the following arguments for the low impact of the fiscal shocks:

- The change of the aggregate demand influence to a small extent the level of the output and of the revenues from economy;
- The economic agents' anticipations are reasonable, and they are not affected by the specifically Keynesian "short-run myopia"; the economic agents optimize their choices related to consumption in a forward-looking manner and they have reasonable anticipations;
- The economic agents do not suffer from monetary illusion and, as a consequence, only the real modifications (the relative prices) have an influence upon the consumption decision;
- The prices and the wages have a high flexibility degree;
- According to the Ricardian equivalence, the increase of the public spending, which is financed either by loans, or by taxes, does not

generate an improvement of the welfare state, as the consumption and the GDP remain unchanged. The decreases of the public savings (as a result of the increase of the public spending) will be compensated by the increase of the private savings, due to the consumers' anticipations about the future increase of taxation. In an economy which is dominated by a Ricardian view upon economy, the fiscal multipliers are close to zero;

- The long-term rate of unemployment depends on the government intervention to a small extent only. Thus, the multiplying effect of the fiscal policy will be lower, as the rate of unemployment is closer to NAIRU: the increase of demand in economy determines the increase of labor demand, while the decrease of unemployment.

2. *The neoclassical synthesis (Hicks, Samuelson)* combines the Keynesian aspects on a short-run with the neoclassical elements, according to which the GDP evolution is influenced by aspects which are specific to the aggregate offer-capital and labor accumulation. According to this theory, the expansionary fiscal policy will generate the increase of consumption and of the GDP on a short-run only, thus contributing to the increase of the domestic demand. However, on a medium term, the constraints which are specific to the aggregate offer will generate a decrease of the GDP towards the level which has been recorded prior to the fiscal expansionary shock.

3. *The new-Keynesian economics (Taylor, Blanchard, Mankiw)* has hypotheses which are similar to those belonging to the new classical economy (optimizing the forward-looking decisions, reasonable anticipations), but it also supposes the existence of nominal and real rigidities. The New-Keynesian approach suggests that the fiscal policy has a lower impact upon the economy, as:

- the consumption does not depend on the current consumption any more, but on the permanent income, so that the individual household will react to a fiscal expansion in case it generates a long-term increase of the income;
- the fiscal expansion generates inflationary anticipations; if they are reasonable, the government decisions will influence the economy on a short-run to a small extent;
- the consumers act according to the principles of the Ricardian equivalence;
- there is a variety of imperfections in economy, and the aggregate offer will not immediately react to the variations of the demand; the imperfections existing in the real economic world are essential for understanding the economic fluctuations.

4. *The theory of the real business cycle (Kydland, Prescott)*

According to this theory, the business cycles are caused by the fluctuations recorded by the rate of increase of total productivity of the output factors, and the distinction between the short and the long-run in analyzing the economic fluctuations and the potential GDP is abandoned. The fiscal policy becomes efficient only if it generates a sustainable increase of the potential GDP. The fundamental instruments which can generate such effects are mainly the productive public spending (education, research-development, public investments) and the taxes applied to capitals.

2. Keynesian and non-Keynesian effects of the fiscal policy

The estimates made on the basis of the models inspired by the previously mentioned theories are extremely divergent with reference to the fiscal policy's impact upon consumption – the main mechanism which helps in spreading the fiscal multiplying effect in economy.

According to the models which are specific to the real business cycle, an increase of the public spending during the current period will be financed by means of the future increase of taxes, thus having a negative impact upon the real current assets of the individuals and of the consumption. In order to neutralize this impact, the human beings will increase the number of working hours, and this will result in an increase of investments (in order to increase the capital stock) and of output. The neo-Keynesian models result in similar effects of the fiscal expansion, as a consequence of the human beings' forward-looking behaviour. However, the labour market reacts differently in the two models. Thus, according to Pappa (2009), the real wages get increased in the neo-Keynesian models, as a result of a positive shock of the government consumption, this evolution being opposite to that encountered in the models of the real business cycles. The increase of output results in the increase of the labour demand to a greater extent than the increase of the labour offer.

However, there are other models which validate the positive impact of the expansionary fiscal policy upon consumption:

- Limnemann (2006) applied a model of the real business cycles within a utility function for consumption and spare time, both preferences being replaceable. The negative effect of the fiscal expansion upon the real assets increases the number of working hours, thus reducing the preference for spare time and it increases the utility related to consumption. The consumption, the number of working hours and the output will get increased.

- Mankiw (2000), Gali and others (2007) included two types of households in the neo-Keynesian models – the Ricardian and the non-Ricardian ones, the latter ones consuming the entire available income. As a consequence, the fiscal expansion will generate the increase of consumption for the non-Ricardians and, depending on their share, the aggregate increase of consumption is possible. For example, according to Monteforte and Sessa (2009), their share is between 30 and 40% within the Euro zone.
- Corsetti, Meier and Muller (2009) gave arguments for the fact that the increase of the public spending at present will not necessarily be financed by means of increasing the taxes, but by decreasing the spending. Under these terms, the reversal of the public spending creates anticipations referring to the future decrease of the real rate of interest on a short term (the central bank decreases the rate of interest under the terms of lower inflationary anticipations), and this fact determines the long-term decrease of the current interest rate and, as a consequence, the increase of the domestic demand (the above described mechanism is valid under the terms of prices rigidity in economy).
- Blinder (2004) demonstrated that the temporary decreases of taxes tend to generate the increase of the current consumption (and not its decrease, according to the Ricardian equivalence), as the consumers act in a forward-looking manner and they will want to maximize their current consumption to the prejudice of a future consumption (with higher taxes).

The analysis of the fiscal policy's impact upon consumption should also take into account the nature of the recession a certain economy passes through. The higher its intensity, the less immediate the economic recovery generated by the fiscal stimuli, because of the existence of three factors with deflationary effects:

- *the Keynesian paradox of saving* – the individual household saves as a consequence of the collective lack of confidence in the economy's capacity to come back, and this automatically determines the decrease of output;
- *the decrease of the asset prices* – the economic agents will try to reduce their debts, being determined by a collective skepticism movement. All of them will sell assets at the same time, and this will result in the decrease of their value and in a deterioration of the others' solvency and in an automatic decrease of asset sales;

- *the decrease of loans* – the banks which encounter the increase in the share of the bad loans will have a higher aversion to risks, and this will generate the decrease of the loans.

However, there is another approach according to which the expansionary fiscal policy is more efficient during the deep recession periods, as the private economic agents, who are facing a series of budget constraints, will consume the additional income to a greater extent and they will not save it. The fiscal regulation of the economy is especially motivated by the existence of a significant part of the households which encounter financial constraints and which would render the monetary policy less efficient (the argument for the use of the fiscal policy during the economic crisis). However, the increase of consumption performed by the households which benefit from the fiscal relaxation may be neutralized by the tendency of other (unconditioned) households to decrease consumption. *As a consequence, the multiplying effect of the fiscal policy will be as higher as the share of those who are not able to save or to get loans is higher.* Tagkalakis (2008) estimated the validity of the previous relation for the OECD countries between 1970 and 2002, under the terms of a fiscal policy's higher impact upon consumption, as the part of the households which face financial constraints during the economic recession periods get increased.

The efficiency of the fiscal policy does not depend only on the recession's influence upon the consumption/investments behaviour of the economic agents, but also on the quantum/dynamics of the public debt in the economies which experience an economic downfall. Thus, the countries which are characterized by high structural budget deficits, which have been accumulated during the economic expansion period and by means of high services of the public debt which are due during this period, will rather have to implement restrictive fiscal measures, which are intended for increasing the confidence of the foreign creditors into the capacity to consolidate the public finances in a sustainable manner. Otherwise, the fiscal expansion at high levels of the public debt will be perceived by the consumers as being followed by the increase of the taxes, and this will have recessionistic effects in economy. The positive impact of the expansionary fiscal policy upon economy would only be valid in case of a low public debt.

Bertola and Drazen (1993) estimated that the expansionary fiscal policy also generates an increase of the private consumption in the case of a sustainable public debt, and the decrease of consumption occurs only in the case in which the public debt reached critical levels. According to Perotti (1999), together with the increase of the public debt, the distortions induced by the future increases of taxes diminish the positive effects of the increase recorded in

the public spending upon the private consumption. Reinhart and Rogoff (2010) demonstrated that, for the developed economies, the increase of the public debt over 90% of the GDP determines a 1% decrease of the GDP. The negative impact of the public debt upon the economic growth tends to be lower in the developed economies, if compared to the emergent ones, under the terms in which the latter ones prove a quite lower financing capacity, due to the capital market which is less developed and to the difficulty in having access on the international markets.

If, in the traditional approach, a restrictive fiscal policy generates an economic loss, Giavazzi and Pagano (1990), Barry and Devereux (2003) asserted the validity of the *expansionary fiscal contraction hypothesis* – the government's credible decreases of spending will provide a sustainable fiscal consolidation and they will reduce the anticipations referring to a possible increase of the taxes. The real rate of interest will be lower, and this will stimulate the long-term consumption, investments and output. The expectance related to the credible decrease of the taxes will determine an increase of the permanent income, and this will determine the increase of the private consumption. In the case of promoting policies for decreasing the public spending in order to provide the budget consolidation, the economic agent may anticipate future decreases of taxes, and the economic demand will get increased, thus diminishing the recessionistic impact of the fiscal contraction (Denmark 1983-1986 and Ireland 1987-1989).

3. What is the size of fiscal multipliers?

The different impact of the fiscal stimuli upon economies is influenced, among others, by the asymmetries existing in the economic agents' consumption/saving behavior, by the opening degree of economy, by the nature of the exchange rate or by economic flexibility. According to the Mundell-Fleming model, the fiscal policy constitutes a real stabilizing instrument of economy only under the terms of a fixed rate of exchange, as the intervention of the central bank cancels the crowding-out effect upon the net exports. However, it is possible for the fiscal policy not to generate the appreciation of the national currency, this correlation constituting the essence of the external crowding-out effect. As a consequence, even under the terms of an open economy and of a flexible rate of exchange, the expansionary fiscal policy may have a higher efficiency degree, as a result of the occurrence of a high pass through effect – the currency appreciation results in the decrease of the inflation rate and limits the crowding-out effect by decreasing the rate of interest. Moreover, the currency appreciation may generate the increase of consumption and of

investments by means of the effect upon wealth, under the terms of the increase in the incomes expressed in a foreign currency, which determines the increase of the foreign currency credits.

Generally, the structural models which have been used (SVAR type) outlined the existence of a fiscal multiplier which is higher on a short term for Germany, if compared to that of the other EU countries, as it is between 0.9 and 1.3. According to Barendt and others (2003), the superior value is explained by the quite lower impact of the increase in domestic spending upon the imports. Based on the VAR type structural models, the multiplier of the public spending is generally proper, and their shock explains approximately 20% of the future GDP variation (Henin, 2001).

Another method used to identify the structural fiscal shocks was developed by Blanchard and Perotti (2002), who elaborated a splitting of the discretionary fiscal policy and of the automatic stabilizers' action. According to them, the USA GDP has a positive reaction to a shock of the public spending, and the multiplier related to them is lower, as the GDP components do not react in the same direction – the private consumption gets increased, and the private investments get decreased.

The panel type researches have seldom identified low fiscal multipliers and, in some cases, even negative multipliers, such as Hemming et al. (2002). In a research made by HM Treasury (2003) based on the Quest model of the European Commission, the multiplier of the public spending is proper in all the European countries which have been included in this analysis – 0.3 in Great Britain, 0.4 in Germany and 0.5 in Italy, France and Spain. Nallari & Engozogo (2010) estimated for USA a multiplier of the government spending of 0.39, which is very close to that recorded for the G7 countries. A research made by IMF (2008) estimated, based on a panel regression, the existence of multipliers less than one both for spending and also for taxes. According to this research, the credibility of the macroeconomic policies which have been promoted and the monetary adjustment degree are critical for the settlement of the fiscal policy's efficiency in stimulating the economy. Similar results have also been obtained for the emergent economies (including the Asian ones), in which case the multipliers of the public spending were approximately 0.6-0.7, this proving a significant level of the crowding-out effect upon the private investments.

The efficiency of an anti-cyclic fiscal policy is not only depending on the quantum of the fiscal pack, but also on its components (tax cuts versus the increase of the public spending). Generally, the hypothesis of an impact of spending which is higher than that of decreasing taxation is not valid. From the point of view of the long-term impact of the fiscal policy, we may consider that it is especially valid in the case of the public investments, through the positive

effects upon the aggregate offer. However, although the increase of the public spending generates a short-term increase of output which is higher than the decrease of taxation, they have a long-term contribution to the exclusion of the distortions which are specific for the labour market or by stimulating the capital accumulation.

