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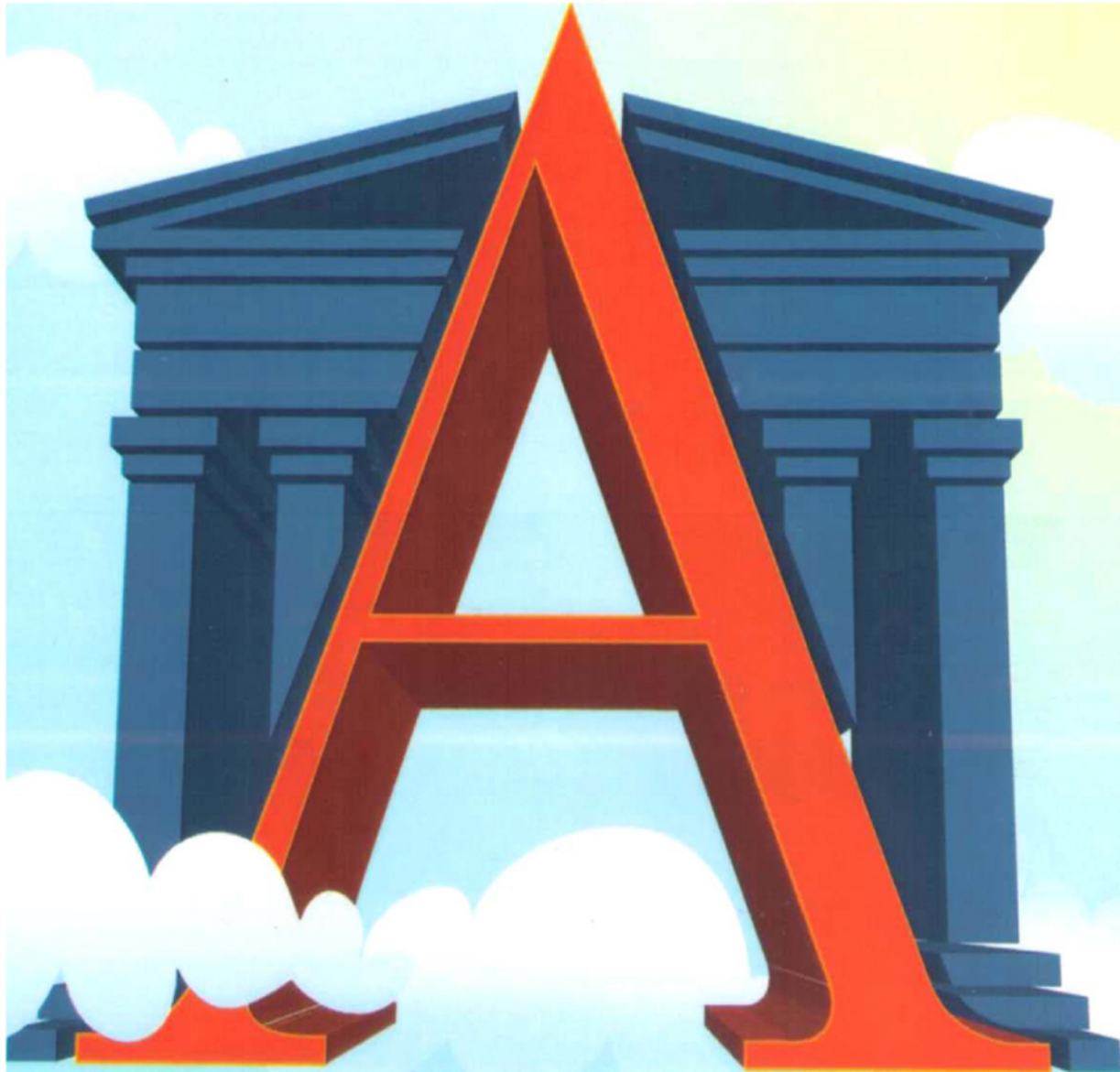
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INTERNAL AUDITING &
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C O N T E N T S

A STUDY OF ACCRUALS QUALITY ON
RISK ASSESSMENT OF SECURITIES IN IRAN

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Abstract:

In recent years, there has been increasingly debate about the impact of quality of accounting information on cost of capital or expected return of stock. The focus of these discussions is the quality of accruals. In particular, two recent papers by Francis et al (2004, 2005) were impressive articles in this Field. The two papers were shown the quality of accruals have an inverse relationship between the costs of capital, it means low quality of accruals lead to cost of capital or expected return of stock. However, Core et al (2008) showed that accruals quality developed by Francis and his colleagues were not able to explain the volatility of stocks. Consequently, accrual quality as characteristics of accounting information can help predict future stock returns. Other similar studies, in this research relation between accrual quality and risk premium companies were investigated by data relating to 73 companies during 2009 and 2010. The results of the statistical analysis and hypotheses showed that the relationship did not exist between the quality of accruals and equity risk premium and there is no significant accruals quality and equity risk premium.

Keywords: Accruals Quality, Stock Risk Premium, Information Quality, Expected return of stock,

1. Introduction:

Investors cannot make decision due to the high variability in options of investment and this choice is based on risk and return. Each person invests for reaching suitable return. Investors for reaching to expected return need necessary information from various sources. Therefore, financial statement help us to be able to choose our expected rate of return and risk. Accounting profit is one of the important information. Accounting profits are recognized on an accrual basis which is usually different amounts reported net operating profit and cash from operations and accruals. Investors, creditors, managers, and other fans of financial statements use earnings as a basis for investment decisions. Since, investors seeking to earn more profit and reduce investment risk. Hence, providing information related to earnings should be confident and be able to evaluate the performance and profitability of company. Results of some studies suggest that benefit accruals and its components affect corporate risk and return.

2. Literature review:

Several prior studies have highlighted the relevance of the Dechow and Dichev (DD) (2002) model as the basis for an empirical measure of the quality of a firm's overall information environment. While these studies are not all specifically relevant to the research question in this paper, they do provide evidence of the usefulness of the empirical measure provided by the DD model. Accordingly, Investment decision research has focused on empirical examination of a theoretical model developed by Lambert *et* al. (2005) of the relation between quality of accounting information and a firm's cost of capital. The Lambert *et* al. (2005) model showed that poor quality information is related to coordination between firms and investors with respect to capital investment decisions and results in increased cost of capital. Francis *et* al. (2005) examined the relation between accrual quality and costs of debt and equity. They found that investors price securities in a manner that reflects awareness of accrual quality and, as a result, poorer accrual quality is associated with higher costs of debt and equity. Biddle and Hilary (2006) reported that accrual quality relates to firm level capital efficiency because of information asymmetry. In relation to capital markets, Chen *et* al. (2007) showed that accrual quality is a priced information risk

factor in a dividend change setting. Their empirical results suggested that the market's perception of information risk changes around dividend changes. An empirical study conducted by Ashbaugh-Skaife et al. (2006) who examined whether a variety of governance attributes explain firm credit ratings. Their study incorporated the DD accrual quality measure as a proxy for the degree of a firm's financial transparency, a desirable governance characteristic. Their empirical analysis showed that the accrual quality measure was significant and positively associated with a firm's credit rating. Doyle *et* al. (2007) examined the relation between accruals quality and internal control quality for a sample of US firms. Internal control quality was determined by whether sample firms disclosed a material weakness in internal control under the requirements of the *Sarbanes-Oxley Act*. Their general finding was that firms with weak internal control over financial reporting, as indicated by disclosure of a material weakness, had lower accruals quality. Doyle *et* al. (2007) also examined the effect of the potential severity of internal control weaknesses. They classified disclosed weakness as 'account-specific', that is weakness in control over specific account balances or transaction-level processes, or 'company-level' weakness where the disclosure indicated a fundamental problem with the firm's control environment. The results showed that 'company level' weaknesses had a greater negative impact on accrual quality. This finding was explained by the account specific weaknesses being 'auditable' and therefore representing less of a threat to the reliability of the financial statements. Ashbaugh-Skaife et al. (2007) extended this study by considering whether disclosed remediation of disclosed material weakness with internal controls was associated with improved accrual quality. The results suggested that firms which remediate disclosed material weakness, as indicated by a later unqualified audit report, exhibited significant improvements in accrual quality relative to firms that failed to remediate their control problems.

Investment in stock has higher risk than other investments in other types of securities. Therefore, the expected return on the investment is higher than other investments. Investors cannot use of priority over bankruptcy liquidation is not final, but they can use premium risk. Premium risk is the excess return to compensate risk for the investors (reward of risk) and when the person accepts risk of investment that receives more return on investment. Briefly, risk premium is excess of earnings for accepting the

risk by investor and if we have higher risk, we will have higher risk premium (Harbula, 2011).

Accruals are made for the reason that revenues and costs occur at the time of receiving or paying cash often varies and it leads to the increase of accruals and earnings. Therefore, accruals quality has an impact on stock returns, according to the investors are seeking returns, they should attention to the quality of accruals in assessment of expected return and returns are adjusted according to the quality of accruals (Chan *et* al, 2006). Investor's decisions are determined based on the disclosure information, manipulation of accruals under earnings management lead to lack of transparency and integrity of financial reports. Uncertainty and ambiguity in resources can provide a negative perspective of users and increase the risk of investment. Higher risk of investment need a higher expected return to compensate for the risk accepted by the investors (Wei, 2008).

Poorer AQ is associated with larger costs of debt and equity. This result is consistent across several alternative specifications of the AQ metric. They also distinguished between accruals quality driven by economic fundamentals (innate AQ) versus management choices (discretionary AQ). Both components have significant cost of capital effects, but innate AQ effects are significantly larger than discretionary AQ effects (Francis *et* al. 2005). In addition, Accruals quality, are negatively associated with both firm underinvestment and overinvestment. The relation between financial reporting quality and underinvestment is stronger for firms facing financing constraints, consistent with the argument that financial accounting information can reduce the information asymmetry between the firm and investors. Verdi realized that the relation between financial reporting quality and investment efficiency is stronger for firms with low quality information environments (Verdi, 2006).

Sloan (1996), in his study showed that cash flow has longer effects on earnings compare to accruals and significant relationship exists between accruals and return of stock. Fama and French (1993), the relationship between accruals quality and information risk according to three factors of size, the ratio of book value to market value and risk premium of market. The results show that positive and significant correlation between accruals and accruals quality and it suggests that accrual quality is a positive risk factor. Chan *et* al (2006) examined the relation of accruals and future stock

returns. They showed that companies' higher accruals are facing with decrease of stock returns in the period after reporting of financial information. Core *et* al (2008), to examine whether accruals quality can be considered as a priced risk factor. Correlation yields with accruals quality factor and the risk factors in Fama and French's model (including market risk premium, the ratio of book value to market value and firm's size) was tested and the results indicate that accruals quality cannot be a risk of pricing and accruals quality as the risk factors cannot be effective in predicting of risk premium. Ogneva (2008), in his research investigates the relationship between stock returns and accruals quality and he concluded that the significant association exists between the quality of accruals and future stock returns. Lacina *et* al (2009) in the study showed that firms with lower accruals compare with firms with higher accruals have lower stock returns ant they concluded that firms with lower accruals have less risk. Mashrwala (2011) investigates accruals quality and return in different months of year. His research shows that the quality of the relationship between accruals and returns is stronger in January than any other month of the year and the effects of accruals quality on stock returns is observed in the first 5 days of trading in January. Lobo *et* al (2012), presented evidence that analyst coverage increases the reduce of accruals and shows that lower accruals quality provides the opportunity for analysts to use the personal information and predicting of lower accrual quality has more private information.

Gray *et* al (2009) re-examines the interplay of accruals quality, information risk and cost of capital in Australia, where a number of important institutional and regulatory differences are hypothesized to affect the relation between accruals quality and cost of capital. The results suggest that, while accruals quality affects the cost of capital for Australian firms, some salient differences exist. In contrast to findings for US firms, the costs of debt and equity for Australian firms are largely influenced by accruals quality arising from economic fundamentals (i.e., innate accrual quality) but not discretionary reporting choices (i.e., discretionary accrual quality). This finding is consistent with our predictions based on the Australian institutional and regulatory environment. In addition, using both the asset pricing tests in Francis *et* al. (2005) and Core *et* al. (2008), we provide evidence consistent with accruals quality being a priced risk factor.