Nijkamp and Poot (2004) made a meta-analysis for 93 of the published researches on the impact of the fiscal policy and the conclusion was that the positive effects of the conventional fiscal policies are limited. However, Spilimbergo and others (2009) estimated that the existence of a multiplier of the public debts which is higher than the decrease of taxation is real (1-1.5 for the higher-size countries, 0.5-1 for the medium sized economies and maximum 0.5 for the small and open economies). The values of the multipliers for the taxes and transfers are approximately half of those for spending, and in the case of the public investments they are a little higher than the other types of public spending.

Making an analysis for 91 sequences of fiscal expansion in 21 OECD countries beginning with 1970, Alesina and Ardagna (2009) outlined the superiority of the fiscal programs which are based on tax cuts, if compared to those aiming to decrease the public spending. The decrease of taxation generates stimulation for the future investments, if the increase of spending determines a decrease of investments. However, during the economic crisis periods, the lack of economic confidence determines the economic agents to increase their marginal inclination towards saving, and this will result in the decrease of the multipliers' value, especially the fiscal one.

Ilzetzki and others (2009) estimated the fiscal multipliers for 20 developed economies, by using quarterly data for the period 1960-2007. The most important results were as it follows:

- The output reaction to the increase of the public spending is lower and rather temporary in the developing countries versus the developed economies;
- The fiscal multipliers are higher in the economies with fixed rates of exchange (0.2 on a short term and 1.5 on a long term) and less open from an economic point of view;
- As for the economies with flexible rates of exchange, the increase of the public spending by 1% of the GDP determines a change in the domestic output which is insignificantly different from zero, both on a short and on a long term;
- The GDP reaction to the increase of spending is temporary in the economies which are characterized by a high share of the public debt;

- The fiscal multipliers for USA are lower both on a short and on a long term after 1980 – 0.64, respectively 1.19. However, the multipliers of the public investments record the highest value;
- The long-term multiplier of the public spending is 0.24 for the developed economies and 0.04 for the emergent ones. The cumulated multiplier of the government purchases (the cumulate change of the GDP related to the variation of the fiscal impulse) is 1.04 for the first group of economies and it is 0.79 for the economies belonging to the second group.

According to OECD (2009), the multipliers calculated in the internationally record the following values:

- The short-term multipliers of the government purchases are improper and they exceed the ones of the incomes, and the first ones are not influenced by the first degree effect of the increase of saving;
- Among the income multipliers, that of the income tax records values between 0.5 and 0.8, and that of the other tax forms is between 0.2 and 0.6;
- The multiplier of the profit tax records values between 0.3 in the year of the fiscal shock and 0.5 at the end of the subsequent year;
- The multiplier of the social contributions is between 0.4 in the first year and 0.6 at the end of the second year since the fiscal shock.

The fiscal multipliers estimated according to the OECD macroeconomic model outline the existence of low differences between the member states and the superiority of the multiplying effect of the public investments (in the second year after the fiscal shock):

Table 1

Fiscal multipliers in the main OECD countries

	The multiplier of the public investments	The multiplier of the government consumption	The multiplier of transfers	The multiplier of the indirect taxes	The multiplier of the taxes applied to the income
USA	1.3	1.1	0.9	0.5	0.9
Germany	1.2	0.8	0.7	0.4	0.7
France	1.2	1.0	0.8	0.4	0.8
Italy	1.2	1.0	0.8	0.4	0.8
Great Britain	1.2	0.9	0.8	0.4	0.8

Source: OECD, 2009.

4. Are they effective fiscal stimulus package?

The impact of the fiscal programs for stimulating economy depends on the economic opening and financial integration degree of the countries where they are applied. For example, in the small and open economies, most part of the increase of consumption is directed towards imports. As a consequence, except the case when the fiscal stimulation packs are perfectly coordinated at the international level, the open countries will prefer the recovery by means of increasing the public investments, which generate a higher impact upon the domestic market.

In order that the economy's fiscal stimulation packs could be successful, they should aim to consumption, so as to provide a higher multiplying effect of the fiscal policy. When assessing the success of an expansionary fiscal policy, the problem of "the economic agents' confidence" occurs – if they are not confident in the long-term fiscal stability within the economies which currently promote expansionary policies, then they will react less to the current fiscal stimuli.

The short-run effects of the economy's fiscal stimulation packs are influenced by the perceptions of its long-term costs. Thus, the more expensive is an expansionary fiscal policy perceived on a long term (the fast increase of the public debt and of the service related to it, the increase of the country risk), the less the economy will be influenced on a short term. The consumers without financial constraints will prefer to cover the future risks, and the fiscal expansion will be reflected in the decrease of consumption, thus generating a negative multiplier (Giavazzi, Pagano, 1990, Alesina, Perotti, 1997). The efficiency of the expansionary fiscal policy also depends on the credibility degree of the announced measures. The more they are perceived as being more incoherent, the more any decision to try to stimulate the economy will introduce instability in the economic system, thus being able to generate the decrease of the private consumption.

The efficiency of the fiscal stimulation packages has been estimated by means of macroeconomic models which help in determining the fiscal multipliers. For example, in the case of USA the Romer and Bernstein model has been used, according to which the multiplier of the public spending is improper both on a short term (1.05, after the first year), and also on a long term (1.55 cumulated after four years). However, there is another model which has been elaborated by Smets-Wouters and which asserts that the value of the public spending' multiplier is lower during the entire period 2009-2013, if compared to the previous model. The economic growth would be lower than the value of the fiscal package for stimulating the economy, as a result of a

permanent contraction effect of consumption and of private investments. After four years since the shock generated by the fiscal pack, the GDP gets increased by 40% only from the initial budget effort. This model supposes the existence of economic agents which form forward looking anticipations and which anticipate deep changes of the fiscal instruments for the years subsequent to an expansionary fiscal shock. It is the model which is specific to the less flexible economies, to those which have certain constraints (such as an agreement with IMF) or to those which are characterized by diffidence/skepticism of the private economic agents. The more difficultly the economy will react to the initial fiscal shock, the higher the profitability in the reversal of the promoted fiscal policy (in order to cancel the impact of the budget deficit's emphasis).

The discretionary fiscal measures aimed by the economic stimulation programs should be interpreted under the terms of the increase of the budget deficit and of the increase of the public debt. The most part of the increase of the deficit is the result of the automatic stabilizers' action during the economic downfall periods (especially the incomes being influenced). For example, in the case of the OECD countries, the budget deficit increased from 1.5% of the GDP in 2007 to approximately 9% of the GDP in 2009, and the public debt reached approximately 100% of the GDP. 75% of this deficit's increase has been the result of the automatic stabilizers, under the terms of the automatic decrease of budget revenues caused by the economic downfall.

Thus, as a consequence of the public spending' increase by 1% of the GDP, an increase of the budget deficit by the same quantum will occur in a first stage. However, the more the domestic output will react to the fiscal stimulus, automatically the more increased the budget revenues will be (e.g., from the indirect taxes, as a result of the increase of consumption), and the budget deficit will get decrease. For example, in the case of a public spending' multiplier of 0.7 (in the first year), the GDP will get increased by 0.7 Euro as a result of a fiscal impulse of 1 Euro. According to the researches made for the OECD countries, the budget deficit will automatically get decreased by approximately half of the GDP increase, namely approximately 0.35 Euro. As a consequence, an increased has been recorded for the budget deficit by 0.65 Euro only (1 Euro initial increase and 0.35 Euro decrease due to the GDP increase). The higher the fiscal multiplier is on a short term, the lower the level of the budget deficit will be on a medium term.

As a consequence, the later the adoption of a fiscal stimulus for economic recovery will be, the more automatically increased the budget deficit will be (as a result of the automatic stabilizers' action), and the fiscal intervention pack should become more significant. There have been made calculations for the fact that, under the terms of an economic down fall of approximately 5% in 2008-2009,

the budget deficit would have got automatically increased by 2.25%. As a consequence, the fiscal stimulus should have a higher intensity, if it is adopted with a lag. In order to be efficient, the fiscal measures should have a lower implementing lag, for the occurrence of effects. *According to IMF (2008), an efficient fiscal stimulus should meet the following conditions:*

- to be immediately adopted after the beginning of the economic contraction; thus, the risk that the measures could become effective too late is diminished (namely, when the budget deficit would be too high, and the economic contraction would be much greater); the risk is the promotion of a restrictive pro-cyclic policy instead of an expansionary anti-cyclic policy.
- to be significant as share in GDP, especially under the terms of an abnormal recession, and the fiscal multipliers will have lower values than the theoretical ones;
- to be sustainable and credible, under the term of the necessity to create fiscal stimulation packs without generating unsustainable increases of the public debt or a domestic/external financing risk of the budget deficit (which will result in the decrease of the economic agents' confidence in the economic evolution).

5. Conclusions

This research has made a synthesis of the main modern macroeconomic theories and of the economic researches, which have analyzed the efficiency of the fiscal policy in diminishing the effects generated by the economic crisis. In comparison with the Keynesian view, the expansionary fiscal policy has a lower multiplying effect in the real economy, as the driving mechanism is influenced, among others, by the reaction of the private consumption, by the level of the public debt and by the credibility of the adopted measures. In order to the fiscal packs for the economic stimulation could be successful, they should be adopted immediately after the economic down fall, they should be significant as a share in the GDP, they should not negatively affect the sustainability of the public finances and they should be focused on supporting consumption. The globally adopted fiscal packs (approximately 3.4% of the GDP during the period 2008-2010) have generated the increase of the budget deficit from 0.3% of the GDP in 2007 up to 6.7% of the GDP in 2009, and also the re-launching of the global economy, over the initial expectances; as for the global economy, there are anticipations for an economic growth of 4.8% in 2010 (according to IMF, October 2010), 0.2 percents higher than in the initial estimation. Under these terms, most of the EU developed countries proposed to immediately adopt

budget austerity programs, in order to provide sustainability to the public finances. The greatest danger is that these restrictive programs could cancel the initial positive effects of the fiscal stimulation packs and that they could negatively influence the medium-term economic growth capacity.

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The Effect of Fear Appeal HIV/AIDS Social Marketing on Behaviour: Evaluating the Importance of Market Segmentation

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Abstract. *The increase in various social problems has caused practitioners to review fear appeals in order to influence behaviour. The Aids pandemic is a major concern and some advertising campaigns do not seem to be producing the expected results. This study used structural equation modelling to investigate whether the use of fear increases the likelihood of adopting appropriate behaviour pertaining to HIV/Aids prevention. Fear, attitude towards the advertisements, severity, susceptibility and efficacy were examined to ascertain the influence of fear appeals on a specific market segment. The findings of this paper indicate a relationship among susceptibility, fear, attitude and behavioural intent.*

Keywords: social marketing; HIV/AIDS; fear appeals; segmentation.

JEL Code: M31.

REL Code: 14G.

1. Introduction

Social marketing programmes address various pandemics and anti-social behaviour, where citizens are not acting in-line with accepted social conduct and regulations, to bring about social change. The proliferation of several social problems has caused a revisit to the effectiveness of fear appeals. Given the increase in social-issue related communication in South Africa, and a population characterised by a wide variety of different cultural groups, advertising in South Africa is often targeted at a heterogeneous audience with a standardised message. The HIV/AIDS pandemic in South Africa is a major concern and the main advertising campaign loveLife, based on informational appeals, does not seem to be producing the expected results.

A number of previous fear appeal study models (Arthur, Quester, 2004, Witte, 1992, 1994) aimed to clarify the role of fear in establishing the effectiveness of advertising when using fear appeals, and also examined the moderating role of coping appraisal in determining consumers' response to fear appeals. Fear, attitude towards the advertisements, severity, susceptibility and efficacy were examined to ascertain the influence of fear appeals. This study used structural equation modelling to investigate whether the use of fear increases the likelihood of adopting appropriate behaviour pertaining to HIV/AIDS marketing communication within a specific target segment. A model to measure fear appeal effectiveness within a specific target segment are discussed, and findings provide encouraging evidence for the persuasive power of fear appeals. Fear appeals can be a strong motivator if accompanied by high efficacy messages, to improve knowledge and to influence attitudes about HIV/AIDS. Susceptibility to the disease among adolescents also influences behaviour.

2. Theoretical background

Fear appeal literature denote that fear can be described by mood adjectives, including feeling frightened, anxious, or nauseous, and also via ratings of concern or worry (LaTour, Tanner, 2003, LaTour, Rotfeld, 1997, Henthorne, LaTour, Nataraajan, 1993, Rogers, 1983). Fear thus motivates actions aimed at reducing these unpleasant emotions (LaTour, Zahra, 1989, Tanner, Hunt, Eppright, 1991), it also relates to risk-taking behaviour which is now often addressed by social marketing efforts (Tudor, 2003). A number of approaches are used for advertising campaigns and promotional efforts to influence or change behaviour. These appeals range from humor to self-idealisation to the use of fear (Belch, Belch, 2004).

The use of fear as an advertising appeal raises the question on the appropriate severity of the threat. As a result many marketing researchers, believing that it is too difficult to implement properly, have questioned the use of fear appeal advertising messages (Rotfeld, 2000). However, the increase in various social problems and behaviours has forced many practitioners to reconsider the use of fear appeals in social advertising, because it seems that other types of advertising appeals are not having the intended behavioural effect. Different models to improve the effectiveness of fear appeal have been proposed. Tay, Ozanne and Santiono (2000) recommend the utilization of fear appeals should be segment specific as fear appeals have been found to influence various population segments differently (Quinn et al., 1992, Burnett, Wilkes, 1980, Burnett, Oliver, 1979 cited in Tay et al, 2000). Segmentation may be based on a variety of variables including age, sex and their involvement in the behaviour under investigation (such as smoking, drunk-driving or unprotected sexual contact).

Individuals need to be encouraged, reinforced, and supported to change their high-risk behaviour into healthy behaviour in order to prevent the spread of HIV/Aids (Fishbein, 2000, Lee, Green, 1991). Three variables in particular, namely attitude, norms and self-efficacy, are the function of underlying determinants. These determinants include beliefs about the outcome of behaviour, social and normative prescriptions within that population, and specific barriers to these actions. External influences should be included when evaluating these beliefs: cultural background, perceived vulnerability to infection and personality traits may have a mediating influence on attitudes, norms and self-efficacy beliefs (Fishbein, 2000). Culturally sensitive interventions have been found to more effectively create behaviour changes in high-risk populations such as adolescents. This finding implies that interventions which are based on sound theoretical knowledge of behaviour change (e.g. social learning theory, the health belief model, and self-efficacy theory) and which also take into account cultural beliefs and attitudes are more likely to succeed (Levinson, Sadigursky, Erchak, 2004).

Based on Leventhal's danger control/fear control framework, the Extended Parallel Process Model (EPPM) is an expansion of previous fear appeal theoretical approaches (Janis, 1967, Leventhal, 1971, Rogers, 1975, Rogers, 1983, Witte, 1992). According to the EPPM threat motivates action, and perceived efficacy determines whether the action taken controls the danger (protective behaviour) or controls the fear (inhibits protective behaviour). Individuals typically weigh their risk of actually experiencing the threat against actions they can take that would minimize or prevent the threat (Witte, 1992, Witte, 1994, Witte, 1998). Efficacy is an environmental or message signal that

may lead to perceived efficacy, which relates to an individual's cognitions about efficacy. Messages that portray efficacy focus on the effectiveness of the suggested response (i.e., response efficacy), and on the target audience's ability to carry out the suggested response (i.e., self-efficacy) (Rogers, 1983). Similarly, perceived response efficacy refers to an individual's beliefs that a response effectively prevents the threat (i.e. "I believe condoms prevent HIV contraction"), and perceived self-efficacy refers to an individual's belief in his or her ability to perform a recommended response (i.e. "I think that I can use condoms to prevent HIV contraction") (Rogers, 1983).

If results indicated high threat and low efficacy, theory indicates that the intervention was failing, because it was promoting fear control responses. Conversely, if the results of a survey indicated high threat and high efficacy, then the intervention was producing the desired actions (Witte, Allen, 2000). Individual differences however influence the assessment of threat and efficacy. Individuals evaluate the components of a message relative to their prior experiences, culture, and personality characteristics. Differing perceptions in different individuals influence consequent outcomes (Witte, 1992). Marketing communication has to take into account the cultural and economic fabric of society, with different types of people from different races (Lane, King, Russell, 2005). Research on race and marketing communication interventions suggest that race groups differ in responses to communication, advertising effectiveness and attitudes towards messages (Dines, Humez, 1995).

A study by Arthur and Quester (2004) aimed to clarify the role of fear in establishing the effectiveness of advertising when using fear appeals. They also examined the moderating role of coping appraisal in determining consumers' response to fear appeals and whether these processes apply equally to different segments or individual differences of consumers. Witte's (1992) Extended Parallel Process Model assessed perceptions of severity, susceptibility, response efficacy (the degree to which the recommended response effectively inhibits the threat from occurring), and self-efficacy (the degree to which the audience perceive their ability to perform the recommended response to prevent the threat) (Witte, 1992, Witte, 1994, Witte, 1998). Growing evidence suggests that well-designed, well-targeted, theory-based behaviour change interventions can be effective in reducing the spread of HIV/AIDS (Fishbein, 2000).

The Aids pandemic in South Africa is a major concern. According to Avert (2008) research shows that about 50 percent of HIV infections in South Africa are transmitted to people before the age of 20, with more than 5 million HIV positive people in a country with 48 million people. LoveLife is South Africa's major multi-million dollar HIV/AIDS prevention campaign (US\$12 million/annum), launched in 1999. It follows an informational appeal approach

and is an educational campaign that emphasizes condom use and “positive sexuality” (Green, 2004, cited in Green and Witte, 2006). LoveLife does not seem to be producing the expected results, and became the world's first organisation to have its funding discontinued by the Global Fund to Fight Aids, Tuberculosis and Malaria, during December 2005. The cut reflects debate about the effectiveness of loveLife's HIV-prevention programme and the viability of behaviour-changing HIV/AIDS education (Peng, 2006).

3. Rationale of the study

The main objective of this research study was to measure the influence of fear-based advertising appeals pertaining to HIV/AIDS in terms of the impact on behavioural intent and whether the use of fear increases the likelihood of adopting appropriate behaviour within a specific target segment. Structural equation modelling was used to investigate fear, attitude towards the advertisements, severity, susceptibility, response efficacy, and self efficacy to ascertain the influence of fear appeals on behavioural intent.

4. Research methodology

A qualitative study was utilised to explore in-depth responses via four focus groups. Following the focus groups a quantitative experimental study was conducted.

4.1. Sampling

The sample for the qualitative (40 respondents in total) and quantitative (360 respondents in total) studies included adolescents between the ages of 18 and 24 years, from the three main racial groups within South Africa. Mid-year estimates (2008) of the South African population (48,8m) indicate that the Black African race make up the majority of the country's population, 79%, followed by White 9.3%, Coloured 9.2 % and Indian or Asian 2.4% (Statistics South Africa, 2008). The HIV prevalence in the adolescent population, aged 15-24 years, is 7.6% amongst males and 27.8 % amongst females (Avert, 2008), thus a group representative of those affected strongly by HIV/AIDS.

Respondents drawn represented educated, middle to upper income groups. The focus on this specific population group can be explained based on their similarity to South Africa's major HIV/AIDS advertising campaign loveLife's target audience, as well as that this group is sexually active. They have income levels of R 6 880 to R 19 974 per month that enable them to

acquire media like television and magazines, they are also educated and literate with a matric (completed high school) or higher education, which enables them to understand advertising messages aimed at them (Saarf, 2007).

4.2. Methodology

Nine print advertisements and ten television commercials, tested for face validity by marketing research and advertising specialist, were used as experimental stimuli to be pre-tested in the focus groups. Each advertisement was rated according to the level of fear appeal perceived by means of a questionnaire based on a 5-point Likert scale (LaTour, Tanner, 2003, Witte, 1998). Three advertisements including low, medium and high fear appeals for print and television were selected based on the ratings from the qualitative research. A pre-test post-test, 3 X 2 between subjects, experimental design was used to collect data from 360 respondents. A convenient quota sampling method was employed. The presentation of various fear appeal advertisements was the experimental intervention while the likelihood of changing behaviour based on fear, attitude, susceptibility and efficacy was measured as the outcome. Respondents were given a self-completion questionnaire with questions based on a risk behaviour diagnosis Likert scale (Witte, 1998) prior to any intervention and the same behaviour scale post-intervention. Fear arousal was measured post-intervention by having respondents rate mood adjectives. Attitude towards the various fear appeal advertisements were also measured post-intervention by using summed scales (LaTour, Tanner, 2003, LaTour, Rotfeld, 1997). Efficacy measurements included response efficacy (effectiveness of suggested response, i.e. "Using condoms is effective in preventing HIV infection") and self efficacy (ability to carry out the suggested response, i.e. "I am able to use condoms to prevent getting HIV infection").

Based on the results from the experimental study as well as evidence from the literature, a proposed model to measure the impact of fear appeal on behavioural intent was constructed. The new proposed model in this study focuses on the equivalence of the Proposed Revised Protection Motivation Model (Arthur, Quester, 2004) and the Extended Parallel Process Model (Witte, 1992). It proposes that if a threatening stimulus (fear appeal) maximizes fear experienced by individuals, and the coping response will be effective in eliminating the fear, whilst individuals is capable of undertaking it, the stimulus will be effective in changing their attitude towards the stimulus and behavioural intent. The threat-appraisal variables, susceptibility and severity, will therefore indirectly influence behavioural change through the mediating variable fear, whilst the coping appraisal variables, response efficacy and self-efficacy will have a moderating influence in determining individuals' response to fear appeals.

5. Data analysis and major findings

Structural Equation Modeling (SEM), a technique that measures a set of dependent relationships simultaneously, was used for the proposed model to measure the behavioural effect of fear appeals in this study (Malhotra, Birks, 2007, Hair, Black, Babin, Anderson, Tatham, 2006). Structural equation modeling (SEM) and a path diagram were used to depict the relationships among the constructs of the proposed model. Multiple regression analysis was used to analyse the relationships between the dependent (behavioural intent) and the various independent variables (Hair et al., 2006, p. 176). Structural Equation Modeling was done in LISREL to estimate the dependence relationships in the model. The combined model used data of all experimental groups to determine goodness-of-fit indices.

An estimated covariance matrix was calculated to assess the degree of fit to the observed covariance matrix. Goodness-of-fit was indicated as the degree to which the actual correlations (or the covariance matrix used as input) were predicted by the model. In this instance the model produced an estimated covariance matrix that was within sampling variation of the observed covariance matrix and therefore illustrates a good model that fitted well (Malhotra, Birks, 2007, Hair et al., 2006). Table 1 illustrates the goodness-of-fit indices for the model.

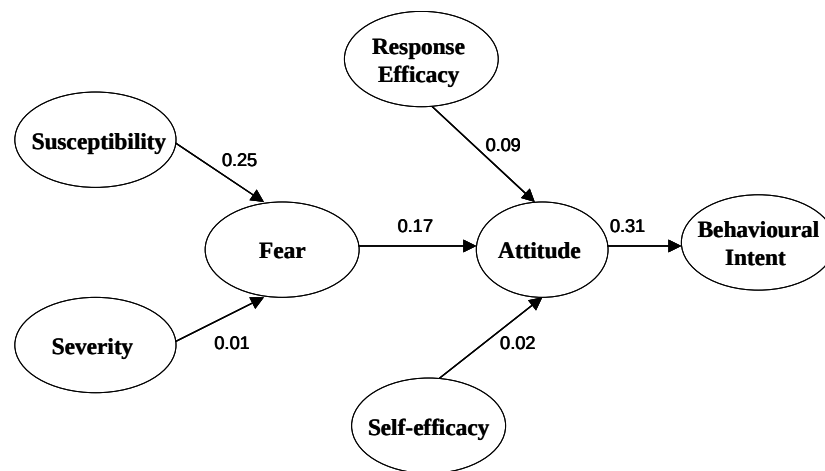
The *p*-values for the Normal Theory Weighted Least Squares Chi-Square and the test of close fit of the RMSEA resulted in no statistically significant ($p < 0.01$) differences indicating that the fit is good. The Root Mean Square Error of Approximation (RMSEA) was 0.057 which indicated good fit compared to the acceptable 0.05 to 0.08 range (Hair et al., 2006). The Normed Fit Index (NFI) and the Comparative Fit Index (CFI) is above the 0.9 level and indicate a good goodness-of-fit. The Goodness of Fit Index (GFI) and the Adjusted Goodness of Fit Index (AGFI) also resulted in values greater than the acceptable 0.9 level (Hair et al., 2006).

Table 1

Goodness-of-fit indices for model

Goodness-of-fit indices	Values
Normal Theory Weighted Least Squares Chi-Square	19.31 (P = 0.023)
Root Mean Square Error of Approximation (RMSEA)	0.057
P-Value for Test of Close Fit (RMSEA < 0.05)	0.33
Normed Fit Index (NFI)	0.93
Comparative Fit Index (CFI)	0.96
Goodness of Fit Index (GFI)	0.98
Adjusted Goodness of Fit Index (AGFI)	0.95

Figure 1 illustrates the results obtained from SEM analysis. Based on the SEM analysis interpretations were made of each relationship in the model. The probability that estimates were significant (i.e. not equal to zero) were used to make estimates of the values of constructs in the model (Malhotra, Birks, 2007, Hair et al., 2006).