3. Accruals Quality Measures

Some researches use the measure of accrual estimation error developed in Dechow and Dichev (2002) and modified in McNichols (2002) and Francis et al. (2005) as our main measure of accruals quality. This measure defines the quality of accruals as the extent to which they map into past, current, and future cash flows. We assume that this measure can capture the effect of internal control on accruals quality for two reasons. First, a large number of disclosed material weaknesses are related to specific accounts ((e.g., inventory (Ge and McVay 2005)). These specific accounts could have estimation errors that will be captured by this measure. For example, if the inventory account is overstated, the obsolete inventory will not result in cash inflows in the next period, resulting in a low correlation between the accrual and realized cash flows. Second, compared to other measures of accruals quality, the measure in Dechow and Dichev (2002) does not rely solely on earnings management or assumptions related to market efficiency (e.g., value-relevance). This measure can capture both biased "discretionary" accruals and unintentionally poorly estimated accruals, which we predict will be the result of an internal control system with material weaknesses.

3.1. Alternative Measures of Accruals Quality

To shed light on the generalizability of our results for AQ, we examine two other commonly used measures of accruals quality: (1) the absolute value of performance-adjusted abnormal accruals (Kothari *et* al. 2005), and (2) the absolute value of the residual from the modified Dechow and Dichev (2002) model. The results are qualitatively similar to those for AQ i.e., there is no annual premium in both cases, both proxies predict higher abnormal returns only in January, and the January premium in both cases is increasing in tax loss selling. Thus, our results do not appear to be specific to the modified Dechow and Dichev (2002) AQ measure, but call into question the risk status of accruals quality in general.

4. Research methodology
4.1. Hypotheses:

This study examines the impact of accruals quality portfolio focuses on assessment of risk. The quality of accounting in general and accrual

quality more specifically have impact on excess of return and cost of capitals. Research in Francis *et* al (2005), suggesting that accruals quality is a priced risk factor that can explain increase of return's stock compare with free return risk. But, Core et al, (2008) criticized research of Francis and colleagues and suggest that the quality of accruals as a proxy for information risk; is not a risk priced factor. The discussions following hypothesis is formulated:

H_1: A significant relation exists between accruals and equity risk premium

The sample is included all of companies listed in Tehran Stock Exchange, which have following conditions:

1 - Their trading must not be halt over three months.

2- The entities should not change their financial periods.

3 - The Company must not be brokerage and financial institutions.

4 - The entities' availability of information is required.

Process variables and hypothesis testing:

4.2. Independent variable

Accruals quality:

In this study, measurement of accruals based on the modified model Dechow and (2002) Dichev that link current accruals to cash flows from operations in the last period, current, and future**.**

$$TCA_{j,t} = \beta_{0,j} + \beta_{1,j} CFO_{j,t-1} + \beta_{2,j} CFO_{j,t} + \beta_{3,j} CFO_{j,t+1} + \beta_{4,j} \Delta Rev_{j,t} + \beta_{5,j} PPE_{j,t} + u_{j,t}$$

$TCA_{j,t}$ = Total current accrual is calculated by The difference between current assets except cash and current liabilities except short-term debt in between year of t and t-1. Residuals of the regression indicates accrual and standard deviation of the residuals shows a measure of accruals that higher accrual is defined as lower quality.

$$TCA = (\Delta CA - \Delta CASH) - (\Delta CL - \Delta STDEBT)$$

ΔCA: changes in current assets
ΔCASH: changes in cash
ΔCL: Changes in Liabilities
ΔSTDEBT: Changes in short term debt

$CFO_{j\,t}$: Cash flow from operations divided by average total assets

ΔRev: change in net revenue

PPE: Gross value of property, machinery and equipment

PPE Gross value of property, machinery and equipment

4.2. Dependent Variable:

Risk Premium: Equity risk premium is calculated by Gordon's model (1962):

$RP_{it} = E\,(R_{it} - RF_t)$

RP_{it} = Risk premium in *t* year

ER_{it} = Expected rate in *t* year

RF_t = Free risk in *t* year

4.3. Control variables

A) *LEV* = Financial Leverage (Ratio of total debt to total assets).

B) *BE / ME* = Ratio of book value to market value.

C) *SIZE* = (logarithm of total assets)

5. Test research hypothesis:

In this study, the number of variables in the following regression model is used to test the hypothesis.

$$RP_t = \beta_0 + \beta_1 AQ_{it} + \beta_2 (BE/ME)_{it} + \beta_3 LEV_{it} + \beta_4 SIZE_{it} + \varepsilon_{it}$$

Before describing hypotheses testing, regression model to calculate the accruals quality studies conducted during and after the calculation of accruals quality research's hypotheses.

Table 1. Regression models for calculation of accruals quality

$$TCA_{j,t} = \beta_{0,j} + \beta_{1,j} CFO_{j,t-1} + \beta_{2,j} CFO_{j,t} + \beta_{3,j} CFO_{j,t+1} + \beta_{4,j} \Delta Rev_{j,t} + \beta_{5,j} PPE_{j,t} + u_{j,t}$$

Variables	2011			2010		
	t	Sig	β	t	Sig	β
(Constant)	4.781	0.000	303899	0.518	0.606	44846
CFO_{t-1}	0.299	0.766	0.067	-2.698	0.009	-0.507
CFO_t	1.698	0.094	0.322	-7.102	0.000	-1.292
CFO_{t+1}	-5.950	0.000	-1.921	3.950	0.000	0.935
ΔRev	8.304	0.000	0.315	5.646	0.000	0.267
PPE	-1.420	0.160	-0.131	5.364	0.000	0.618
R Square			0.913			0.972
F			241.35			461.876
Sig			0.000			0.000
Durbin-Watson			1.648			1.946

The above table shows the results of calculating the correlation between current accruals and cash flows in 2010 and 2011, past, present and future changes in income and the gross value of property, machinery and equipment.

R- Squire in 2010 shows that 97/2% of current accruals are originated from changes of the variables. In according to coefficient of cash flows in 2010 and 2011 showed a significant and negative correlation between the model and other variables.

Coefficient in 2010 shows 91/3% of current accruals is originated by changes in the variables. Moreover, cash flows and changes in income had inversely, significant associated with other variables in the model, and other variables are excluded from the model in 2011.

Furthermore, P-value is less than 5%, therefore 95% efficiency model is appropriate. Then, the accruals quality measured by using the standard deviation of the remaining items on regression model (1):

Table 2. Testing the hypothesis of a relation between accruals quality

and Equity Risk Premium

$RP_{it} = \beta_0 + \beta_1 AQ_{it} + \beta_2(BE/ME)_{it} + \beta_3 LEV_{it} + \beta_4 SIZE_{it} + \varepsilon_{it}$												
Final			Third			Second			First			**Level**
t	Sig	β	t	Sig	β	t	Sig	β	t	Sig	β	**Variables**
9.371	0.000	1.095	-0.032	0.974	-0.036	-0.100	0.920	-0.115	-0.069	0.945	-0.081	**Constant**
									0.144	0.886	3.067	$\beta_1 AQ$
2.148	0.034	0.028	1.797	0.075	0.024	1.829	0.070	0.025	1.773	0.079	0.024	$\beta_2 BE/ME$
						0.401	0.689	0.283	0.415	0.679	0.297	$\beta_3 LEV$
			1.009	0.315	0.190	0.893	0.374	0.173	0.826	0.410	0.166	$\beta_4 SIZE$
		0.036			0.044			0.045			0.045	**R Square**
		4.613			2.816			1.918			1.432	**F**
		0.034			0.064			0.130			0.227	**Sig**

Table 1 shows the backward regression, the regression model fitted to the four quarters, with the exclusion of the least important of all variables, parameters, and other variables in the model remain excluded from the model, this table show 3.6% of the changes in premium risk is of other volatility of the other variables. The final level by eliminating of variables, the only variable affecting the level of 95% as effective variables in the model remains.

In the final stage P-value = 0.034 and is less than 5%, thus 95% efficiency model is appropriate.

The final models of the regression model will be as follow:

$$RP_{it} = \beta_0 + \beta_1(BE/ME)_{it} + \varepsilon_{it}$$

Therefore, the quality of accruals and equity Risk Premium correlation exists between 95% and this will be rejected.

6. Conclusion:

Balance between risk and return on investment are the basis of investor's decisions, they are they are seeking to assessment the expected future return by reported information. Whatever the quality of the

information provided was better, uncertainty in the estimation of expected return and risk would be reduced. Accruals has essential role for assessing the stocks. In fact, accrual quality defined as near the level of cash flows generated and earnings of the company, therefore, poor accruals quality reduces the degree of closeness and increase risk of investment. The result of this study provides evidence that no relation exist between accruals quality and equity risk premium in Tehran Stock Exchange. Since accruals can manipulate quality of earnings, thus, it is expected that possible because of the ability to affect the quality of earnings, accruals are expected market react to the evidence and there is a significant relation between accruals quality and equity risk premium. Moreover, based on the results, this study is inconsistent with those studies that concluded that accruals have important role in the description and explanation of capital cost, return and risk premium. It shows that, capital market is not efficient in Iran and it is due fact that lack of knowledge about accruals accounting of investors and users about accrual quality and its components. Investors and owners do not have knowledge about accruals accounting and accruals that is accepted by the Financial Accounting Standards Board. Therefore, Financial Accounting Standards states that one objective of financial reporting is to inform present and potential investors in making rational investment decisions and in assessing the expected firm cash flows.

References:

Ashbaugh-Skaife, H., D. W. Collins, W.R. Kinney, and R. LaFond,(2007), "The effect of SOX internal control deficiencies and their remediation on accrual quality", Working Paper, *http://www.ssrn.com.*

Biddle, G.C., and G. Hilary, (2006), "Accounting quality and firm-level capital investment", *The Accounting Review* 81, 963-982;

Chan, K., L. Chan, N. Jegadeesh, and J. Lakonishok, (2006), "Earnings quality and stock returns", *Journal of Business,* 79 (3), pp. 1041-1082;

Core, J., W. Guay, and R. Verdi, (2008), "Is accruals quality a priced risk factor?" , *Journal of Accountig and Economics,* 47, pp.2-22;

Dechow, p., And I. Dichev, (2002), "The quality of accrual estimation errors", *The Accounting Review,* 77, pp.35 – 59;

Doyle, J., W. Ge, and S. McVay, (2007), "Accruals quality and internal control over financial reporting", *http://www.ssrn.com;*

Fama, E. F., and K. R. French, (1993), " Common risk factors in returns o stock and bonds", *Journal of Financial Economics,* 33, pp.3 -56;

Francis, J., P. Lafond, P. Olsson, and K. Schipper, (2004), "Cost of equity and earnings attributes, ", *The Accounting Review ,* 79, pp.967 – 1010;

Francis, J., P. Lafond, P. Olsson, and K. Schipper, (2005), "The market pricing of accruals quality ", *Journal of Accounting and Economics,* 39, pp.295 – 327;

Ge, W., and S. McVay. (2005), "The disclosure of material weaknesses in internal control after the Sarbanes-Oxley Act", *Accounting Horizons* 19: 137-158;

Gordon, M (1962), "The Investment, Financing, and Valuation of the Corporation". Irwin, Homewood, IL;

Gray, P., Koh, P, S., Tong, Y, H (2009), "Accruals Quality, Information Risk and Cost of Capital: Evidence from Australia", *Journal of Business Finance & Accounting*, Vol. 36 (1):51-72;

Kothari, S. P., A. Leone, and C. Wasley. (2005), "Performance matched discretionary accrual measures". *Journal of Accounting and Economics* 39 (1): 163-197;

Harbula, P., (2011),"Equity risk premium and volatility a European perspective", http://www.ssrn.com;

Lambert, R., C. Leuz, and R. E. Verrecchia. 2007. Information Asymmetry, Information Precision, and the Cost of Capital, Working Paper, University of Pennsylvania;

Lobo, G. J., M. Song, and M. Stanford, (2012), "Accruals quality and analyst coverage", *Journal of Banking and Finance,* 36, pp.497 – 508;

McNichols, M. (2002), "Discussion of the quality of accruals and earnings: The role of accrual estimation errors", *The Accounting Review* 77: 61- 69;

Mashrwala, C. A., (2011), " The pricing of accruals quality: January vs., the rest of the year ", *http://www.ssrn.com;*

Ogneva, M., (2008), "Accruals quality and expected returns: the importance of controlling for cash flow shocks '*Working paper,* Stanford University;

Sloan, R., (1996), "Do stock prices reflect information in accruals and cash flow about future earnings?", *The Accounting Review,* 71, pp.289 – 315;

Verdi, R. (2006), "Financial reporting quality and investment efficiency", Working paper, MIT;

Wei, K. C. J., and F. Xie, (2008), "Accruals capital investments and stock returns', *Financial Analysts Journal,* 64, pp.34 – 44;
Xu, Z. R., and M. J., Lacina, (2009), "Explaining the accrual anomaly by market expectations of future returns and earnings', *Advances in Accounting,* 25, pp.190 – 199;

FISCAL UNION BETWEEN MZTH AND REALITY – TAX DEVELOPMENTS AND TRENDS IN THE EUROPEAN UNION AND EURO AREA

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Abstract

European integration means "a stage towards the organized world of tomorrow" as stated by Jean Monnet, involving, consequently, the correlation between economic and social values and objectives. Given the context, we notice the importance and the role of national policies in the European space, with a special emphasis on the monetary and fiscal-budgetary aspects.