Chi-Square=19.31; Df=9, P-Value=0.2265; RMSEA=0.057

Figure 1. Structural equation model of fear appeal and behavioural intent

The estimated coefficients of the first two relationships, namely susceptibility (0.25) and severity (0.01), illustrated that susceptibility had the greatest impact on fear, and severity was insignificant. This was in-line with the findings of Arthur and Quester's (2004) study, which also reported a causal relationship between susceptibility and fear, but not between severity and fear. They conclude that fear is an emotional response to a stimulus and many of the antecedents may be more affective than cognitive. This finding partially supports Witte's (1992, 1998) explanation that an individual evaluates the perceived threat of the danger, and if the appraisal of threat results in moderate to high perceived threat, then fear is caused. However, the findings of this study only indicate that the susceptibility construct of threat influences the relationship with fear and not the severity construct.

Both response efficacy and self efficacy indicated insignificant relationships with attitude. The study by Arthur and Quester (2004) illustrates similar results stating that response efficacy and self efficacy do not necessarily act as moderating variables in the fear-behavioural-intent relationship. They also confirm fear as the primary driver for change in behavioural intent.

Witte (1998), on the contrary, states that an individual that experiences a threat is motivated to begin a second appraisal, which is an assessment of the efficacy of the suggested response. Thus, when perceived threat and perceived efficacy are high it stimulates adaptive actions such as attitude, intention, or behaviour changes that control the danger, however no support for this was found in this study.

Other positive causal relationships included fear to attitude (0.17) and attitude to behavioural intent (0.31). This is in-line with theory indicating that the higher a fear appeal the more effectively it influences attitude and finally behaviour (LaTour, Tanner, 2003, Snipes, LaTour, Bliss, 1999, Donovan, Jalleh, Henley, 1999, LaTour, Rotfeld, 1997, LaTour, Snipes, Bliss, 1996, Henthorne, LaTour, Natarajan, 1993). Arthur, Quester (2004) confirm this finding stating that susceptibility influences behavioural intent indirectly through the mediating variable fear.

6. Conclusions

Fear appeals can be a strong motivator if accompanied by high efficacy messages, to improve knowledge and to influence attitudes about HIV/AIDS. Susceptibility to the disease among adolescents also influences behaviour.

The results of the SEM model confirmed a causal relationship between susceptibility and fear, showing that susceptibility had the greatest impact on fear. On the contrary, severity was insignificant and had no effect as an antecedent to fear. This implies that respondents feel susceptible to the threat of contracting HIV/AIDS and this influences their fear experienced, but although the disease is severe this aspect does not influence their fear experienced or ultimately their behaviour. Adolescents thus evaluate the perceived threat of the danger of HIV/AIDS, and if this appraisal of their susceptibility results in moderate to high perceived threat, then fear is caused.

Response efficacy and self efficacy indicated insignificant relationships with attitude and it can be concluded that these constructs do not stimulate adaptive action such as attitude or behaviour change and do not necessarily act as moderating variables in the fear-behavioural-intent relationship.

Fear is the primary driver for change in attitude and behavioural intent, as per the classical fear appeal theory where outcomes relate to acceptance of a message's recommendations. When individuals are confronted with a threatening stimuli and experience fear, they try to eliminate the unpleasant feeling by intending to perform a certain coping response to reduce the threat. From this it seems that the higher a fear appeal the more effectively it

influences attitude and finally behaviour, whilst susceptibility influences behavioural intent indirectly through the mediating variable fear.

From this study it is evident that fear appeals in HIV/AIDS communication are effective to change behaviour, and that HIV/AIDS marketing communication programmes are of central importance in slowing down the spread of the disease among a specific target segment, namely South African adolescents. In the development of future HIV/AIDS advertising campaigns targeted at adolescents, social marketing communication practitioners must consider to communicate the target audiences' susceptibility to the disease. This will ensure that adolescents experience a relevant fear that will drive them to change the way they think about HIV/AIDS and ultimately influence them to modify their sexual behaviour to safe sexual behaviour.

Limitations of this study include that SEM generally requires a larger sample relative to other multivariate approaches, since larger samples generally produce more stable solutions (Hair et al., 2007). Furthermore, processing and responses to advertising appeals do not always occur immediately after exposure to an advertisement intervention, referred to as the "delayed effect." This study was conducted in an experimental laboratory setting and therefore did measure this effect over time. Areas for future research include replication studies based on the proposed model to measure fear appeal effectiveness on other samples in different settings.

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Underground Economy and Corruption: the Major Problems of the Romanian Economy

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Abstract. *This paper aims to show characteristics of some negative phenomena such as corruption, tax evasion and underground economy, in the case of Romania. Data on these phenomena are actual and capture the characteristics of our country, comparatively with the other EU countries. Current financial and economic crisis have generated a worsening of these phenomena which, in turn, have deepened the crisis. Limiting tax evasion and fiscal corruption can and should accept to be one of the solutions for improving the public financial balance for Romania.*

Keywords: tax evasion; underground economy; corruption.

JEL Codes: E62, H26.

REL Codes: 8B, 8K.

1. Introduction

Romania is one of the EU states that have serious unresolved issues regarding tax evasion and corruption.

Tax evasion has some weak points – monitoring, public transparency, limitation and restriction. It is a phenomenon that increasingly proliferates in our society, aided by public system corruption and bureaucracy, and the resignation of the regulatory institutions, by an attitude of "We do not have what to do."

High corruption is, in turn, a permanent issue in the Romanian society. Corruption has a strong social and cultural determination. This negative phenomenon, almost universal at all levels of government and the state financial control bodies, led to one of the highest level in the EU in terms of tax evasion and tax arrears.

These negative phenomena adversely affect the level of taxation, economic growth, leading to an increased general government deficit and debt (Braşoveanu, Obreja Braşoveanu, 2008a, Braşoveanu, Obreja Braşoveanu 2008b).

In order to lead our country out of this economic and financial crisis and in order to meet the nominal convergence criteria imposed by the EU on public finances, it is a necessity to decrease these phenomena and to increase the collection of public funds on this path (Brondolo, 2009, Gupta, 2005).

2. Tax evasion and underground economy

Tax evasion is the main cause of the reduction in tax revenue. It is a negative economic phenomenon, present in all economies, in different proportions, but high, due to many determinants, including psychological factors (Alm, Martinez-Vazquez, 2007).

Human nature is against taxation. The state's role should be to limit and restrict this phenomenon and to bring in business economic environment the real amounts stolen through tax evasion.

Tax evasion can be defined as "*all legal and illegal procedures by which, those interested escape, in whole or in part, their taxable material obligations under the tax laws*" (Văcărel, 2008, Rădulescu, 2007).

Based on criteria of legality, tax evasion may be lawful, in consequence allowed, and illegal, fraudulent or tax fraud. Allowed tax evasion can be viewed as a legal reorganization of a business so as to minimize the tax obligation, while illegal tax evasion can be viewed as a business reorganization, for the same purpose. Morally, certain types of avoidance the taxation are as bad as

fraudulent evasion and therefore should be treated in the same perspective. In practice, however, often there is no fracture between legal and illegal, but rather continuous, successive attempts to exploit loopholes in the law leading contributor to the illegal from the legal area. Most often, the illegality is manifested through the preparation of false statements, keeping double accounting records, false, and withholding material taxable, declaring taxable income lower than actual.

Tax evasion is also divided into identifiable, by the state financial control bodies, and unidentified. The proportion of identified tax evasion is too small compared to the total size of tax evasion, including tax evasion and underground economy, tax evasion that is unidentified. Tax evasion is present both in the visible economy, but mostly in the underground economy.

Underground economy exists in all countries, with different proportions in GDP. Underground economy appears in the literature under various names (over 20): occult, hidden, disguised, parallel, annex, dangerous, ghost, invisible, informal, dual, cash, informal, secondary, illegal, gray, shade, unmeasured economy, or even anti-economy. Pierre's definition according to which the underground economy is "all economic activity that occurs outside of the criminal laws, social or fiscal or escape from national accounts, is considered by specialists as the most comprehensive definition of the informal economy" (Radulescu, 2007).

There is a rich literature on the possible causes of the underground economy, which distinguishes between these three types of causes:

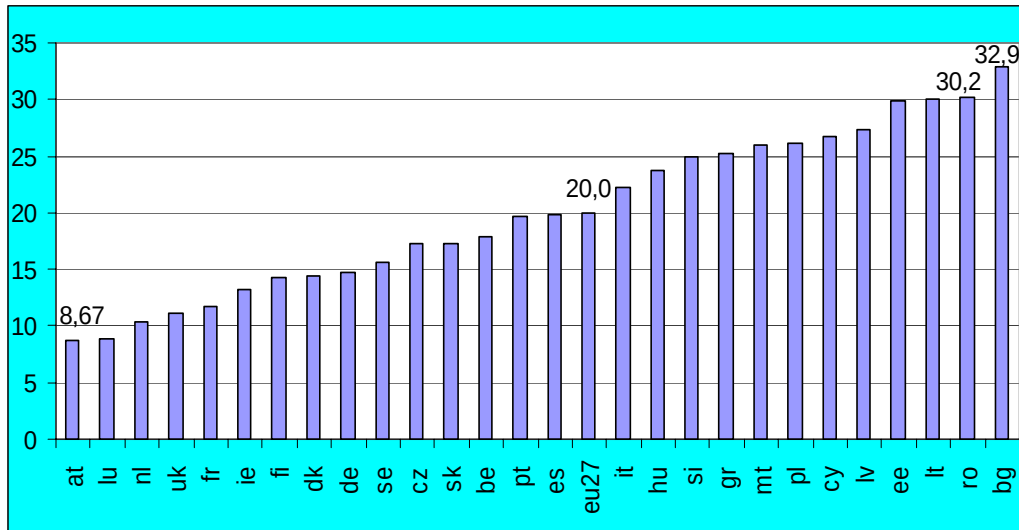
- fiscal pressure of the direct and indirect taxes (Caballé, Panadés, 2007);
- fiscal pressure of the regulations imposed by the State (Levaggi, 2007);
- fiscal morality: the attitude of citizens towards the state (McGee, 2005, Torgler, Valev, 2007).

A high dimension of the underground economy has as main negative effects the decrease of the growth rate of the formal economy. For Romania, the statistics are alarming with regard to this phenomenon and the negative effects of the increased size of the shadow economy are strongly felt both in GDP and the tax revenue.

Our country has a share of 30.2% of GDP of the underground economy in 2010, only Bulgaria is worst at this chapter. The average for the EU-27 is 20% of GDP, which makes our country to have more than 10 pp comparing to this average, the difference could lead to obtaining a considerable sum for the national public budget, assuming that fiscal discipline would increase.

We note that the share of the underground economy is less than 15% in the Nordic countries, Austria, Germany, France, Ireland and Great Britain,

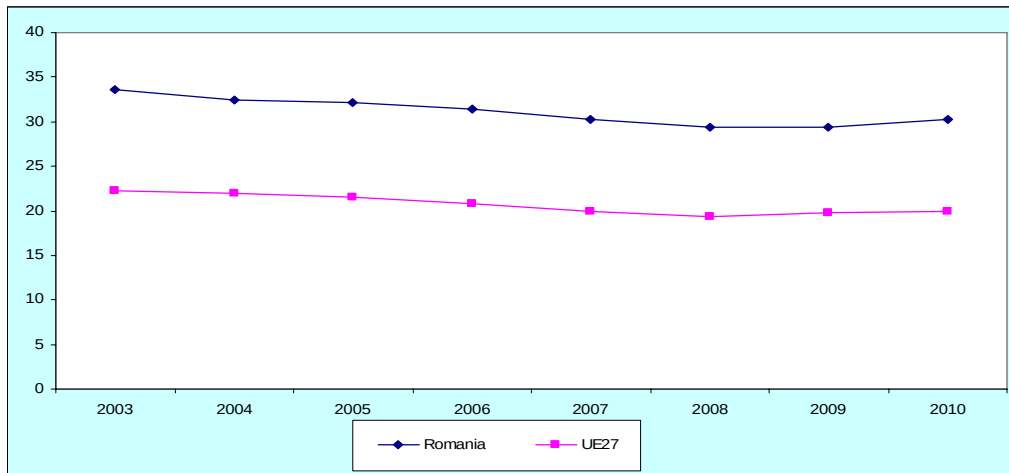
Luxembourg and the Netherlands. Even if these states were recorded for the low percentage, the difference might be taken into account, considering that the smallest amount of it is still significant, being 8.67% (in Austria).



Source: Prof. Friedrich Schneider estimates.

Figure 1. *The underground economy in EU member states in 2010*

Analyzing the evolution of the underground economy in the period 2003-2010, the comparison between Romania and EU-27 average member, it can be seen a slight reduction in the size of this phenomenon, about 2 percentage points for both our country and for the EU-27 average. The difference between Romania and EU-27, however, is relatively constant at around 10 percentage points, which clearly reflects a systemic problem of our economy.



Source: Prof. Friedrich Schneider estimates.

Figure 2. *The underground economy in Romania and the EU27 average in 2003-2010*

3. Corruption

For a long period, economic analysts have considered corruption as a cultural and political matter, and it might be impossible to decrease or to remove it (Andrei, Roșca, Matei, 2008). Thus, elimination of corruption was not seen as an objective of the reforms of development, but it was considered a natural component of a country, as exogenous, like, for example, its geography (Martinez-Vasquez, Arze, Boex, USAID, 2006).

Corruption manifests itself in different areas, in various shapes and complex interactions, but it dominates the tax and budget arena (the number of cases and especially the size, as this high-level corruption here). Corruption is rampant not only in developing countries but also in developed countries. Although the potential for corruption is specific to each country, it was found that the types and extent of budgetary and fiscal corruption are influenced by the country's general tax structure and fiscal management systems used by that country (Martinez-Vasquez, Arze, Boex, 2006). For example, a complex tax system, with large variations in tax rates, can cause taxpayers to bribe collectors of tax revenue. Also, poor control of expenditures reduces the risk that officials should be caught and it stimulates corruption.

Oxford English Dictionary defines corruption as *"the perversion or the destruction of integrity or reliability in the performance of public duties by bribery or favor."* According to Romanian Explanatory Dictionary, corruption is *"departure from the morality, from the honor and from the duty."* The most

used definition of corruption in the public sector: *"public servants abuse for their earnings."* Public office is abused in order of their earnings when a public authority to accept, request or leads to bribery. Public position can be abusively used for personal benefit even if no bribery occurs, through patronage and nepotism, theft of state assets or diversion of public revenues. Not all forms of corruption involve direct monetary payments; government officials can get more subtle benefits from corrupt acts, such as political support.

There must be made the distinction between corruption and tax evasion: even if tax evasion may include bribe an official, tax evasion itself is the act of the private entity and it does not require public sector officials.

When it comes to corruption in terms of fiscal and budgetary policies, it can take three forms:

1. *Corruption at the level of the public funds or tax collection;*
2. *Corruption at the level of the distribution of expenditures;*
3. *Corruption from quasi-fiscal activities (such as privatizations).*

Although the negative relationship between corruption and fiscal system is intuitive and apparently, this negative correlation coefficient does not necessarily imply a causal relationship between two variables. For example, it might be the case that both high corruption and low tax revenue collection can be caused by some common external factors, such as low levels of development and high levels of poverty. Such examples show that there is a general increase in tax revenues just by lowering corruption.

Possible explanations for the negative relationship between corruption and revenue collection:

1) whether the official who collects tax revenues are involved in corrupt practices (either by direct theft of public funds or by allowing taxpayers to avoid paying taxes in exchange for bribes), then corruption will generate a decrease in direct tax revenue size collected.

2) corruption may act indirectly to reduce the tax base or the level of the entire economic activity, finally resulting in the reduction of budgetary revenues.

a) corruption reduces the tax base by reducing the formal sector; the higher the corruption and underground economy, the lower is the tax base (formal sector) and the lower is the revenue collection. The direct relationship between the size of the shadow economy and corruption has been established based on data from 145 countries by Friedrich Schneider (2007).

b) corruption leads to decreases in GDP or economic growth, so it reduces the tax base in the whole society (Braşoveanu, Obreja Braşoveanu, 2009b);

c) corruption may direct an important part of public funds to extra budgetary accounts. These funds are used less effectively in areas that are not a priority and can be removed from their destination;

d) other mechanisms: corruption increases transaction costs of the business, corruption leads to lower investments, corruption decreases productivity, as firms compete in terms of bribes and not quality, companies that are successful in illegal businesses in the informal sector do not pay taxes for these activities, as a result, the underground firms have a competitive advantage over firms in the formal economy, some of which were forced to leave the formal economy.

The appearance and the degree of development of corruption are determined by two major factors: motivational factors and the existence of opportunity.

a) Motivational factors of corruption

Corruption is toward the rational self-interest. Most important motivation to become corrupt is that of personal financial gain. Corrupt behavior of public servants can be explained as a result of economic calculations. Anticorruption strategies should be oriented towards economic initiatives and opportunities for civil servants leading to this behavior.

They were identified several motivating factors that determine the decision to become corrupt officials: *ethical and moral standards, the probability of being discovered, small penalty, reward of officials, pressure from tax evaders.*

There is a double causal relationship between tax evasion and corruption: the presence of tax evasion will generate motivation for corruption because it increases the bribe offered by the taxpayers, while corruption decreases the effectiveness of penalties and the probability of auditing as a tool of control. Tax evaders believe that, even if discovered, they can avoid legal penalties or other sanctions by bribing auditors.

The degree of tax evasion in an economy is determined primarily by the general level of taxation stipulated legal, not by the level determined by the revenues collected. High levels of taxes and low quality of public services lead to higher levels of tax evasion. The high level of taxation is also an explanation for tax evasion.

It is also the current situation in which our country finds: although we have some of the highest tax rates for both VAT and social contributions as required (two components that hold more than two thirds of modern tax systems of EU Member States), our country is the last of the EU in terms of government revenue collected as a share of GDP. This is due to the high level of tax evasion. Corroborating these facts with the low quality of public services, it is clear that tax evasion will tend to increase during the next period. Corruption is undoubtedly the engine of this growth.

b) Opportunities for corruption

A proverb says “I do if I could, but I can not, so do not do” (Martinez-Vasquez, Arze, Boex, 2006). This statement illustrates the difference between the motivational factors of corruption and the existence of opportunity for corruption. Even if an officer is inclined to carry out acts of corruption, they may not materialize unless there is an opportunity. There was thus a proportional increase in the level of corruption with the opportunities offered by the structure of tax administration.

Important factors that create the opportunity for corruption in government revenue administration: *lack of vigilance and control in tax administration, complexity of the tax system, discretionary power of civil servants, civil politicization public.*

Staff changes in the tax system through political reason are a common practice in developing countries, where labor laws are absent or weak. In some cases the changes are so large and important so that the stability of the institutions is shaken. Where the number and frequency of change of civil servants is high, officers temporarily see their positions as opportunities to get rich quickly. Usually, officers are party members serve its political interests, rather than community interests. Corruption among officials increases due to the lack of merit-based recruitment practices, lack of regular inspections and lack of civil protections against abuses of authority by superiors. Often, even if there are regulations against such abuses, officials do not know their rights and obligations, or are blackmailed by politicians.

Romania is perceived as one of the most corrupt countries in the EU, with Greece and Bulgaria (see annual reports of Transparency International in 2009 and 2010 Corruption Perceptions Index (CPI)).

Table 1

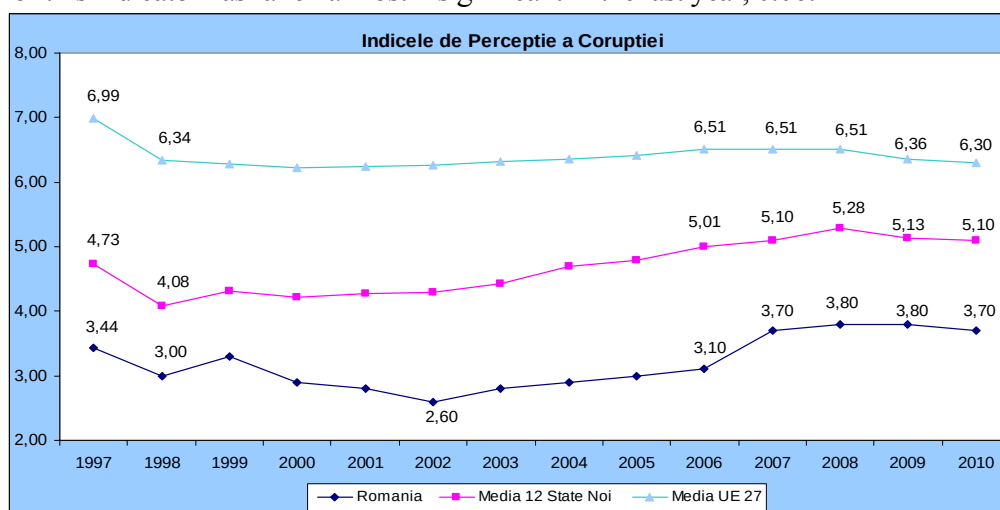
Evolution of the CPI for the EU in 2008-2010

		2008	2009	Changes 09/08	2010	Changes 10/09
1	Denmark	9.3	9.3	0	9.3	0
2	Sweden	9.3	9.2	-0.1	9.2	0
3	Finland	9	8.9	-0.1	9.2	0.3
4	Netherlands	8.9	8.9	0	8.8	-0.1
5	Luxembourg	8.3	8.2	-0.1	8.5	0.3
6	Germany	7.9	8	0.1	7.9	-0.1
7	Ireland	7.7	8	0.3	8	0
8	Austria	8.1	7.9	-0.2	7.9	0
9	U.K.	7.7	7.7	0	7.6	-0.1
10	Belgium	7.3	7.1	-0.2	7.1	0
11	France	6.9	6.9	0	6.8	-0.1
12	Slovenia	6.7	6.6	-0.1	6.5	-0.1

		2008	2009	Changes 09/08	2010	Changes 10/09
13	Estonia	6.6	6.6	0	6.5	-0.1
14	Cyprus	6.4	6.6	0.2	6.3	-0.3
	UE 27	6.51	6.36	-0.15	6.3	-0.06
15	Spain	6.5	6.1	-0.4	6.1	0
16	Portugal	6.1	5.8	-0.3	6	0.2
17	Malta	5.8	5.2	-0.6	5.6	0.4
18	Hungry	5.1	5.1	0	4.7	-0.4
19	Poland	4.6	5	0.4	5.3	0.3
20	Czech Republic	5.2	4.9	-0.3	4.6	-0.3
21	Lituania	4.6	4.9	0.3	5	0.1
22	Slovakia	5.9	4.5	-1.4	4.3	-0.2
23	Letonia	5	4.5	-0.5	4.3	-0.2
24	Italy	4.8	4.3	-0.5	3.9	-0.4
25	Greece	4.7	3.8	-0.9	3.5	-0.3
26	Romania	3.8	3.8	0	3.7	-0.1
27	Bulgaria	3.6	3.8	0.2	3.6	-0.2

Source: Transparency International Romania.

But 2010 is a better year for our country than for Greece and Bulgaria, which had a worsening in the ratings comparing to our country, so that Romania has climbed two places compared to 2009. In 2010 compared to 2009 it may be seen a worsening of the CPI, so a higher perception of corruption for 15 countries, an improvement in this perception for the six states and six countries keep the same CPI. EU 27 average for this indicator has fallen almost insignificant in the last year, 0.06.



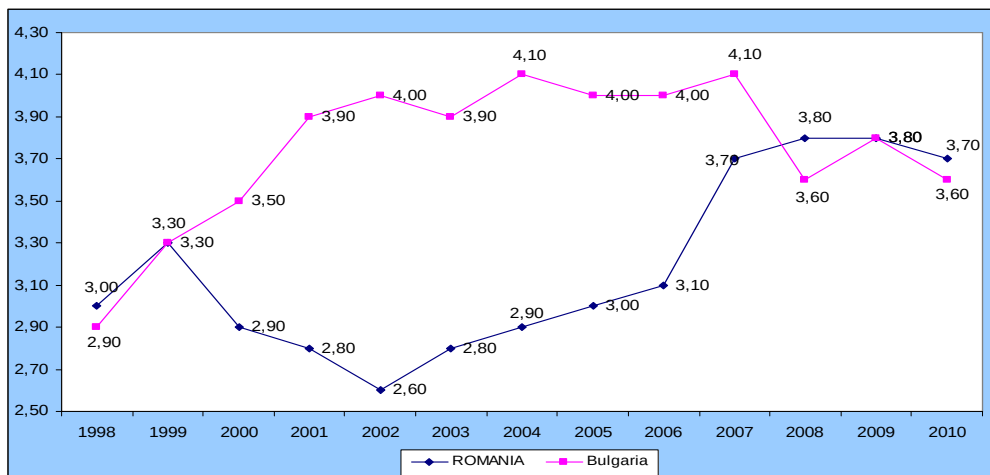
Source: Transparency International Romania.

Figure 3. Evolution of CPI in the EU 1997-2010

If you compare the evolution of CPI in our country and the EU-27 average or the average determined for the 12 newest EU member states, it might be observed:

- a parallel evolution in the period 1997-2010 relative to the average 12 NMS, this means that the gap of our country from this average has remained relatively constant, ie 1.3,
- a reduction of the gap compared to EU 27 average, from 3.55 in 1997 and 3 points, 34 points in 1998 to 2.6 points in 2010.