This study focuses on the research of the fiscal-budgetary integration, of the tax system evolution in the EU member states, due to the consequences of taxation upon the economic and social development of any country, given the frequent reforms to which the tax system was subjected with time.

Keywords: tax system, corporate tax, income tax, VAT

1. Introduction

The European Union enlargement, as well as the full integration within its structures, represents a challenge both for its member states, as well as for the ones in the accession process. The importance of full integration has already been highlighted in 1950 by Jean Monnet - "primus inter pares", who on May 9th conceived the Schuman Plan, accounting for the first stage of the European organization for economic integration.

Although European integration means the transfer of national competencies from strictly individualized fields to an European organization,

where sovereignty is jointly exerted, this study deals with only one field of the economic integration, i.e. the fiscal field, due to the influence of the tax system, analyzed as an instrument of the tax policy, upon the taxation level and due to its economic, financial, social and political implications.

2. Historical Evolution of Tax System

The tax system's role in the economic activity was perceived differently from one historical stage to another, from one group of states to another and differently even for countries that belong to the same group, according to their economic and social development. Consequently, the tax system as tax policy instrument contributes to the growth and to the development of the economic potential of the society in general and to the satisfaction of the population's social needs, in particular.

Given the context, we observe the need to know and to understand the way in which the tax system is operating, starting with the first theoretical approaches of the doctrine makers that tried to explain the utility of taxes, the determination of an optimum level for such taxes, as well as aspects regarding their collection.

By means of consequence, according to the physiocrats' conception regarding the economic life, the state's revenue has as its sole source the net product, because, in their opinion, the taxation of the net product will not affect the conditions of simple reproduction. Elaborating on this theory, Abatale Baudeau proposes the introduction of a single tax, but this idea is rejected by physiocrats because they consider that "this tax will not be felt by anyone, because no one will pay the tax"[1]

Following this conception, the physiocrats' view develops by elaborating new theories, much closer to the economic reality, based on the idea that "the state budget is fed by means of several channels and nowhere in the history did ever exist a single tax system, but a multiple taxation system."[2]

An important contribution in the development of taxation was brought by Adam Smith, who introduced for the first time in economy the concept of

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[1] Gide Ch., Rist Ch., "*Istoria doctrinelor economice" (History of Economic Doctrines)*, Ed. Casei Scolilor, Bucharest, 1926, pg. 63;
[2] Popescu Gh., "Evolutia gandirii economice" (*Evolution of Economic Thought*) – 3rd edition, Ed. Academiei Romane - Bucharest, Ed. Cartimpex – Cluj, 2004, pg. 120;

„invisible hand" and used the tax policy as an instrument for economy stabilization. Starting from the premise that the state has certain liabilities in order to protect and to safeguard the society's interests, among which we mention national defence, creation of justice or execution of public works, such obligation becomes more an more expensive, consequently, expenses grow becoming increasingly more difficult to be incurred; thus, as society develops, the expenses must be incurred through the general contribution of the entire society in the form of taxes and fees which will meet certain requirements and principles.

Thus, Adam Smith in "*The Wealth of Nations*", formulates for the first time in the evolution of economy the general principles of taxation, which include aspects regarding their arrangement and collection.

The 13 principles he formulated are the following: tax fairness, certitude of taxation, convenience of tax levy, performance of taxes, taxation uniqueness, taxes stability, taxes elasticity, taxation proportionality and progressiveness, as well and taxation substantiality, simplicity, neutrality and morality.

In the modern taxation theory, the stress is put on finding an efficient modality to collect taxes.   Over this period, we notice the contribution of Frank Ramsey, who considers that "the highest taxes must be enforced upon those receipts or disbursements with the highest price inelasticity rate in relation to the offer or demand"[1], obtaining thus an income growth, without recording a significant efficiency loss.

Shortly after the studies elaborated by Ramsey, "the father of supply-side economics", Arthur Laffer, distinguished himself on one hand by his opinion according to which the tax rate cut involves a reduction of the tax revenues, thus the arithmetical effect being obvious, and on the other hand, the tax rate cut may increase labour and production, leading to the growth of the public revenues, thus to the occurrence of the economic effect.

Nevertheless, the start of the economic recession in 1929, respectively, 1933, determined the reformation of the economic thinking at that time. In this context, a new conception formulated by Keynes comes to the fore regarding the role of the state's intervention in the economy, as well as the origination of new mechanisms for the functioning of the market economy

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[1] Samuelson P.A., Nordhaus W. D., *"Economie politica" (Political Economy)*, Ed. Teora, Bucharest, 2000, pg. 380;

based on the use of financial and money instruments, considered by P. Samuelson as extremely efficient automatic stabilization forces.

Thus, the measures promoted by Keynes reveal the fact that "taxes, state loans, public expenditures etc. have been used by the public authorities as instruments for the promotion of economic growth, for economic cycle correction, labour force occupancy, restoration of general balance disturbed by conjunctural factors".[1]

3. Tax System in the European Context

Starting from the analysis of the historical evolution, one may notice that the economic theories were in a continuous adapting process to the economic and social developments and, in the context of tax integration a new approach based on the current reality becomes necessary.

To this respect, we note the need for a common monetary policy and for its coordination with the national tax policies, but such aspect may lead to ideological divergences, to completely contrasting ideas upon the state's economic policy's objectives, for establishing the priority among such and the intervention's degree of intensity. This is why, by applying the monetary and budgetary convergence criteria provided in the Maastricht Treaty it is possible to establish the purpose, to choose the corresponding means and methods, it is also possible for a certain functionality to exist, as well as a purpose of the tax integration.

Meanwhile, there is the need to unify and coordinate the national tax policies in the European Community area based on a series of principles, methods and techniques. Thus, the main instrument used by the European Union in order to accomplish the standardization of tax policies at the level of the 27 member states consists in the coordination of taxes, considering the two European integration principles: the principle of observing the national tax policies and the principle of subsidiarity. In parallel, for the Euro Area, the Stability and Growth Pact provides the application of the tax conduit principles, especially related to the adjustment of the structural budgetary balance.

Nevertheless, the regulations of the Maastricht Treaty and of the SGP are not sufficient for the efficient operation of a single market, because the

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[1] Vacarel I. Bistriceanu Gh., "Finante publice" *(Public Finance)*, 6th edition, Ed. Didactica si Pedagogica, 2007, pg. 84-85;

existence of 27 different tax systems involves a series of costs experienced in the trading activity, in the economic entities' activity, as well as at the level of individuals, hence, the implementation of the Aquis on taxation becomes necessary, on its two components: direct taxation and indirect taxation.

From the direct taxation viewpoint, the short-term unification of legislation is difficult to achieve. Currently, the European directives refer only to less relevant aspects in relation to direct taxation. The innovation proposed by the European Commission is focused on the corporate tax. It aims at the introduction of a system of rules applicable by the economic entities that unfold their activity in the European Union.

This system of rules is known as "common consolidated corporate tax base", used for the taxable profit calculation. The new tax system aims at the calculation of the tax base using a single formula, by filing a single tax declaration for the entire activity of the economic operators within the European Union at the "single counter", as well as at aspects regarding the distribution of the consolidated tax base using "a formula that includes three equal-value factors (labour force, assets and sales),"[1] but it does not force the member states to adopt a single corporate tax rate.

Such an approach is necessary for:
- "cutting the company conformity costs as regards the corporate tax;
- removing double taxation for the companies that operate within the internal market;
- removing over-taxation for cross-border activities"[2]; thus, limiting the negative effects induced by the existence of the current numerous tax obstacles..

In relation to the income tax, it may be noted that only few EU member states use the single income taxation rate, the most frequently used method being the progressive income taxation in instalments. Likewise, it is worth mentioning that the number of instalments, the taxation rates level, the determination of the taxable income, as well as the income type subjected to taxation varies from one state to another according to the national legislation of each such state.

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[1] European Commission, "Proposal for a Council Directive on a Common Consolidated Corporate Tax Base", 16.03.2011, pg.3;
[2] European Commission, "Proposal for a Council Directive on a Common Consolidated Corporate Tax Base", 16.03.2011, pg.2;

Thus, in Romania, as starting with 2005, a single 16% rate was introduced, adopted on January 1st, 2012 in Hungary, as well, applied on its territory to all income categories. In some states in the Euro Area, such as Germany, progressive rates taxation is used, according to the income size, ranging from 15% to 42%; for the overall annual income, except for allowances, in Malta the tax rates level varies from 15% to 35%, and in the French tax system the rates vary from 5.5% to 41%, the tax on the personal income being levied on the total net income, determined according to the calculation formulas afferent to each income type, including for the incomes that come from external sources, if the contributors are French residents.

As regards indirect taxation, starting with "the year 1975, the Commission's efforts focused on adopting and enforcing the 6th Council Directive on VAT: uniform basis of assessment."[1] At the same time, this programme aimed at simplifying the procedures and formalities applicable to VAT in the intra-community trade, with the purpose of removing misrepresentation in the field of concurrence and of encouraging the SMEs activities within this space.

Currently, the VAT regulations aim at "ensuring the unitary application of the current VAT system..., especially as regards the taxable persons, the supply of goods and of services and the place of taxable operations"[2], and last but not least, the regime of tax rates, of deductions and of mentioning the operations that are exempted from the VAT payment.

In this context, at the European Union level, the standard VAT rates level afferent to the year 2011 ranged between 15% and 25%, the highest rate being levied in states such as Denmark, Hungary and Sweden, and the lowest in Luxembourg and Cyprus, as results from figure no. 1.

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[1] Official Journal C 244, 24/09/1981 P. 0004-0012, „Information from the Commission - programme for the simplification of value added tax procedures and formalities in intra-community trade", pg. 1;
[2] Official Journal of the European Union, Council Regulation no. 282/2011, laying down implementing measures for Directive 2006/112/EC on the common system of value added tax, of 15.03.2011, comma 4;

Fig. nr. 1 Nivelul   **Fig. no. 1 VAT standard rates level in the EU afferent to 2011**
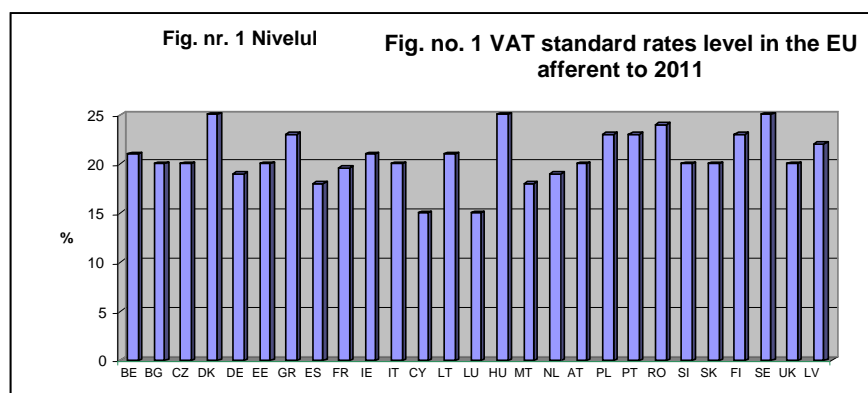
Source: author's processing of data assumed from the European Commission, „VAT rates Applied in the Member States of European Union", Situation at 1st July 2011

4. Comparative Analysis upon the Results of Enforcing Tax Systems in the EU 27 and in the Euro Area

The analysis upon the results of direct and indirect taxation, within the European Union, as well as in the Euro Area states, allows to highlight the importance of taxes in forming the financial resources necessary for expenditures at community level, and under the economic and social aspect, a major interest is represented by "sizing the part of the Gross Domestic Product took at the state's disposal by means of taxes".[1]

Thus, at the EU-27 level, the total tax revenues (calculated as arithmetic mean) amounted in 2000 at 37% of the GDP, followed by a decreasing tendency of 1% for the following period, amounting in 2009 to 35.8% of the GDP. As compared to the situation recorded in the EU-27, in the Euro Area, the total tax revenues amount afferent to the same period was constantly maintained around 37% of the GDP.