Overall this period, Romania and Bulgaria shared the last two positions, our country is really perceived to have, in general, a higher corruption than neighboring country during 1998-2010.



Source: Transparency International Romania.

Figure 4. Evolution of CPI in Romania and Bulgaria 1997-2010

4. Conclusions

The behavior of some economic agents to not pay the taxes or the contributions, because they are not sanctioned by the state, it means the increase of taxation on the shoulders of those who are honest and pay these obligations. Reducing tax evasion and corruption, and tax arrears would be equivalent with reduction the actual taxation.

Tax evasion and great corruption, unsanctioned by state authorities, have degraded our society also from a moral perspective, and it is unreasonable for those who break the rules to succeed, and those who are correct pay also for the incorrect ones.

Corruption and tax evasion are therefore major problems of our society, even more major in the context of the current economic and financial crisis and our country's desire for EU integration. These negative phenomena should be treated with priority, and legislative and administrative reforms should be supported by a careful monitoring of these phenomena and their reduction.

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List of abbreviations and symbols

GDP = gross internal product

EU 27 = European Union after 1 January 2007, with 27 Member States

27 EU Member States: AT = Austria, BE = Belgium, BG = Bulgaria, CY = Cyprus, CZ = Czech Republic, DE = Germany, DK = Denmark, EE = Estonia, EL = Greece ES = Spain, FI = Finland, FR = France, HU = Hungary, IE = Ireland, IT = Italy, LT = Lithuania, LU = Luxembourg, LV = Latvia, MT = Malta, NL = Netherlands, PL = Poland, PT = Portugal, RO = Romania, SE = Sweden, SI = Slovenia, SK = Slovakia, UK = United Kingdom

Health Insurance Participation: The Role of Cognitive Ability and Risk Aversion

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Abstract. *The decision to enroll in employer-offered health insurance or purchase insurance in the individual market requires consumers to consider numerous possibilities, most in an environment characterized by imperfect information. This paper introduces an adapted behavioral framework to predict health insurance coverage among employed workers. Results indicate that consumers in the higher quartiles of intelligence are increasingly more likely to have enrolled in an employer's health insurance policy or purchased insurance in the individual market. Also, respondents with a higher tolerance for risk are less likely to be insured than those less tolerant of risk.*

Keywords: consumer behavior; health insurance; intelligence; risk tolerance; uninsured.

JEL Codes: D12, D14, J24.

REL Code: 7A.

Introduction

Health insurance is a financial product that simultaneously reduces one's exposure to dramatic financial loss (Ehrlich, Becker, 1972) and helps assure access to acute and preventive medical care that is associated with improved health status (Ross, Mirowsky, 2000). Like most financial decisions, the decision to enroll in employer-offered health insurance or purchase insurance in the individual market requires consumers to consider numerous possibilities. For example, a consumer must take into account whether medical care will be necessary, how much the medical care will cost if needed, the level of resources available to meet both certain and uncertain future medical care needs, and the opportunity cost of using resources for insurance (Nielsen, Garasky, 2008). To complicate matters further, health insurance purchasing decisions are made in a context of an individual's unique aversion to risk. Consumers, then, must assess the uncertain costs of purchasing insurance (in the form of premiums, deductibles, co-payments, opportunity costs) while assessing their willingness to bear physical and financial risk.

To provide some insight into the role that cognitive ability and risk tolerance play in consumers' decisions to enroll in employer-provided health insurance or purchase insurance in the individual market, this paper introduces an adapted behavioral framework that models the probability that employed workers have health insurance.

1. Empirical framework

The empirical framework for this research draws from Andersen's behavioral model of health services utilization (Andersen, 1995). The original behavioral model, and the research communities' incremental adaptations (Aday, Awe, 1997, Aday, Fleming, Andersen, 1984, Andersen, 1995, Andersen, Rice, Kominski, 2001), predicts that an individual's use of medical services is a function of several characteristics that Andersen labeled as predisposing characteristics, enabling characteristics, and need based factors. *Predisposing characteristics* that influence one's interactions with medical services include family composition, social and demographic characteristics, and health beliefs (e.g., the attitudes, beliefs, and knowledge), and other factors – including genetic and psychological characteristics – that influence one's probability of seeking care. *Enabling characteristics* are family – and community – specific resources related to medical service access, including income, financial resources, health insurance, and one's attachment to a medical care provider. Community-specific enabling characteristics include the community's mix of physicians and hospitals,

population density, proximity to medical care providers, and the community's attitude about the use of medical services.

Variations of the behavioral model developed by Andersen are primarily used by economists, sociologists and health policy analysts who are interested in the dynamics of medical care access and utilization, particularly in the description and analysis of various populations' access to medical services (Aday et al., 1984, Aday, Awe, 1997, Andersen, 1995, Andersen et al., 2001). This original behavioral framework suggests that enabling resources are influenced by predisposing characteristics. For example, an individual's income (an enabling resource) is a function of education, occupation, and other enabling resources. Similarly, we estimate the unique contribution of one's psychological characteristics such as intelligence and risk tolerance on the enabling resource, health insurance.

2. Data and sample

To investigate the relationship between cognitive capacity and health insurance, this study uses the National Longitudinal Survey of Youth 1979 (NLSY79), a nationally representative panel of 12,686 respondents managed by the Center for Human Resource Research at The Ohio State University. The NLSY data contain detailed information on individual health insurance coverage as well as information on respondents' behavioral, socioeconomic and demographic characteristics. The 1979 wave is a national survey of individuals born between 1957 and 1964. The NLSY79 has interviewed the same individuals between 1979 and 2006 with 22 waves of this panel beginning in 1979 (Haurin, Gill, 1987). For this study, we use the health insurance related information from 2006 due to availability of detailed health insurance related data in this most recent NLSY survey. Because our research goal is to understand the characteristics of those who choose to participate in employer-sponsored or privately purchased health insurance plans, individuals who are unemployed and those who receive Medicaid are excluded from the study.

3. Variables

Dependent variable

The dependent variable for this study is participation in employer-sponsored or privately-purchased health insurance plans. This is a binary variable coded "1" if the respondent has employer-sponsored or privately-purchased health insurance and as "0" otherwise.

Independent variables

The explanatory variables are comprised of the various predisposing characteristics and enabling resources drawn from the behavioral model of health service utilization (Aday, Awe, 1997, Andersen, 1995). Specifically, the primary predisposing characteristic of interest here is intelligence. Additional predisposing characteristics included as controls are demographics, social structure, health belief, genetic factors and individual risk tolerance.

The demographic and household components include family size, gender, marital status, age of the respondent and children. Age and family size are continuous variables; gender is binary coded as '1' for female and '0' if male; having children is also binary coded as '1' for having children and '0' if otherwise. For marital status, the married variable is included as reference and is compared against the single, divorced/separated and widowed variables, which are dummy coded and included in the model.

The social structure components comprise of educational attainment, work and race related information. Educational attainment of less than high school is used as the reference variable and compared against variables corresponding to completion of high school, some college, college degree and graduate studies. Occupation related controls include job tenure and hours worked per week (as a proxy to control for full time and part time employment); and binary coded variables for white collar job and union membership. In the case of race, White variable is used as the reference and is compared against Black, Hispanic and other races. The health beliefs and practices components include binary coded variables for smoking, reading nutrition labels before grocery purchase and exercising regularly.

The binary variables for mother and father living are coded as '1' if alive and '0' if not. These variables are used as proxies for unmeasured genetic characteristics that may be associated with respondents' life expectancy. Psychological characteristics included in the model are risk tolerance and IQ. The risk tolerance variable is continuous whereas the IQ variable is split into quartiles. Quartile 1 is used as reference and is compared against the quartiles 2, 3 and 4 of intelligence. Enabling resources that we model as correlates (controls) of health insurance status include family income, homeownership, and region of residence in the United States. Income is included as a continuous natural log. With respect to region, living in the West is included as reference, whereas living in the Northeastern, Northcentral and Southern United States are included as binary variables. Homeownership is coded as '1' if the respondent owns home and as '0' if the respondent is a renter.

Measurement of risk tolerance

Following Amuedo-Dorantes and Pozo (2002) study using the NLSY79, we created an indicator of respondents' risk tolerance using responses to questions from the 2006 wave that addressed respondents' attitudes towards risk. The NLSY risk variable is included as a predisposing characteristic and coincides with those created by Lusardi (1998) from the HRS dataset.

Measurement of intelligence

NLSY participants completed the Armed Services Vocational Aptitude Battery in 1980, which is transformed into an intelligence percentile using the Armed Forces Qualifying Test. The test is demonstrably equivalent to an IQ test, and correlates strongly with other tests of cognitive ability (Glaeser, Mare, 2001). Intelligence is coded into quartiles.

4. Analysis

Descriptive statistics

A descriptive statistical analysis is initially performed to examine the demographic composition, social structure, health beliefs, genetic as well as psychological factors and enabling characteristics for both insured and uninsured. Means tests are also performed to determine whether there exist significant behavioral, socioeconomic and demographic differences between the insured and uninsured groups of respondents.

Health insurance status

This study examines the determinants of having health insurance after controlling for the predisposing and enabling characteristics based on Andersen's behavioral model. The dependent variable is binary; hence a logistic estimation technique is used to calculate the coefficients of the hypothesized variables (Wooldridge, 2006). We estimate the following model for this analysis:

Health insurance status = $f(\text{demographic composition, social structure, health beliefs, genetic factors, psychological factors, income, homeownership, region})$

5. Empirical results

Descriptive statistics

Table 1 shows the demographic characteristics, social structure, health beliefs, genetic and psychological factors, and enabling characteristics of the sample. The demographic characteristics show that a higher percentage of

insured are women (52.3%) and married (65.8%). The descriptive statistics also show that a higher percentage of uninsured have not attended college (65.3%). Furthermore, a significantly higher percentage of the insured hold white collared jobs (40.8%) or belong to a union (21.0%); and work for 40 hours or more (41.1%) in a week. Besides, while 69.5% of uninsured are smokers; a significantly higher percentage of the insured read nutrition labels (47.3%) and exercise regularly (51.0%). Also the parents of a greater percentage of the insured are still living. A significantly higher percentage of the insured are in the third and fourth quartiles of intelligence; whereas a higher percentage of the uninsured are in the first and second quartiles of intelligence. The descriptive composition of enabling resources reveals that the insured have higher average family income (\$80,877) when compared with the uninsured (\$30,992). Higher percentages of the insured are homeowners and live in the Northeastern or Northcentral United States.

Predictors of health insurance participation and discussion

Table 2 shows the logistic regression estimates of participation in health insurance plans. The results show that several enabling resources described in Andersen's behavioral model are positively associated with being insured, including income, homeownership and residence (Northeast). Compared to the married respondents, the single, divorced or separated and widowed respondents are less likely to have health insurance. Also, compared to individuals who have not completed high school, educational attainment of high school or higher increases the likelihood of being insured. Among occupational characteristics, longer job tenure is a positive predictor of having health insurance. Individuals who are more conscientious about taking care of their health, as proxied by reading nutrition labels before purchasing groceries, are more likely to be insured; conversely, individuals who are smokers are less likely to be insured.

With respect to the characteristics of interest to us, the predisposing characteristics intelligence and risk tolerance are significantly associated with being insured after controlling for all other characteristics identified in our modified behavioral model and available in the NLSY data. Notably, consumers in the higher quartiles of intelligence are increasingly more likely to have health enrolled in an employer's health insurance policy or purchased insurance in the individual market. Also, respondents with a higher tolerance for risk are less likely to be insured than those less tolerant of risk.

6. Conclusion

This paper uses data from NLSY79 to investigate whether intelligence and risk tolerance play a role in an individual's decision to purchase health insurance. Importantly, the respondents in this data set are between the ages of 37 and 49, thus comprising of young baby-boomers in the wealth formation phase of their life cycle. As a product that reduces both the probability of an income shock by improving access to preventive and acute medical care, and as a product that reduces the magnitude of any financial shock that may arise through an unexpected health event, health insurance needs to play a role in the financial strategies for this cohort. Prior research has demonstrated the household-level effects of individual-level insurance status (Nielsen, Garasky, 2008). In this context, health economists and policy makers must continue to exploit data that offer insights into how the life course differs by various behavioral and risk related characteristics and the role that health insurance plays in protecting the physical and economic well-being of individuals. As the debate on health care and health insurance coverage continue across the nation, the lower participation rates among individuals with lower intelligence and higher risk tolerance combined with the negative association between lower levels of education and health insurance coverage pose a serious challenge for policy makers and health economists who are trying to develop ways to increase health insurance coverage in the population. The results of this study are interesting in that consumers with lower cognitive capacity and higher risk tolerance are making decisions about health insurance that are different than their higher-capacity and lower risk tolerant peers. Economists, policy makers and scholars of health insurance and health care utilization need to further investigate these relationships in the future.

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Table 1

Descriptive statistics and T tests

Variables		All	Insured	Uninsured	T test	Sig
Overall		100.00%	81.70%	18.30%		
Predisposing characteristics						
<i>Demographic</i>						
Age	Continuous	44.66	44.69	44.53	2.01	**
Female	Equal to 1 if yes; 0 otherwise	51.08%	52.34%	45.30%	4.18	***
Married	Equal to 1 if yes; 0 otherwise	59.84%	65.80%	33.23%	19.56	***
Family size	Continuous	3.02	3.11	2.59	8.34	***
Have children	Equal to 1 if yes; 0 otherwise	81.67%	81.78%	81.13%	0.49	
<i>Social structure</i>						
Education						
< 12 years	Equal to 1 if yes; 0 otherwise	9.75%	7.21%	21.10%	-14.42	***
12 years	Equal to 1 if yes; 0 otherwise	43.20%	40.74%	54.18%	-8.09	***
13-15 years	Equal to 1 if yes; 0 otherwise	24.92%	26.30%	18.77%	5.05	***
16 years	Equal to 1 if yes; 0 otherwise	12.12%	14.08%	3.35%	9.81	***
>16 years	Equal to 1 if yes; 0 otherwise	10.01%	11.67%	2.60%	7.89	***
Race						
White	Equal to 1 if yes; 0 otherwise	44.26%	47.09%	31.69%	9.25	***
Black	Equal to 1 if yes; 0 otherwise	29.05%	26.85%	38.85%	-7.81	***
Hispanic	Equal to 1 if yes; 0 otherwise	12.75%	12.25%	14.97%	-2.52	**
Others	Equal to 1 if yes; 0 otherwise	13.94%	13.81%	14.49%	-1.53	*
Occupation						

White collar job	Equal to 1 if yes; 0 otherwise	38.00%	40.83%	25.33%	8.53	***
Union membership	Equal to 1 if yes; 0 otherwise	18.26%	21.03%	5.88%	11.11	***
Hours worked/ week	Continuous	40.36	41.13	36.86	10.98	***
Job tenure	Continuous	12.61	12.63	12.51	0.19	
<i>Health beliefs</i>						
Smoker	Equal to 1 if yes; 0 otherwise	56.89%	54.06%	69.52%	-9.32	***
Read nutrition labels	Equal to 1 if yes; 0 otherwise	43.80%	47.34%	28.07%	11.65	***
Exercise regularly	Equal to 1 if yes; 0 otherwise	49.89%	50.96%	45.26%	3.38	***
<i>Genetic factors</i>						
Father living	Equal to 1 if yes; 0 otherwise	60.43%	61.98%	53.38%	5.13	***
Mother living	Equal to 1 if yes; 0 otherwise	79.73%	81.05%	73.80%	5.33	***
<i>Psychological factors</i>						
IQ quartile 1	Equal to 1 if yes; 0 otherwise	25.53%	21.36%	40.94%	-15.69	***
IQ quartile 2	Equal to 1 if yes; 0 otherwise	24.78%	24.13%	27.88%	-2.58	**
IQ Quartile 3	Equal to 1 if yes; 0 otherwise	24.47%	26.51%	22.62%	3.88	***
IQ Quartile 4	Equal to 1 if yes; 0 otherwise	25.22%	28.00%	8.56%	14.01	***
Risk tolerance	Continuous	1.94	1.88	2.20	-7.96	***
<i>Enabling resources</i>						
Family income	Continuous	\$71,747	\$80,877	\$30,992	19.58	***
Own home	Equal to 1 if yes; 0 otherwise	67.72%	72.36%	43.64%	17.06	***
Region						
West	Equal to 1 if yes; 0 otherwise	19.81%	19.79%	19.96%	-0.49	
Northeast	Equal to 1 if yes; 0 otherwise	14.93%	16.03%	9.79%	5.28	***
Northcentral	Equal to 1 if yes; 0 otherwise	24.06%	25.15%	19.11%	4.17	***
South	Equal to 1 if yes; 0 otherwise	41.20%	39.03%	51.14%	-7.28	***

*p<.1, ** p<.05, *** p<.01

Table 2

Likelihood of health insurance coverage

Variables (N=2601)	Coef	MFx	Odds	St.Error	Sig.
<i>Enabling resources</i>					
Log Income	0.095	0.012	1.173	0.028	***
Homeowner	0.409	0.046	1.328	0.140	***
Region(Ref: West)					
Northeast	0.411	0.049	1.544	0.226	*
Northcentral	0.295	0.028	1.478	0.191	
South	-0.228	-0.024	0.927	0.164	
<i>Predisposing characteristics</i>					
<i>Demographic</i>					
Age	0.037	0.006	1.017	0.027	
Female	0.171	0.025	1.309	0.125	
Marital status (Ref: Married)					

Single	-0.622	-0.116	0.508	0.197	***
Divorced/Separated	-0.569	-0.096	0.540	0.173	***
Widowed	-0.630	-0.067	0.542	0.439	
Family size	0.075	0.012	1.073	0.050	
Children	-0.309	-0.033	0.722	0.281	
<i>Social structure</i>					
Education (Ref: <High School)					
High School	0.496	0.053	1.869	0.182	***
Some College	0.851	0.080	2.802	0.220	***
College	1.354	0.108	5.177	0.386	***
Graduate	1.518	0.115	6.462	0.330	***
Occupation					
White Collar job	0.169	0.015	1.091	0.123	
Union membership	0.002	0.002	1.029	0.157	
Hours Worked per week	0.005	0.001	1.005	0.006	
Job Tenure	0.001	0.000	1.001	0.000	***
Race (Ref: White)					
Black	0.182	0.015	1.283	0.164	
Hispanic	-0.116	-0.022	0.904	0.186	
Others	0.049	0.017	1.169	0.819	
<i>Health beliefs and practices</i>					
Smoker	-0.218	-0.029	0.906	0.130	*
Read Nutrition Labels	0.486	0.050	1.713	0.129	***
Exercise Frequently	0.083	0.008	1.029	0.122	
<i>Genetic factors</i>					
Father living	0.015	0.001	1.030	0.124	
Mother living	0.017	0.004	1.064	0.144	
<i>Psychological characteristics</i>					
IQ (Ref: Quartile 1)					
IQ quartile 2	0.1320	0.0252	1.1407	0.1752	
IQ Quartile 3	0.3027	0.0327	1.2617	0.0159	**
IQ Quartile 4	0.6659	0.0685	1.7059	0.0213	***
Risk Tolerance	-0.0979	-0.0103	0.9308	0.0508	*
Intercept	-3.0356			1.2664	***
Pseudo R-square	0.1867				

*p<.1, ** p<.05, *** p<.01

Suggestions for Improvement of the Methodology of Elaboration and Substantiation of Economic and Financial Investment Projects in Agriculture

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Abstract. *The investment activity in agriculture has a multitude of particularities. Our proposals designed to align the methodology and structure requirements of the European Commission methodology for investment projects in agriculture. To this end we will make a presentation to the requirements of the methodology and then, using a case study, we demonstrate both the applicability and superiority in relation to the methodology currently used at the moment here.*

Keywords: investment project; cost-benefit analysis; agriculture; economic efficiency; financial efficiency.

JEL Code: Q14.

REL Codes: 11E, 15B.

1. Requirements cost-benefit analysis for projects financed by FEADR Program

This analysis is based on Working Paper no. 4 European Commission - Directorate General for Regional Policy (www.ec.europa.eu/regional_policy), which is a guide for developing cost-benefit analysis for projects to be co-financed by ERDF or Cohesion Fund during 2007-2013. The objectives of cost-benefit analysis are:

- to determine the extent to which the project contributes to regional development policy and, specifically, the objectives of priority axis in which the funds requested;
- to determine the extent to which the project needs of ERDF co-financing for financially viable.

To estimate the economic, social and environmental impact of the project we operate with assumptions which introduce a number of uncertainties. Therefore a risk analysis should be included in cost-benefit analysis. In the risk analysis there will be included the measures to minimize the negative impact of certain risks. These measures may introduce evidence of additional expense, which means a reversal design.

Once identified target groups, the conditions and the project needs, the objectives are clearly established. Different types of solutions will be evaluated according to the extent they can help to achieve the objectives. It must be shown that the selected and developed solution of the project is best suited to achieve the objectives. It is necessary that the objectives be more clearly defined and their corresponding indicators properly quantified because they are elements of analysis.

For investment projects in agriculture it is necessary to determine effectiveness and to consider two levels: at the investor level (micro) and at the national economy level (macro).

Efficiency investment project at the micro level is the goal of financial analysis, where assessments are made on the position of investor interests, which achieve a maximum return on their allocated funds.

In the financial analysis to determine revenue and expenses there are taken into account taxes and any budget subsidies, and prices are that ones on the market both for products in the country and for the import teel ones. In the financial analysis the following categories of problems are approached: the optimal structure of financing sources, analysis of self-financing capacity, return on capital invested.

Economic analysis approaches the project's efficiency from the company's interests point of view. It aims to substantiate timeliness and effectiveness of

the project by comparing the total effort made to build overall objective and the results obtained. Unlike financial analysis, the market costs are calculated without tax consideration, the prices used are those established on domestic under competitive conditions, and if they are missing world market prices are used. Synthetic criterion for assessing the efficiency of investment projects is national project profitability, based on net present value and internal rate of return. In this respect, besides the quantitative effects the project generates, social and economic aspects are considered: coverage of needs for the poor sectors of the economy, labor absorption, etc.

1.1. Financial analysis (Financial cost-benefit analysis)

As noted in the methodology cost-benefit used by the European Commission for co-financing investment projects the financial analysis and economic analysis are applied.

The main objective of financial analysis is the calculation of financial performance indicators project, that it the investment profitability allocated to the project beneficiary. This analysis is developed normally, in terms of the legal owner or manager of infrastructure. There are cases where the owner and operator of infrastructure are not the same entity (Delegated management). In these cases a consolidated financial analysis will be further developed as would be the same entity.

The method used in developing financial cost-benefit analysis is the “discounted cash flow net”. Unforeseen expenses in the general estimate of costs will be considered only if they are included in the eligible project costs. Specifically, they will not be counted in determining the need for funded, as long as there is not an effective cost, but a measure to mitigate some risks.

The horizon of analysis recommended for projects funded through this type of action is 20 years. Recommended discount rate is 5% financial analysis.

Analysis will be achieved using in the incremental method. When it is difficult or even impossible to determine costs and revenues in the statement “without project”, European Commission recommends that no project scenario to be considered as that with “no infrastructure”, meaning that revenues and operating and maintenance costs to be considered for all infrastructure, not only for the portion rehabilitated, modernized by the project.

Financial analysis will assess in particular:

- a) the financial profitability of investment and proper project invested contributions determined with net income indicators calculated on the total investment value noted with VNAF.

- b) internal rate of return calculated on the total investment value (RIRF). Total investment value includes both eligible costs, and those not eligible in the estimate of costs.

Profitability of own contribution invested in the project are determined considering only its contribution to the project measured by net income for updated financial analysis of capital investment (VNAF/K) and internal rate of return on invested capital (RIRF/K). In this case its contribution is considered when it is actually paid (for example, a loan repayment case).

Optimal amount of financial assistance from the Structural Funds is established by the level determined for RIRF/K and VNAF/K. If two values are very good indicators this means that the proportion of funding was reimbursed more than necessary.

Financial sustainability of the project in terms of financial assistance from the Structural Funds is evaluated by checking the cumulative cash flow net. This must be positive in each year of the analysis. In determining the cumulative net cash flow all costs (eligible and ineligible) and all funding sources will be considered.

1.2. Economic analysis (economic cost-benefit analysis)

Economic analysis measures the economic, social and environmental impact of the project and evaluates the project in terms of general society interests. A project is not always necessary and desirable. Therefore, where appropriate, economic analysis will be accompanied by a study on the availability of target groups (people) to pay for services provided by infrastructure constructed/rehabilitated/upgraded by the project. There have to be taken into account, where applicable, factors such as endurance tariff for population or environmental costs (applying the “polluter pays” principle).

The basis for developing an economic analysis is financial analysis tables. To determine economic, social and environmental performance aspects of the project it has to be accomplished a series of corrections for both costs and incomes, such as:

- a. *Tax corrections* applied to indirect taxes, if were included in costs (eg VAT, when it was included in eligible costs and/or operating and maintenance costs, as employer obligations regarding wages, or any grants if they were included in costs). The requirement is imposed by the fact that it constitutes income to the state/local budget.