As direct taxation is concerned, the evolution of the corporate tax and of personal income tax collection degree at the EU-27 level as compared to the Euro Area for the period 2000-2009, is highlighted in figure no. 2 and in figure no. 3.

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[1] Vacarel I. Bistriceanu GH., ... "Finante publice" *(Public Finance)*, 6th edition, Ed. Didactica si Pedagogica, 2007, pg. 280;

Fig. no 2 Evolution of corporate tax and income tax in the EU-27 for period 2000-2009

Fig. no. 3 Evolution of corporate taxe and income taxe in the Euro Area for period 2000-2009
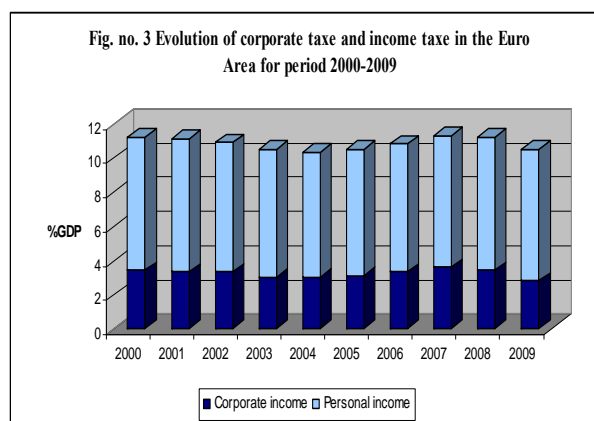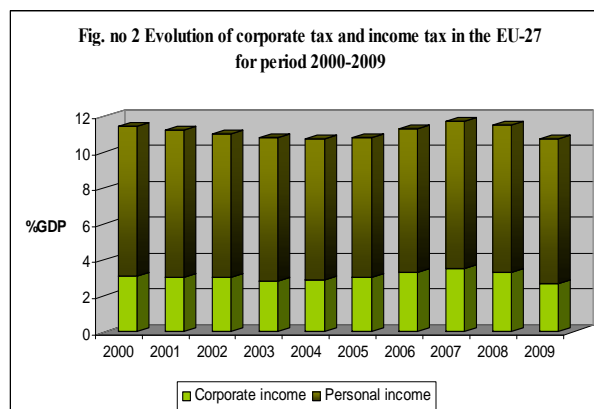
Source: author's processing after data from European Commission - Taxation and customs union, „Taxation trends in the European Union", Edition 2011

After analyzing the two charts, one may notice that the value of the personal income tax is higher that the corporate tax value at the EU-27 level, as well as in the Euro Area. Given the context, the corporate tax percentage from the GDP ranged between 2.7% and 3.6% in both the cases, and for the income tax, the Euro Area recorded a percentage of 7.8% of the GDP in 2000, respectively, of 7.7% of the GDP in 2009, and in the EU-27, the mean for the period 2000-2009 varied from 7.8% to 8.3% of the GDP.

Indirect taxes varied as percentage from the GDP for the period between 2000-2009, between a minimum of 13.4% in 2002 and a maximum of 14.2% in 2006, and in 2009 they recorded a percentage of 13.4% from the GDP.

Although the European Union member states adopted VAT legislation unification measures due to the remarkable differences of the standard rates (comprised between 15% and 25%) applied at national level or due to the narrowing of the application basis, the VAT percentage from all tax revenues (EU-27) calculated for 2004-2010 is situated below 25%, though increasing as compared to 2000, when it amounted to 19.7%.

For the Euro Area the collections from VAT registered a downward trend over 2007-2010, varying from 6.9% to 6.6% from the GDP.

5. Conclusions

Irrespective of the unfolded economic activity, the evolution of the tax system was perceived differently in every state for every period, according to the economic development degree, according to the standard of living, as well as according to the contributors' capacity to adapt to the new changes. Nevertheless, the financial role of the tax instruments maintains its importance and it is unanimously recognized, and the taxes and fees afferent to the different activities account for the main public resources formation modality.

Following this study, one may notice that, even though the tax unification and coordination process was roughly accomplished, it shows a series of deficiencies as its enforcement at national level is concerned.

The new approaches' implications draw the attention upon the consequences generated by the increase of fiscal pressure, which, within the Euro Area, amounted to 44.5% in 2009 and of the taxation degree, respectively „what percentage of the gross domestic product is concentrated at the state's disposal through taxes, fees and contributions".[1] From this viewpoint, it may be concluded that the states recording a high GDP per inhabitant also have a higher taxation rate, highly influenced by the structure of taxes and fees, by the way in which the matter subjected to taxation is determined and correlated with the progressiveness of the taxation rates.

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[1] Vacarel I. Bistriceanu GH., ... "Finante publice" *(Public Finance)*, 6th edition, Ed. Didactica si Pedagogica, 2007, pg. 380.

Bibliography

1. **Gide Ch., Rist Ch**., "Istoria doctrinelor economice" (History of Economic Doctrines), Editura Casei Scolilor, Bucharest, 1926;

2. **Pelinescu E., Stanica C., N., (**coordinators) "Evaluarea rolului politicii fiscale in combaterea crizei economico-financiare si in asigurarea condiţiilor impuse de integrarea in zona euro" (Evaluation of the tax policy's role in combating the economic and financial downturn and in ensuring the conditions imposed by the integration in the euro area), Editura OIM, Iasi, 2011.

3. **Popescu Gh.,** "Evolutia gandirii economice" (Evolution of Economic Thought) – 3rd edition, Editura Academiei Romane - Bucharest, Editura Cartimpex – Cluj, 2004;

4. **Samuelson P.A., Nordhaus W. D.** , "Economie politica" (Political Economy), Editura Teora, Bucharest, 2000;

5. **Vacarel I. Bistriceanu GH**., ... „Finante publice" (Public Finance), 6th edition, Editura Didactica si Pedagogica, 2007;

6. **Vasile E**., **Ghiţă M**., ş.a, "The Reorganization of the Internal Control System within Public Entities", Romanian Agricultural Research No 25/2008, pp107-112;

*** Official Journal of the European Union, Council Regulation no. 282/2011, laying down implementing measures for Directive 2006/112/EC on the common system of value added tax, of 15.03.2011;

*** Official Journal C 244, 24/09/1981 P. 0004-0012, „Information from the Commission - programme for the simplification of value added tax procedures and formalities in intra-community trade";

*** European Commission, "Proposal for a Council Directive on a Common Consolidated Corporate Tax Base", 16.03.2011;

*** European Commission, „VAT rates Applied in the Member States of European Union", Situation at 1st July 2011;

*** European Commission - Taxation and customs union, „Taxation trends in the European Union", Edition 2011;

*** http://ec.europa.eu/taxation_customs/tedb/taxSearch.html

Europea

THE DAY-OF-THE-WEEK EFFECT ON BUCHAREST STOCK EXCHANGE

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Abstract
This study investigates the presence on Bucharest Stock Exchange of one of the most documented seasonal anomalies of financial assets' returns: the day-of-the-week effect. We use daily returns for five Romanian official exchange indices and for one MSCI Barra country index during May 2007-March 2013, thereby including both the 2007-2009 financial markets meltdown and the 2009-2012 recovery that followed it. We employed a GARCH-M model with dummy variables for both the mean and the variance equation, but the results obtained don't offer clear enough and sufficient statistically significant arguments to confirm the presence of the above mentioned effects on all the six indices investigated.

Keywords: stock returns, volatility, seasonal anomalies, frontier markets, GARCH models
JEL classification: G01, G02, G12, G14, G15

1. Introduction

The calendar effects of the financial assets returns is a frequent topic among retail investors, professional money managers and behavioral science researchers, mainly because they are all fascinated and intrigued by the fact that financial markets, despite being extremely competitive and difficult to predict, still leave slight gaps and inefficiencies that can be speculated in order to obtain exceptional returns.

Seasonal effects, a different name for the calendar effects, are considered to be cyclical anomalies in market returns, based on the calendar. The most well-known and discussed such cyclical anomalies are the January effect and the weekend effect (also known as the Monday effect). Other popular types of anomalies mentioned in the financial literature are the day of the month effect (the hypothesis that the turn of the month is associated with returns higher than the average) and the Friday effect (also higher than the average returns on Fridays), or the Thursday effect on some Asian markets.

Most recent studies consider that such effects depend on the size of the market (or of the portfolios examined), measured by capitalization or volume of shares traded, and on the particular economic situation during the investigated period of time. Also, many authors concluded that these cyclical anomalies are more likely to be found on market indices, or on large and well diversified portfolios, than on individual assets.

Our research focused on a wide range of indices from the Romanian capital market, considered by investors and international institutions to be part of the frontier markets category, during a period that included both significant and consistent up and down trends.

The rest of the paper is organized as follows: section 2 presents the most relevant Romanian and international related studies; section 3 describes the data that we worked with and the data mining methodology that we have used; section 4 presents the results that we have obtained; finally section 5 summarizes the most important conclusions and proposes further studies in this field.

2. Literature review

The literature on day of the week and month of the year effects is very rich and refers to many national and international markets of regions of the world. The conclusion of the previous studies are not always in agreement, the results of the investigations conducted by previous authors being dependent on the characteristics and time periods of the markets that were investigated, such as: level of maturity, size, economic cycle, organizational structure etc.

Fields (1931) was among the first authors to argue for the existence of special patterns in the intra-week stock market returns. Fields didn't conduct statistical test for this hypothesis, but his paper opened the door to a great number of articles by other authors. A little later, Cross (1973) analyzed more than 40 years of daily data for Dow-Jones and other American indices and sustained his conclusions. His work was continued by French (1980) who was the first to employ statistical methods in order to test for the presence of the calendar effects. He used found that the expected return for Mondays is about three times larger than the average expected returns for the other days of the week.

Among others, Gibbons and Hess (1981), Rogalski (1984), Jaffe and Westerfield (1985), Condoyanni (1987) and Ziemba (1991) used simple linear regression models and conducted t-tests and F-tests in order to investigate the presence of day of the Monday effect in Japanese, Australian, Canadian, US and some European stock markets.

Connolly (1989, 1991) was the first to abandon the previous approaches and to use econometric models such as GARCH and Bayesian models in order to deal with the most frequent problems that occur in the simple linear regression models, such as: non-normality of the residuals, conditional heteroscedasticity of the residuals and sometimes the presence of autocorrelation among the daily returns.

Lakonishok and Smidt (1988) used more 90 years of daily data for Dow Jones Industrial Average and found evidence of persistent anomalies in returns around the end of the week, end of the month, end of the year and around holidays.

Lauterbacha and Ungar (1995) used OLS regression and argued that in Israel (where the average inflation rate was relatively high during a few decades previously to the date of the article) the calendar effects are present

but in a different from than in most international markets. After the authors adjusted the stock returns with inflation the dissimilarities disappeared, which could suggest that such effects should be measured in real terms.

Boynton, Oppenheimer and Reid (2009) made tests on day of the week effect on the Japanese stock market and found that until 1990s the Tuesdays exhibits abnormal losses while after 1990s the Tuesdays effects are replaced by similar effects on Mondays. They argue that those effects are driven by volume changes.

Rahman (2009) examined the presence of day of the week anomaly in three official indices from Dhaka Stock Exchange during 2005-2008 using both linear regression and GARCH(1,1) with dummy regressors and found statistically significant negative coefficients for Sundays and Mondays and statistically significant positive coefficient for Thursdays.

Tevdovski, Mihajlov and Sazdovski (2012) examined the presence of day of the week effect on stock market indices from osnia and Herzegovina, Bulgaria, Croatia, Macedonia and Serbia during 2006-2011, using linear regression with dummy variables and Wald test. They found statistically significant Monday effect only in Croatian and Bulgarian stock markets.

Angelovska (2013) employed single ANOVA regression model with dummy variables, but also more advanced models such as GARCH(1,1), EGARCH, M-GARCH(1,2) and M-EGARCH and found evidence about the existence of day of the week effect on Thursday in both return and volatility of the Macedonian Stock Exchange.

Romanian authors were also interested to investigate the presence of calendar anomalies on Romanian stock market. Among others, Tudor (2008) studied daily logarithmic returns for the official composite Bucharest Stock Exchange index during 2000-2005 and employed a linear regression model with dummy variables, but found no evidence to support the existence of the aforementioned effects.

Also, Balint and Gica (2012) used a GARCH(1,1) model to search for January effects both on returns and volatility of 30 companies (grouped on 3 portfolios according with their capitalization) traded on Bucharest Stock Exchange during 2003-2010. The authors observed that the January effect occurred before the 2007-2009 financial crisis, but afterwards, due to lower share price and liquidity results became inconclusive.

The presence of the January effect on Bucharest Stock Exchange was also investigated by Stancu and Geambasu (2012) by analyzing the excess returns (after excluding the risk adjusted expected returns) obtained during 2002-2010 by three portfolios, of ten stocks each, grouped by size and trading volume. For both methods of computing portfolios (capitalization or trading volume), the authors found higher excess returns in January, sustaining the hypothesis of calendar anomalies.

3. Data and methodology

Our study was conducted on the most older and popular 5 official Bucharest Stock Exchange indices: BET, BET-C, BET-FI, BET-XT and BET-NG. Also, it included the standard Romanian country index (large + mid cap) from MSCI Barra. We have collected daily prices for all the six indices during the period May 1st 2007 – March 15th 2013, courtesy of the Bucharest Stock Exchange Trading Department and MSCI Barra.

In order to eliminate the obvious non-stationarity from our data we have transformed the price time series into return time series for all the 6 assets. According to Strong (1992), "there are both theoretical and empirical reasons for preferring logarithmic returns. Theoretically, logarithmic returns are analytically more tractable when linking together sub-period returns to form returns over long intervals. Empirically, logarithmic returns are more likely to be normally distributed and so conform to the assumptions of the standard statistical techniques." For these reasons we have decided to use logarithmic returns in our study. The computation formula of the logarithmic returns is as follows:

$$R_{i,t} = Ln\left(\frac{P_{i,t}}{P_{i,t-1}}\right)$$

where Ri,t is the return of asset i in period t; Pi,t is the price of asset i in period t and Pi,t-1 is the price of asset i in period t-1.

As a result of this initial data gathering we obtained a data base with 6 time series of log-returns, each with 1534 daily observations.

This article builds upon the foundations laid by our previous research (Panait and Slavescu, 2012) showing that volatility "persistency is more present in the daily returns as compared with the weekly and monthly series". Also, we know from previous studies that "GARCH-in-mean was well fitted on the weekly and monthly time series but behaved less well on

the daily time series" for 3 Romanian stock market indices and the most liquid 7 individual stocks during 1997-2012.

For the reasons stated above, and having in mind the conclusions of other authors mentioned in the literature review section stating that GARCH family models often better succeed in extracting most autocorrelation and heteroscedasticity from residuals than simple linear regression models, we decided to use a GARCH-M model with dummy variables in both the mean and the variance equations:

$$R_{i,t} = \mu + \gamma_0\sigma_t^2 + \gamma_1 D_{mon} + \gamma_2 D_{tue} + \gamma_3 D_{wed} + \gamma_4 D_{thu}$$
$$\sigma_{i,t}^2 = \omega + \alpha\varepsilon_{t-1}^2 + \beta\sigma_{t-1}^2 + \gamma_5 D_{mon} + \gamma_6 D_{tue} + \gamma_7 D_{wed} + \gamma_8 D_{thu}$$

where $R_{i,t}$ is the return of asset i in period t; $\sigma_{i,t}$ is the standard deviation of asset i in period t; μ is the average return for asset i during the investigated period; ω, α and β are the usuar coefficients of the variance equation of a GARCH(1,1) model; γ_0 represents the variance coefficient from the mean equation of the model; D_{mon} - D_{thu} represent the dummy variables (for example D_{mon} has a value of 1 only in Mondays and a value of 0 during the rest of the daily observations); and γ_1- γ_8 represent the coefficient of the dummy variable from both the mean and the variance equation of the model

Before estimating the GARCH-in-mean model, we investigated all the data series in order to see if they meet the pre-conditions for the GARCH-in-mean model. We observed that average returns for all the time series are not statistically significantly different from zero and that the values for standard deviation are in all cases significantly larger than mean values. Most of the time series present negative skewness, excess kurtosis and "fat tails". Also, none of the 6 time series studied are normally distributed as proven by values for the Jarque-Bera tests (see Table 1 for details, at the end of this article).

Going further, we computed the squared returns for all the 6 time series and tested for evidence of heteroscedasticity and volatility clustering. We found clustering of volatility in the daily returns of all the 5 official Bucharest Stock Exchange indices, but we were unable to confirm it for the MSCI Barra Romania country index (see Figure 1 for details, at the end of this article).

Also, we investigated the heteroscedasticity of the 6 time series, by calculating the autocorrelation (AC) and partial autocorrelation (PAC) functions, and also by performing the Ljung-Box Q-statistics. In all our calculations we used a 20 period lag.

We observed the presence of serial correlation till the 20-th lag in the daily squared returns for all the 5 official Bucharest Stock Exchange indices, but again we were unable to confirm its presence for the MSCI Barra Romania country index (see Table 2 for details, at the end of this article). Since heteroscedasticity is a pre-condition for applying the GARCH models to a financial time series, this means that we might be unable to fit such a GARCH model on the daily returns of MSCI Barra Romania country index.

4. Results

Table 3 included at the end of this article presents the values obtained for the coefficients of the GARCH-M model used to test the presence of the day-of-the-week effect in Romanian stock market indices. In all our estimates of the model we have used the hypothesis that the errors are normally distributed. Below are the conclusions that can be drawn from this table:

(1) First, we observed that with only in the case of three out of the six indices investigated (MSCI Barra Romania country index, BET-XT and BET_FI) the estimated coefficients of the model respect the requirement that $(\alpha + \beta) < 1$, which is a crucial condition for a mean reverting process.

(2) Second, we noticed that in all cases the two main estimated coefficients for the variance equation of the model (the α and β coefficients) are statistically significant at the 99% confidence level. The ω coefficient of the variance equation of the model is statistically significant only in the case of BET-XT and BET-FI indices.

(3) Third conclusion, and an extremely important one, is that, with only one exception, the γ_1 coefficients are statistically significant and have negative values. This practically confirms the Monday effect, respectively the hypothesis that there is a statistically significant lower expected return on Mondays in comparison with the end of the week.

(4) In all cases the γ_5 coefficients are statistically significant and have positive values which argue that on Mondays the average volatility is higher comparing with the end of the week. Still, this fourth conclusion

derived from Table 3. can be maintained only for the three indices where the estimated coefficients from the variance equation of the model respected the requirement that $(\alpha + \beta) < 1$, meaning that we can draw this conclusion only for MSCI Barra Romania country index, BET-XT and BET_FI indices, not for all of the six indices investigated.

(5) We also notice a Tuesday effect in returns, for 5 out of the 6 indices investigated. This is not present in the volatility of the indices but, instead, it is replaced here by a Thursday effect in all the three cases where the estimated coefficients from the variance equation of the model respected the requirement that $(\alpha + \beta) < 1$.

For the conclusions above to be credible, we diagnosed the goodness of fit of the GARCH-M models, in all the cases, by looking into the properties of the residuals and squared residuals:

(1) First we investigated the autocorrelation (AC) and partial correlation (PAC) of the standardize residuals till the 20-th lag, and also we performed the Ljung-Box Q-statistics at the 20th lag. The results presented in Table 4 (at the end of this article) show that in most cases there was no significant (at the 10% threshold level) autocorrelation. Also we investigated the autocorrelation (AC) and partial correlation (PAC) of the squared standardized residuals till the 20-th lag and also we performed the Ljung-Box Q-statistics at the 20th lag. The results, also presented in Table 4 shows that in 4 out of 6 cases the model failed to extract all significant autocorrelation from the standardized squared resiaduals.

(2) Second we employed the Jarque-Bera tests and found that none of the series of residuals are normal distributed.

(3) Third we calculated the statistics of the ARCH-LM tests and noticed that in most cases all the ARCH effects were successfully removed from the residuals.

5. Conclusions

In this paper we studied the day-of-the-week effect on daily returns for 6 Romanian stock market indices during May 1st 2007 – March 15th 2013 using a GARCH-M model with four dummy variables both in the mean and in the variance equations.

We found statistically significant coefficients for the Monday and Tuesday dummy variables in the mean equation of the model, for all 6

indices, which argues for the presence of abnormal returns during those days of the week. Both the Monday and Tuesday coefficients were negative, showing that lower returns comparing with the turn of the week were more likely during those days.

Also, we found statistically significant coefficients for the Monday and Thursday dummy variables in the variance equation of the model, which can be interpreted as abnormal volatility during those days of the week. Still, only in 3 out of 6 indices the GARCH-M model showed a mean reverting behavior for the conditional variance ($\alpha + \beta < 1$). Also, the model didn't succeed to extract all autocorrelation from squared standardized residuals (although it managed to extract most autocorrelation effects and most ARCH effects from the simple standardized residuals) and neither of the residuals were normal distributed. These reasons led us to conclude that the results showing a Monday and a Thursday effect in volatility for 5 out of the 6 indices investigated are not statistically clear enough and that the research of the day-of-the-week effect on Bucharest Stock Exchange should be continued by fitting other models from the GARCH family, especially asymmetrical models.

6. Bibliography

1. Angelovska, J. (2013) 'An Econometric Analysis of Market Anomaly - Day of the Week Effect on a Small Emerging Market', International Journal of Academic Research in Accounting, Finance and Management Sciences, vol.3, no.1, pp. 314-322

2. Balint, C. and Gica, O. (2012) 'Is the January effect present on the Romanian capital market?', Procedia – Social and Behavioral Sciences, no.58, pp. 523-532

3. Boynton, W., Oppenheimer, H.R. and Reid, S.F (2009) 'Japanese day-of-the-week return patterns: New results', Global Finance Journal, no.20, pp. 1-12

4. Connolly, R.A. (1989) 'An examination of the robustness of the weekend effect', Journal of Financial and Quantitative Analysis, no.24, pp. 133-169

5. Connolly, R.A. (1991) 'A posterior odds analysis of the weekend effect', Journal of Econometrics, no.49, pp. 51−104

6. Cross, F. (1973) 'The behavior of stock prices on Fridays and Mondays.' Financial Analysts Journal, no.29, pp. 67-69
7. Fields, M.J. (1931) 'Stock prices: a problem in verification', Journal of Business, no.4, pp. 415-418
8. French, K.R. (1980) 'Stock returns and the weekend effect', Journal of Financial Economics, no.8, pp. 55-70
9. Gibbons, M. and Hess, P. (1981) 'Day of the week effects and assets returns', Journal of Business, no.54, pp. 579−596
10. Jaffe, J. and Westerfield, R. (1985) 'Patterns in Japanese common stock returns: Day of the week effects and turn of the year effects', Journal of Financial and Quantitative Analysis, no.20, pp. 261−272.
11. Jaffe, J. and Westerfield, R. (1985) 'The weekend effect in common stock returns: The international evidence', Journal of Finance, no.40, pp. 433−454
12. Jaffe, J., Westerfield, R. and Ma, C. (1989) 'A twist on the Monday effect in stock prices: Evidence from the U.S. and foreign stock markets', Journal of Banking and Finance, no.13, pp. 641−650
13. Lakonishock, J. and Smidt, S. (1988) 'Are Seasonal Anomalies Real? A Ninety-Year Perspective', The Review of Financial Studies, vol.1 no.4, pp.403-425
14. Lauterbach, B. and Ungar, M. (1995) 'Real vs. nominal stock return seasonalities: empirical evidence', International Review of Economics and Finance, no.4, pp. 133-147
15. Nicolae-Bălan M., (2009), „Metode econometrice cu aplicaţii în economie", Editura Printech, Bucureşti, 173 pg., ISBN 978-606-521-320-3
16. Panait, I., Slavescu, E.O. (2012) 'Using GARCH-in-mean model to investigate volatility and persistence at different frequencies for Bucharest Stock Exchange during 1997-2012', Theoretical and Applied Economics, vol.19, no.5 (570), pp. 55-76
17. Stancu, I. and Geambasu, L. (2012) 'Return seasonality – January effect. Study case: the Bucharest Stock Exchange', Economic Computation and Economic Cybernetics Studies and Research, no.1/2012
18. Strong, N. (1992) 'Modeling Abnormal Returns: A Review Article', Journal of Business Finance and Accounting, vol.19, no.4, pp. 533–553