- b. *Corrections for externalities* refers to the effects of the project in its environment and economy and must be considered as:

- Adverse effects which are included in the analysis of economic cost position can be:

- during construction. For example, during construction of a road the traffic is diverted, leading to delays of half of an hour for all vehicles;
- during the life of the project. For example, a new route will increase pollution by emissions from vehicles passing on this road, like in any traffic increase case.
- Positive effects which are included in the analysis of economic benefits position can be:
 - during construction. For example, a number of temporary jobs that are offered during construction;
 - during the life of the project. For example, reducing emissions, reducing energy consumption in case of thermal rehabilitation of a hospital or school, increased land value due to design, increasing the number of SMEs, etc.

These positive effects are found in the impact indicators (those related to general objectives).

All these effects are divided into:

- economic (growth of indirect revenue, additional indirect costs);
- social (reducing unemployment, the number of jobs lost, the number of displaced people, etc.);
- environment (increase/decrease pollution, as appropriate)

c. Corrections to transform the market price into accounting prices (shadow prices). In many cases market prices do not reflect the true prices of goods, being distorted by subsidies or other protectionist policies. Thus, the amounts included in the financial analysis hides these issues and the formed image is wrong in terms of company. These distortionary elements such as custom duties will be eliminated from the economic analysis.

Moreover, shadow prices should reflect opportunity cost and consumer willingness to pay for goods or services provided by that infrastructure.

Shadow prices are calculated by applying conversion factors on prices used in financial analysis. They are determined separately for labor force (taking into consideration the area unemployment rate) and for goods that are marketable (taking into account, for example, custom duties and various export subsidies).

The discount rate used in economic analysis is called the *social discount rate*.

For the period 2007 - 2013 Commission recommended a discount rate of 5.5% for social cohesion countries, hence, for Romania too.

Every project must assess the following economic indicators for the full value of the project:

- Net Economic Update (VNAE) - it must be positive;
- Economic Internal Rate of Return (RIRE) - it must be greater than or equal to the social discount rate (5.5%);
- Report Benefit/Cost (B/C) - it must be greater than 1.

Projects that do not meet these conditions have not relevant impact, hence are not important and will not receive structural funds.

1.3. Risk analysis and sensitivity

Risk analysis and sensitivity will be made and included in the feasibility study for all projects, regardless of their total value.

In accordance with 40 (e) of Regulation no. 1083/2006, cost-benefit analysis should include a risk assessment. This will be done in two steps:

a. sensitivity analysis, in which the *critical variables* are identified; the financial and economic performance of the project will be analyzed when their values can vary by plus or minus 10%. What we are trying to determine are the values that influence the stability of the project, ie the conditions under which the net present value reaches zero (Ie: what is sensitive project, it is calculated for both VNAF, and for VNAE).

b. risk analysis will take into account the probability that the critical variable that will change as we estimated in sensitivity analysis. Different statistical methods will be used and probability distribution of financial or economic indicators will be determined. It is not always possible to determine the likelihood of change by a certain percentage of the value of critical variables and therefore we can not always develop a risk analysis based on sensitivity analysis. In these cases a qualitative risk analysis will be made.

2. The proposed indicators for efficiency and financial merits of investment projects in agriculture

In analysing the efficiency of investment projects, an important tool of investigation is the economic indicators. They are designed to reflect the actual contents of numerical parameters that characterize the project under consideration, relationships and correlations between parameters, their evolution over time. The indicators for calculating the efficiency of investment use, therefore, qualitative and quantitative characterization of the degree and level of recovery of investment resources, each version of the project, thus ensuring a proper foundation of investment decision.

Indicators used in calculating the efficiency of investment projects for agriculture must be designed to meet the following fundamental requirements:

- to provide information to land owners to enable them to know the amount of investment required, annual operating costs, increase predictability of economic impact, cost savings by making the investment;
- provide decision-making bodies, particularly creditors, sufficient informations on the opportunity and return on investment for enforcement work designed, the possibility the required loans be rendered;
- to provide useful information to judge whether the investment decision in relation to other design objectives in other sectors of national economy and abroad are suitable.

2.1. Dynamic indicators used to substantiate the efficiency of investment projects in agriculture

Dynamic indicators are based on updating efforts and investment effects, action that ensures comparability of efforts, evidenced during the building project, with effects obtained during the operation.

Updating method is based on the following reasoning: a *leu* invested today, early period, in a productive activity undertaken with a certain efficiency (a) is equivalent in more than one year with an amount greater than a *leu*, so $1 = 1(1+a)$, where a is the profit achieved in the activity for which the initial amount was spent. Reinvesting this amount next year is obtained $1(1+a)(1+a) = (1+a)^2$, which after h years becomes $(1+a)^h$. It follows that an investment made today by a *leu* equals over h years not with a *leu*, but with a sum of $(1+a)^h$.

The expression $(1+a)^h$ is called factor of fructification and it is used for comparability of amounts currently past or present in the future. When we want to equate the future amounts currently one uses the discount factor whose mathematical expression is:

$$\frac{1}{(1+a)^h}$$

Among the indicators that are part of this class, the methodology we will use in this case study includes the following: total expenditures to date, updated investment recovery period, the economic return on investment updated index of profitability of investments, net income update report revenue costs to date, internal rate of return.

Updating technique involves using a discount rate expressing the annual efficiency with which a unit value is used and is determined from a basic size that can be achieved the average profitability in the industry which includes

project analysis or average Bank Interest on loans, plus a risk factor and any inflation factor.

2.2. Our opinion on setting the discount rate

Should make it clear at the outset that the size of the discount rate has a decisive impact on the results, and therefore the investment decision. The higher it is, the indicators calculated value is diminishing and, therefore, some projects will be eliminated. In our opinion choosing the discount rate is subject to the investors financial situation. Thus, if the necessary investment is provided from its own sources, size is determined by the rate of return on average invested funds during the period immediately prior to the project. Discount rate, however, needs to be greater equity loan interest rate money market. Instead IRI (Internal rate of return on investment) must be greater than the discount rate for that amount of cash flows generated by the project to be positive. When funding is attracted to sources, the discount rate should be dimensioned to a size weighted average cost of different sources of capital, which will add a risk.

If the revenue streams generated by the project shall be taxed at a rate r_i , the discount rate is the minimum that can be accepted: $a = d(1 - r_i)$, where “d” is the interest rate on borrowed capital. The apparent size of that rate results from the fact that investor saves, in this case, part of taxable income by deducting financial expenses due.

There are other views on the definition of the size the discount rate. Some authors suggest the opportunity cost of capital rate, ie the last units of investment profitability possible at a cost of capital. Although it seems a good solution, this method is impractical, whereas determining the opportunity cost of capital is difficult.

2.3. Economic content and relations of calculation to determine the effectiveness of proposed indicators of investment projects in agriculture

1. *Updated total expenditures (K_{at})* - expresses the total expenditure which an investor does to achieve expected levels of use values. The calculation includes investment and operating expenses (in new targets) or as annual bonus (at modernization development projects). Therefore it is desirable that the total discounted costs are minimal. To establish the annual growth rate of expenditure it must be taken into account comments made under this section on additional costs after the project.

$$K_{at} = I_t + \sum_{h=1}^{De} Ex \frac{1}{(1+a)^{h+d}},$$

where:

- It – total investment;
- De – operating efficiency of the project duration;
- Ex – annual operating expenses;
- h – reference year (h= 1,..., De +d).

2. *Updated investment recovery period* - expresses the time after which the investment is recovered in annual profit growth achieved by commissioning and operation of facilities. It is a very complex indicator, with a large reflection capacity of efficiency. Any investor is interested to know after how long can recover invested capital based on net income, to begin a new investment. The updated form is determined by the formula:

$$It^{ac} = Ph \frac{(1+a)^{T^{ac}} - 1}{a(1+a)^{T^{ac}+d}}$$

where:

- T^{ac} – updated recovery period
- Ph – annual profit.

Updated recovery period is determined by logarithm and will be chosen that option for which this indicator is minimal.

3. *Updated economic efficiency for Investment* - is one of the most complex investment efficiency indicators. it expresses how much cash net profit updated on entire lifetime investment objective is at investment update. In case of land improvement project it is taken into account annual profit growth. The project variants which will be chosen is that at which the indicator level is the highest.

4. *Investment profitability index (Ipi)* - expresses how much updated net income is obtained at updated investment. Between two or more versions of project it is preferred that one with the highest level. Relationship indicator is calculated:

$$Ip = \sum_{h=1}^{De} (Vh - Ih - Ch) \frac{1}{(1-a)^{h+d}} / \sum_{h=1}^d Ih \frac{1}{(1+a)^h}$$

where:

- Vh - annual revenue
- Ih - annual investment
- Ch – annual expenditure
- a – discount rate

h – reference year.

5. *Updated net income (VNA)* - expresses how much updated net income the investor will get from building and operating effectively during the project life. For new projects, the calculation formula is as follows:

$$VNA = \sum_{h=1}^{De+d} (Vh - Ch - Ih) \frac{1}{(1+a)^h}$$

For development, modernization and land improvements, works pointer consists of net revenue growth of the plant and the average annual savings resulting from elimination of damage to be recorded prior to development.

$$\Delta VNA = \sum_{h=1}^{n+d} (\Delta Vh - \Delta Ch - Ih) \frac{1}{(1+a)^h}$$

where:

ΔVh - total annual revenue growth

ΔCh -total annual costs growth

ΔIh - total annual investment growth

ΔVNA - updated net income growth

a – discount rate

h – reference year.

Remember that, in calculating the indicator, the depreciation of fixed assets is not included in costs to avoid double counting (at the time of purchase as investment, then during the period of operation of the asset as depreciation allowances).

In terms of efficiency, according to this indicator, it can be acceptable alternatives to the VNA greater than zero. We consider that this indicator is most important, as expressed directly to any investor's objective - to obtain a maximum net income. However, it should it be considered a volume indicator, and it doesn't make a comparison between effects and efforts.

6. *Internal rate of return on investment (RIR)* - expresses the rate of discounts for total revenues equal total costs, that is the discount rate for which project profit is zero. IRI calculation can be done by graphical representation, established itself for a positive net income properly updated at a minimum discount rate ($a_{\min}$) and a negative net income properly updated at a maximum discount rate ($a_{\max}$).

$$RIR = a_{\min} + (a_{\max} - a_{\min}) \times \frac{VNA_+}{VNA_+ + |VNA_-|}$$

Compared with the VNA, internal rate of return has some limitations, due to the fact that annual flows are discounted at a rate which doesn't express the opportunity cost of capital.

It is indicated that the selection of investment projects based on RIR to take place by comparing the efficiency obtained in similar economic objectives.

7. *Cost-income ratio*. For this indicator, the projects are accepted if the ratio is higher or at least one. The calculation formula for the indicator is:

$$\frac{V}{C} = \frac{\sum_{h=d+1}^{d+De} V_h \frac{1}{(1+a)^h}}{\sum_{h=1}^{d+De} (I_h + C_h) \frac{1}{(1+a)^h}}$$

where:

V = income, C = cost.

In projects practiced in agriculture it is necessary for this report to be substantially higher than one, because here the risk of failure to forecast the revenue is increased than in other branches.

We appreciate that the indicator is very suggestive in expression efficiency, whereas sets the increase of the net effect updated that will be obtained per unit of effort all updated.

3. Conclusions

Practical activity shows that these methods and their results can lead to contradictory decisions, as the various projects compared are often times incompatible in that:

- projects which necessitate the same capital expenditures have different functioning periods;
- project which have the same functioning period have different initial capital costs;
- projects which differ both in their functioning period and in their initial capital costs.

French economics M. Levasseur recommends only the VNA (*Updated net income*) methods, as it applies the fundamental economic principle according to which a project must be accepted if it bears superior profitability, that is, marginal income superior to marginal cost. The idea which dominates this thinking is that of rationality, or of the project which makes the biggest contribution to increase the company's worth.

Contrary to this opinion, it can also be mentioned that no solution is truly imposed. Thus, on the one hand, financial methods express different objectives of a company, like VNA (*Updated net income*) targets yield or project value maximization; the term of maturity expresses the investor's interest in earning liquidity as soon as possible and, on the other hand, all the above-mentioned methods conflict with each other in one aspect or another.

Consequently, the investment decision must be compatible with the company's objectives, as well as with the project objective, which makes any profitability analysis of the project have multiple criteria.

In our opinion, the specificity of investment projects in agriculture must also be found in the methodology of elaboration and economic and financial substantiation of investment projects in this field in order to correctly evaluate their efficiency.

From the points made above we can conclude that the investment activity in agriculture has a multitude of particularities which makes the economic and financial substantiation of investment projects in agriculture a tedious process. The complexity of the system of assessment indicators of farm performance and that of agricultural investment project efficiency both support this idea.

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