19. Tevdovski, D., Mihajlov, M. and Sazdovski, I. (2012) 'The day of the week effect in South Eastern Europe stock markets', Annals of the „Constantin Brâncuşi" University of Târgu Jiu - Economy Series, no.3, pp. 20-24

20. Tudor, C. (2006) 'Testing for seasonal anomalies in the Romanian Stock Market', Romanian Economic Journal, no.21, pp. 71-79;

Table 1: Descriptive statistics

	Mean	Std. Dev.	Skewness	Kurtosis	Jarque-Bera	Probability
RO_MSCI	-0.0005	0.0227	-2.25	35.92	70549	0
BET	-0.0003	0.0195	-0.54	9.25	2475	0
BET-XT	-0.0005	0.0210	-0.48	8.64	2010	0
BET-NG	-0.0004	0.0204	-0.37	11.86	4857	0
BET-FI	-0.0006	0.0281	-0.21	8.74	2029	0
BET-C	-0.0004	0.0180	-0.68	10.10	3216	0

Source of data: Bucharest Stock Exchange, MSCI Barra; calculations by the authors

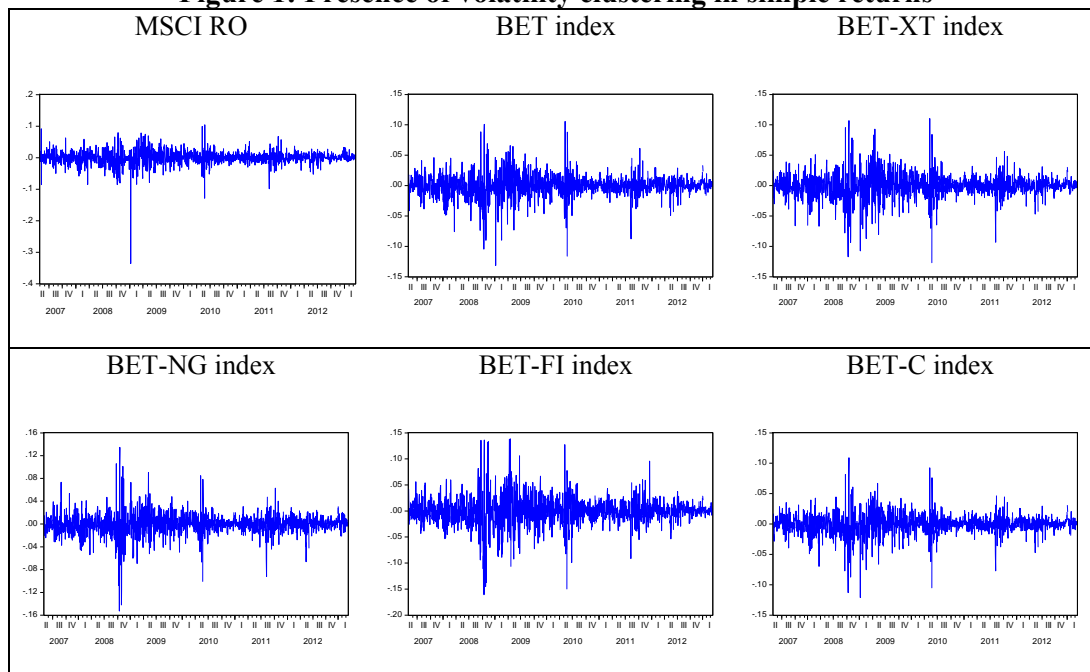**Figure 1: Presence of volatility clustering in simple returns**

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Table 2: Estimation of the autocorrelation (AC), partial autocorrelation (PAC) and Q-statistic with 20 lags for the squared returns

	AC	PAC	Q test	p-value
RO_MSCI	0.018	0.014	12.9	0.882
BET	0.117	-0.004	847.7	0
BET-XT	0.134	-0.019	1193.7	0
BET-NG	0.128	-0.041	1974.0	0
BET-FI	0.150	-0.051	1749.9	0
BET-C	0.137	0.013	1022.2	0

Source of data: Bucharest Stock Exchange, MSCI Barra; calculations by the authors

Table 3: Estimated values for the coefficients of the GARCH-M model used to test the presence of the Monday effect

	Coeff value	Std. error	Z ststistic	p-val		Coeff value	Std. error	Z ststistic	p-val
	Mean equation					**Variance equation**			
MSCI Barra Romania country index									
γ_0	-1.2816	1.9021	-0.6738	0.5004	ω	0.0000	0.0000	-0.8256	0.4090
μ	0.0022	0.0009	2.3999	0.0164	α	0.1992	0.0195	10.2293	0.0000
γ_1	-0.0037	0.0012	-3.0397	0.0024	β	0.7925	0.0159	49.7879	0.0000
γ_2	-0.0035	0.0011	-3.1257	0.0018	γ_5	0.0001	0.0000	2.0394	0.0414
γ_3	-0.0007	0.0020	-0.3389	0.7347	γ_6	0.0000	0.0000	-0.6843	0.4938
γ_4	0.0000	0.0011	-0.0082	0.9935	γ_7	0.0003	0.0000	11.9326	0.0000
					γ_8	-0.0002	0.0000	-5.3820	0.0000
BET									
γ_0	-0.2253	1.7987	-0.1253	0.9003	ω	0.0000	0.0000	-0.6613	0.5084
μ	0.0022	0.0007	2.9124	0.0036	α	0.2086	0.0145	14.3697	0.0000
γ_1	-0.0040	0.0010	-4.0306	0.0001	β	0.7977	0.0128	62.1732	0.0000
γ_2	-0.0021	0.0009	-2.1897	0.0285	γ_5	0.0000	0.0000	2.0889	0.0367
γ_3	-0.0011	0.0009	-1.1761	0.2395	γ_6	0.0000	0.0000	-0.2364	0.8131
γ_4	-0.0007	0.0009	-0.7864	0.4316	γ_7	0.0000	0.0000	-0.0902	0.9281
					γ_8	0.0000	0.0000	1.8105	0.0702

BET-XT

γ_0	-0.3815	1.7150	-0.2225	0.8240	ω	0.0000	0.0000	-2.2276	0.0259
μ	0.0018	0.0008	2.3941	0.0167	α	0.1656	0.0129	12.8024	0.0000
γ_1	-0.0036	0.0012	-3.1504	0.0016	β	0.8311	0.0123	67.8235	0.0000
γ_2	-0.0017	0.0010	-1.6605	0.0968	γ_5	0.0001	0.0000	4.6948	0.0000
γ_3	-0.0009	0.0009	-1.0277	0.3041	γ_6	0.0000	0.0000	-0.1930	0.8470
γ_4	-0.0002	0.0010	-0.1574	0.8749	γ_7	0.0000	0.0000	0.0429	0.9658
					γ_8	0.0001	0.0000	3.3454	0.0008

BET-NG

γ_0	-0.0130	1.7824	-0.0073	0.9942	ω	0.0000	0.0000	-0.3958	0.6923
μ	0.0018	0.0007	2.3954	0.0166	α	0.1937	0.0185	10.4503	0.0000
γ_1	-0.0031	0.0010	-2.9528	0.0031	β	0.8142	0.0147	55.3393	0.0000
γ_2	-0.0020	0.0010	-1.9849	0.0472	γ_5	0.0000	0.0000	2.2570	0.0240
γ_3	-0.0012	0.0009	-1.3030	0.1926	γ_6	0.0000	0.0000	-0.8936	0.3715
γ_4	-0.0008	0.0009	-0.8745	0.3818	γ_7	0.0000	0.0000	0.3823	0.7022
					γ_8	0.0000	0.0000	0.3971	0.6913

BET-FI

γ_0	-1.0920	1.2602	-0.8666	0.3862	ω	0.0000	0.0000	-1.8793	0.0602
μ	0.0016	0.0010	1.6192	0.1054	α	0.2989	0.0282	10.5822	0.0000
γ_1	-0.0015	0.0014	-1.1047	0.2693	β	0.6925	0.0220	31.5306	0.0000
γ_2	-0.0011	0.0013	-0.8374	0.4024	γ_5	0.0001	0.0000	5.3942	0.0000
γ_3	-0.0008	0.0012	-0.6646	0.5063	γ_6	0.0001	0.0000	2.8940	0.0038
γ_4	-0.0001	0.0014	-0.0423	0.9662	γ_7	0.0000	0.0000	-1.8642	0.0623
					γ_8	0.0001	0.0000	5.0178	0.0000

BET-C

γ_0	-0.6605	1.9337	-0.3416	0.7327	ω	0.0000	0.0000	-1.9102	0.0561
μ	0.0023	0.0006	3.7779	0.0002	α	0.1865	0.0136	13.7526	0.0000
γ_1	-0.0040	0.0009	-4.5973	0.0000	β	0.8212	0.0122	67.4307	0.0000
γ_2	-0.0030	0.0008	-3.6336	0.0003	γ_5	0.0000	0.0000	2.5389	0.0111
γ_3	-0.0016	0.0008	-2.0132	0.0441	γ_6	0.0000	0.0000	1.3284	0.1841
γ_4	-0.0010	0.0008	-1.2996	0.1937	γ_7	0.0000	0.0000	0.1594	0.8734
					γ_8	0.0000	0.0000	2.8507	0.0044

Source of data: Bucharest Stock Exchange, MSCI Barra; calculations by the authors

Table 4: Estimation of the autocorrelation (AC), partial autocorrelation (PAC) and Q-statistic with 20 lags for the standardized residuals and squared standardized residuals

	Simple standardized residuals				Squared standardized residuals			
	AC	PAC	Q test	p-value	AC	PAC	Q test	p-value
RO_MSCI	-0.028	-0.029	30.614	0.060	0.000	0.001	4.257	1.000
BET	-0.026	-0.025	38.747	0.007	0.016	0.017	23.717	0.255
BET-XT	-0.029	-0.030	48.069	0.000	0.008	0.014	34.060	0.026
BET-NG	-0.029	-0.023	26.977	0.136	0.008	0.015	36.508	0.013
BET-FI	-0.033	-0.036	49.753	0.000	-0.007	0.000	25.430	0.185
BET-C	-0.025	-0.026	52.209	0.000	0.021	0.023	17.418	0.626

Source of data: Bucharest Stock Exchange, MSCI Barra; calculations by the authors

GREEN ECONOMY – RISKS AND CHALLENGES OF SUSTAINABLE DEVELOPMENT

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Abstract

The concept of the green economy provides a response to the multiple crises that the world has been facing in recent years – the climate, food and economic crises – with an alternative paradigm that offers the promise of growth while protecting the earth's ecosystems and, in turn, contributing to poverty reduction. In this way, the transition to a green economy will entail moving away from the system that allowed, and at times generated, these crises to a system that proactively addresses and prevents them.

Keywords: sustainable development, green economy, risks, challenges

During the recent global financial crisis, the United Nations General Assembly and several UN agencies underscored that the crisis represented an opportunity to promote green economy initiatives as part of the stimulation packages being put in place to support the recovery. Furthermore, when the GA decided to approach UN Conference on Sustainable Development (UNCSD), which has been in June 2012 in Rio de Janeiro, it was chosen as one of its major themes, namely as "a green economy in the context of sustainable development and poverty eradication"

The concept carries the promise of a new economic growth paradigm that is friendly to the earth's ecosystems and can also contribute to poverty alleviation. Regarding in this framework, it is compatible with the older

concept of sustainable development which has been mainstreamed into the United Nations' work for many years. But it also entails risks and challenges, particularly for developing countries, for whom economic development becomes more demanding and the fear arises that the new concept could be used to reinforce protectionist trends, enhance the conditionality associated with international financial cooperation, and unleash new forces that would consolidate the international inequalities.

In May 2009 at the UNCSD's first Preparatory Committee, several delegations therefore requested that the United Nations Department of Economic and Social Affairs, the United Nations Environment Program, the United Nations Conference on Trade and Development and other relevant organizations cooperate to prepare a study to be available for the next Preparatory Committee which would assess both the benefits and the challenges and risks associated with a transition to a green economy.

The concept of a green economy has become a center of policy debates in the last years. It has gained currency to a large extent because it provides a response to the multiple crises that the world has been facing in recent years – the climate, food and economic crises – with an alternative paradigm that offers the promise of growth while protecting the earth's ecosystems and, in turn, contributing to poverty reduction. In this way, the transition to a green economy will entail moving away from the system that allowed, and at times generated, these crises to a system that proactively addresses and prevents them.[1]

There is not a single definition of the green economy, but the term itself underscores the *economic* dimensions of sustainability or, in terms of the recent UNEP report on the Green Economy, it responds to the "growing recognition that achieving sustainability rests almost entirely on getting the economy right". It also emphasizes the crucial point that economic growth and environmental stewardship can be complementary strategies, challenging the still common view that there are significant tradeoffs between these two objectives – in other words, that the synergies prevail over the tradeoffs.

Responding to concerns of many countries, the concept of green economy should be seen as consistent with the broader and older concept of

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[1] Khor, Martin, *Food Crisis, climate change and the importance of sustainable development*, Penang TWN, 2008

sustainable development. The specificities of the broader concept are its *holistic* character, as it encompasses the three pillars of development – economic, social and environmental – and its particular focus on *inter*-generational equity. This is reflected in UNEP's definition of a green economy as "one that results in improved human wellbeing and social equity, while significantly reducing environmental risks and ecological scarcities".[1]

Khor Martin raises several concerns and risks in the use of this concept from the perspective of developing countries. In particular, he underscores the need to identify and deal with the tradeoffs that may be involved at different stages of development and with different environment endowments and challenges. Furthermore, for connecting the concepts of the green economy and sustainable development, he underscores the need to respect fully the principles agreed upon at the 1992 United Nations Conference on Environment and Development (UNCED) and particularly the principle of common but differentiated responsibilities. This requires, in his view, a three-pronged approach in which: the developed countries have to take the lead in changing their production and consumption patterns; developing countries maintain their development goals but do so while adopting sustainable practices; and developed countries commit to enable and support the developing countries and sustainable development through finance, technology transfer and appropriate reforms to the global economic and financial structures.

Also, Khor presents several risks that may be associated with the misuse of the concept of the green economy. The first risk is that it could be defined or operationalized in a one dimensional manner, as merely "environmental". The second risk is that of a "one size fits all" approach, in which all countries are treated in the same manner. There are also a series of risks related to the trade regime: of using environment for trade protection; of gaining market access through the guise of environment; of developing countries' facing production that is subsidized in the industrial world without being able to impose corrective measures; of limiting the policy space that developing countries have to promote their own green economy sectors; and of facing technical standards that their exporters cannot meet.

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[1] UNEP, *The Economics of Ecosystems & Biodiversity. Mainstreaming the Economics of Nature*, 2010

And finally, the concept of the green economy should not be used to impose new conditionality on developing countries for aid, loans, and debt rescheduling or debt relief.[1]

While underscoring the connections between the economy and the environment, it should not lose sight of the equity dimensions, including the needs of the poorer members of society throughout the world, the specific needs of developing countries (and of different groups of developing countries) and, of course, of future generations.

The Macroeconomic Dimensions of the Green Economic Growth

There are four different macroeconomic issues that must be taken into account into a green economy analysis. The first one relates to issues of inter-temporal welfare: how the welfare of future generations is taken into account in current economic decisions, an issue that is relevant for savings and investment decisions today, but has broader implications, as the social discount rate chosen should be used in cost-benefit analysis at the microeconomic and sectoral levels. The second refers to the effects that the degradation of the environment has on aggregate supply, as well as the effects of environmental spending and protection policies on both aggregate supply and demand. The third is the fact that economic growth is always a process of structural change, a fact that is highlighted by the significant changes in the patterns of production and consumption that must be put in place in the transition to the green economy, which in this regard can be characterized as no less than a new technological or industrial revolution. The final one relates to how global initiatives in this area are going to be financed.

The first of these issues relates to the discount rate that is used to value in current economic decisions the consumption (welfare) of future generations and the environmental damages that are being created today but which will fully affect economic activity only in the future – the damages generated by climate change, the loss of biodiversity or the deterioration of water systems, to name just a few of all these. The importance of this issue can be best understood in terms of the debates of climate change. For

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[1] Khor, Martin, *The impact of trade liberalization on agriculture in developing countries: the experience of Ghana,* Penang TWN, 2008

example, environmental damage worth $100 half a century from now would be valued at $49.90 today using the Stern Review's discount rate of 1.4% a year but only $5.43 or $6.88 using the alternative rates preferred by its critics (6 and 5.5%, respectively). Therefore, using a high discount rate significantly reduces the social profitability of taking mitigation actions today, favoring delayed action or even no action at all. For this reason, a high rate of discount reduces the attractiveness of savings and investing today to benefit the welfare of future generations.[1]

This implies that social discount rates used for the analysis of optimal economic growth paths and associated savings and investment decisions are inherently linked to ethical debates on inter-generational equity. On these grounds, it is justified the use by Stern and supporters of strong environmental action of social discount rates that are the market rates. Indeed, the full inter-generational equity calls for the use of a discount rate equivalent to the expected rate of technical change (on the order of 1.5 to 2%). This also implies that savings and investment today to reduce environmental damages must be increased to benefit future generations.

A complementary argument is that strong action today insures future generations against the asymmetric and non-linear effects that certain developments can have on the ecosystem (for example, the fact that the risk of losses associated with climate change or the extinction of species, among others, is higher than the probability of a more favorable outcome than those being projected), including the rising likelihood of extreme events (catastrophes). As indicated, this implies that microeconomic and sectoral cost-benefit analysis of relevant environmental investments should be evaluated using low social discount rates.

Macroeconomic considerations also indicate that green investments have a dual positive economic effect, on aggregate supply and demand. In the first case, the recent Green Economic report by UNEP shows that a strategy of reallocating investments towards the green economy may lead to slower potential economic growth for a few years, as renewable natural resources are replenished (an effect that can be strong in some sectors, such as fisheries), but will result in the long run in faster economic growth.

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[1] Khor, Martin, *Some Key Points on Climate Change, Access to Technology and Intellectual Property Rights*, European Patent Office conference on climate change and IPR policy, Penang TWN, 2008

Furthermore, investments in the green economy also reduce downside risks of adverse events associated with climate change, energy shocks, water scarcity and loss of ecosystem services. They will also result in the long term in increased employment, as green investments are generally more employment intensive, and have direct benefits in terms of poverty reduction. The latter is particularly true in the case of agriculture, where green technologies will tend to improve the agricultural productivity of rural smallholders.

A full consideration of the fact that green investments today will also increase aggregate demand gives an even more positive macroeconomic picture. Also such investments can help increase economic activity and employment in the short-run, a much needed action for industrial economies that are still characterized by high levels of unemployment. This positive effect may even counteract whatever adverse aggregate supply effects those investments can have in the short term. In turn, to the extent that investment is embodied in new equipment or leads to learning-by-doing, higher investment induces productivity growth, reinforcing long-term growth. Obviously, the composition of the demand stimulus must be carefully chosen to reinforce sustainable development: certain types of consumption and investment must be restricted to avoid excessive resource depletion and waste, whereas environmentally-friendly investment and consumption should expand.

Developing Countries' Green: Development Strategies

The third macroeconomic dimension comes from recognizing that economic growth is nothing else but a process of structural change: one in which some activities expand, based on new technological knowledge, while others contract. In this "structuralist" view, those changes are not just a byproduct of growth but their prime mover: development is nothing other than the capacity of an economy constantly to generate new dynamic activities. This view is essential because the transition to the green economy involves no less than a technological revolution, and will have deep impacts on production structures as well as on consumption patterns.

These structural transformations have two types of implications. Since new technologies are largely going to originate in the industrial

countries, there are a series of international issues related to how these technologies are disseminated, what changes in trade patterns they will generate and what mechanisms will be put in place by the international community to guarantee that this process will benefit all countries. The second set of issues relates the domestic policy response by developing countries.

The major implication in this regard, which is underscored by the three authors, is that active development strategies must be put in place to drive the transformation towards new dynamic green activities. This strategy can be called as an investment-led strategy, or an active industrial and technology policy. In the latter case, it must be emphasized, however, that it involves not only manufacturing or industry but the whole range of economic activities (agricultural transformations, for example, are critical). For this reason, "production sector policies" could be a better term than industrial policies. Developmental states must be at the center of these strategies, but they must be designed to encourage strong private-sector responses. In Khor's terms, the state has traditionally had a strong developmental role in developing countries: it now has to take on a *sustainable* development role.

According to some specialists, the core of this strategy should be a strong technology policy with a focus on adaptation and dissemination of green technologies and the treatment of green economic activities as "infant industries" that require appropriate support (subsidies, preferably time-bound, access to credit and perhaps some level of protection). In the opinion of other specialists, a wise industrial policy requires giving preference to new public and private investment that contribute to sustainable development: investment with good prospects for generating backward and forward linkages in the economy, and which aligns with countries' development priorities. In the end, he argues, governments looking to support domestic green sectors will inevitably pick losers as well as winners, but this should not be a blanket admonition against trying, as we have a rich history on which to draw in judging what works and what does not. These actions should be supported by public sector investments that develop the necessary infrastructure and provide access to basic energy and water and sanitation for the poor.

Besides encouraging faster economic growth, the strategy must also incorporate sustainable development principles and practices. The set of related issues is extensively analyzed in Khor's contribution. It includes regulation, pricing policies, taxes and subsidies to limit pollution and emissions and to control over-exploitation of natural resources and making prices better reflect environmental values, as well as mainstreaming environmental criteria in government procurement policies. This principle should also be incorporated in the pricing of public services, but in such a way as not to penalize the poor, especially when the products or services concerned are essentials. Thus, if water is generally underpriced, when revaluing its price a system of differential pricing should be put in place that ensures access for the poor. Public expenditure on restoring damaged ecosystems (such as forests, hillsides, water catchment areas and mangroves) is also important.

One of the crucial issues is the right of rural communities to a clean environment that enables them to have a sound basis for their livelihoods and their living conditions. One of the most serious potential effects of global warming will be the lower productivity of agriculture in developing countries. For the same reason, however, poor rural communities are also among the main beneficiaries of the green economy. Sustainable agricultural production methods have great mitigation and adaptation potential, particularly with regard to topsoil organic matter fixation, soil fertility and water-holding capacity, and increasing yields in areas with medium to low-input agriculture and in agro-forestry.

In this context, paying farmers for carbon sequestration may be considered a "triple dividend" policy, as carbon dioxide is removed from the atmosphere (mitigation), higher organic matter levels and moisture retention in soils enhance their resilience (adaptation), and improved soil organic matter levels lead to better crop yields (production).

This issue is also related to "food security", a term that has shifted back to the traditional concept of greater self-sufficiency and increased local food production. This may require, in Khor's view, putting back many institutions that were dismantled in developing countries due to structural adjustment policies: those that assisted farmers in marketing, credit, subsidies, infrastructure, and protection. It should also include international trade reform that sufficiently reduces or removes harmful agricultural

subsidies in the developed countries, while enabling developing countries to have special treatment and safeguard mechanisms to promote their small farmers' livelihoods.

Domestic and International Technology Issues

The technological revolution surrounding the green economy is likely to differ from previous processes of this sort in at least three major ways. First of all, government policy is going to play a more central role than in past industrial revolutions. Secondly, given the level of integration of the world economy today and the fact that it is responding to veritable global challenges, the associated technological change is going to be essentially a global process, with specific international institutions playing a fundamental role in coordinating international cooperation. Thirdly, it will take place under the prevalence of intellectual property rights which are stronger and enjoy global protection under the TRIPS Agreement (Trade-Related Aspects of Intellectual Property Rights) of the World Trade Organization (WTO).

This raises essential issues as to who will benefit from technological change, in terms of being at the center of research and development efforts, and generating new economic activities and linkages with the rest of their economies. The available evidence indicates that most innovation in climate mitigating technology does take place in industrial countries and that, therefore, firms from those countries are the main holders of intellectual property rights, but a number of major developing country firms (from Brazil, China and India, in particular) have already gained some market share in new technologies. Given the center-periphery character of the process of technology generation, an important concern relates to whether this process will generate new forces for international inequality associated with the uneven technological capacities that already exist, both between industrial and developing countries but now also among developing countries.

A critical issue here is that, aside from the very large disparities in capacities to generate technology, technological absorption on the recipient side is always an active learning process. So, a central aspect of technology development and transfer is building local capacity so that developing

countries can absorb, adapt, diffuse into the domestic economy and eventually design new technologies. Government support is thus essential to create national systems of innovation. This requires mechanisms to disseminate the technology, such as agricultural extension services for green agricultural technologies and similar mechanisms to spread knowledge about better building practices to household and construction firms, and about energy-saving technologies to small and medium-sized manufacturing firms, to mention a few. It also requires growing public, academic and private research and development and engineering teams that adapt imported technology and eventually contribute to generate new technology.

In any case, given the fact that most developing countries will be technology followers, there is a need to develop global institutional arrangements that increase international cooperation and collaboration on research and development in all areas relevant for green growth, and accelerate the spread of those technologies to developing countries.

An important measure to promote sustainable development is to expand the space for technologies in the public domain, and to stimulate the transfer to developing countries of publicly-funded technologies. Industrial countries should influence the flow of such technologies directly, or through requiring the private sector and public institutes that receive research and development funding from government to be more active in transferring technologies to developing countries. At the international level, there can also be public funding and joint planning of research and development programs, following for example the model of the Consultative Group on International Agricultural Research (CGIAR).

Products and technologies emerging from such publicly funded programs should be placed in the public domain. A network of technology experts in various areas should be made available to advise developing countries, as well as designing a model of research and development cooperation agreement, global demonstration programs, knowledge-sharing platforms, and a global database on freely available technologies and best practices in licensing.

International Trade and Investment Rules

Changing trade patterns will be an essential part of the structural change surrounding the transition to the green economy. This restructuring brings potential economic benefits to developing countries by opening up new export opportunities. The growth in environmental goods and services has tended to exceed growth of merchandise exports since at least the mid-1990s as well as growth of GDP. However, there are also risks. Although, some developing countries – notably China, but also India and Brazil – are participating dynamically in these markets, most environmental goods are produced in industrial countries. New trends also pose risks associated with using environment for protectionist purposes, including the undue use of subsidies and technical standards, and limiting the policy space that developing countries have to promote their own green economies.

One obvious way trade policy might help in the greening of economies is by lowering tariff and non-tariff barriers to goods such as wind turbines and efficient light bulbs, and services such as environmental engineering. However, Khor claims that some developed countries may be attempting, through the categorization of certain goods and services as "environmental", to eliminate the tariffs of unrelated goods in WTO negotiations. In turn, he argues in favor of developing countries retaining some room for protection to develop their own environmental goods and services and support their diversification efforts.

Khor and other specialists also cautioned against the use of environmental standards as a new form of protectionism. The clearest case is that of border carbon adjustments, which would operate in practice as additional import tariffs and should thus be rejected. In addition, standards and prohibitions based on production and processing methods, which are not necessarily protectionist, may be easily specified in ways that provide undue advantage to domestic producers. They include carbon footprint labels, or labels that display the amount of greenhouse gases a product emits over its life cycle. More generally, environment-related product and process standards, regulatory regimes and restrictions are steadily ratcheting up in industrial economies, and private buyers in these countries are also developing a parallel set of related standards and codes.

The rise of these standards has major implications for developing country exporters. Governments should thus focus on enabling exporters to meet such standards, working with the private sector to communicate the content of the regulations and to help firms identify, acquire and assimilate the technologies needed to meet them. Governments can also help build accredited national or regional capacity to test and certify goods as compliant; this includes building laboratories, working with foreign accreditation bodies, supporting technical training etc. They can also design domestic standards that are not too far from those required internationally, which would help build up private sector capacity to export successfully to demanding key markets and result in less local pollution, resource use and waste. At the international level, however, the plethora of product energy performance standards, testing procedures and labeling requirements used in different markets creates a barrier to export. Harmonizing these standards would thus be a huge boon, in particular for small and medium sized exporters.

The support given by industrial countries to green industries, including for research and development, though essential for the transition to the green economy, also raise some concerns. There is nothing close to international agreement on the propriety and ideal character of such support, which is thus liberally granted by developed and developing countries alike. Furthermore, while there are rules in this area, there is a divergence of opinion among some authors about what WTO rules say, which reflects a broader policy debate. Although we could wait for clarity from the WTO dispute settlement process, this would not give policy makers certainty about what they can and cannot do.

Furthermore when rule-breaking is a widespread practice, it is unwise to use this mechanism, as any WTO dispute settlement decision risks looking anti-environment, anti-development, or both. Far better would be to hammer out some agreement (whether inside or outside of the WTO) that would identify best practice in the application of such support that is consistent with fair international trade.

Usually, there is broad agreement that technical standards and subsidies are essential for the transition to the green economy, but there is the possibility, as Khor argues that, through particular and narrow definitions of the trade-environment connection, powerful nations could try

to shift the economic burden of ecological adjustment to the weaker parties. A particular challenge is this regard is the interpretation of GATT Article XX, which allows countries to take measures contrary to the GATT rules on certain grounds, including measures "necessary to protect human, animal or plant life or health" and measures relating to the conservation of exhaustible natural resources.

Excepting these considerations, some countries will lose markets and/or suffer worsening terms of trade under a green economy. Any policies that help them successfully diversify away from known long-run losers would be essential for their success in a global green economy. A major concern here is obviously the commodity dependence of a large number of developing countries, particularly in Africa, the Middle East and Latin America. However, the best way to face the structural diversification efforts is to start by relying on capabilities and assets they already possess. For the economies that rely heavily on extractives, the most feasible near-term course is to focus first on process improvements to existing activities, though clearly understood as a step in building up different classes of activities.

Finally, the existing international investment "regime" – a web of over 2,700 bilateral investment treaties, investment provisions in a growing number of free trade agreements, and a host of firm/project-specific host government agreements – poses additional challenges. The first is that the plethora of agreements does not help states discriminate between desirable and undesirable forms of investment; in fact, some provisions in these agreements may actually act as obstacles to that sort of discrimination. Even more troublesome is the fact that, over the past decade, private sector actors have increasingly used dispute settlement provisions under these agreements to compel states into binding arbitration, arguing that new environmental regulations amount to an expropriation of their investments, or that they violate provisions on fair and equitable treatment by changing the rules of the game. This inappropriate interpretation of investment protection regulations must be unmistakably corrected. Furthermore, the Agreement on Trade-Related Investment Measures (TRIMS) under WTO and most investment agreements also prohibit the use of performance requirements. Such measures can be shown to work in fostering new innovative global players, prohibiting them could constitute an obstacle to

achieving a green economy. So, as in the area of subsidies, it may be better to reach fresh international agreement as to what should be acceptable (and/or best) practice in this area in the pursuit of the green economy.

In conclusion, there are many challenges and obstacles facing developing countries in moving their economies to more environmentally friendly paths. On one hand this should not prevent the attempt to urgently incorporate environmental elements into economic development.

On the other hand, the various obstacles should be identified and recognized and international cooperation measures should be taken to enable and support the sustainable development efforts. The conditions must be established that make it possible for countries, especially developing countries, to move towards a "green economy." The main conditions and dimensions have been recognized in the negotiations that led to Rio 1992, and are well established in the Rio Principles and in Agenda 21. The treatment of the "green economy" in Rio Plus 20[1] should be consistent with the sustainable development concept, principles and framework, and care should be taken that it does not detract or distract from "sustainable development". Thus the "value added" to the Green Economy as contrasted to sustainable development should be identified. Care has to be taken to ensure that the "green economy" term and concept is also understood to include the social, equity and development dimensions, including the need for international provision of finance and technology and accompanying global economic reforms and that the risks of the misuse of the term are adequately addressed.

Bibliography

1. Amza, Gh., Ecotechnology and sustainable development, vol. 1-2, Printech Publishing House, Bucharest, 2009;
2. Baboianu, G., Benea, C., Rusu, T., Strategies and policies on sustainable development and biodiversity protection, U.T. Press Publishing House, Cluj-Napoca, 2009;
3. Georgescu-Roegen, N., Complete Works. Energy, natural resources and economic theory, Expert Publishing House, Bucharest, 2006;

---

[1] Khor, Martin, *Preliminary Notes on the Green Economy, in the context of sustainable development*, Statement at the panel on Green Economy at the Rio Plus session, 2011

4. Khor, Martin, Food Crisis, climate change and the importance of sustainable development, Penang TWN, 2008;

5. Khor, Martin, Preliminary Notes on the Green Economy, in the context of sustainable development, Statement at the panel on Green Economy at the Rio Plus session, 2011;

6. Khor, Martin, Some Key Points on Climate Change, Access to Technology and Intellectual Property Rights, European Patent Office conference on climate change and IPR policy, Penang TWN, 2008;

7. Khor, Martin, The impact of trade liberalization on agriculture in developing countries: the experience of Ghana, Penang TWN, 2008;

8. Lachman, B.E., Linking Sustainable Community Activities to Pollution Prevention: a Sourcebook, Critical Technologies Institute, Canada, April 1997;

9. Polimeni J.M, Polimeni-Iorgulescu R., Shirey R.L., Trees C.L., Trees W.S., The Demand for Community Suppported Agriculture, Journal of Business and Economics Research, 4(2), pp 49-59, 2006;

10. The Economics of Ecosystems and Biodiversity for National and International Policy Makers, TEEB, 2009;

11. UNCED, Rio Principles on Environment and Development, New York, United Nations, 1992;

12. UNCED, UN Conference on Environment and Development: Agenda 21, New York, United Nations, 1992;

13. UNCTAD, The Green Economy: Trade and Sustainable Development Implications, Geneva, United Nations, 2010;

14. UNEP, The Economics of Ecosystems & Biodiversity. Mainstreaming the Economics of Nature, 2010;

15. United Nations, Report of the Secretary-General's high-level advisory group on climate change financing, New York, United Nations, 2010.

FOOD SAFETY, FOOD SECURITY AND ENVIRONMENTAL RISKS

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ABSTRACT

This paper shows how food safety, food security and environmental risks associated with agriculture can be alleviated through sustainable agriculture.

Today, most of the countries are arguably food insecure. Developed countries rely mostly on industrial agriculture which has led to increasing monocropping and imported food while developing countries are extremely vulnerable to food price inflation. The risks associated with food insecurity are political and economic instability.

Modern industrial agriculture mindset assumes the reality of substitution between land and external chemicals and management systems that resulted in overvalued land and undervalued social costs of the negative externalities with the associated environmental risks of polluted water, acid rain and degraded soil.

The globalization of the food production and the intensification of food trade enhance the risks associated with food safety. Food consumption all over the world is a mixture of imported agricultural products and domestic products making difficult to find the contamination source in case of a food scare.

The development of agriculture is an essential way to raise national income and improve the welfare of rural dwellers whether a developing country or a developed country. The paper makes the case that sustainable agriculture is the best method for agricultural development with the largest opportunity for economic development and reduction or alleviation of environmental, food security and food safety risks.

Keywords: sustainable agriculture, food safety, food security, environmental risks

JEL Classification: Q18, Q32, Q34, Q57

1. Introduction

Malthus famously predicted that population will grow faster than food production causing widespread starvation and death. Fortunately, this prophecy did not come to fruition since technological advancements, more land dedicated to farming, advanced farming techniques, and capital investment have been able to supply a plentiful amount of food for the world's population. However, another force increasing the demand for food should be considered. Between 1950 and 2011, the level of urbanization increased fivefold (UN DESA 2012:4). High levels of urbanization are linked to changes in the pattern of food consumption (Regmi and Dick, 2012) and also, as income increases, the demand for food, whether fresh or processed, generally increases (Engels' Law). As a result, the increasing amount of food that must be produced and sent from rural farms to cities increases the stress on agricultural production and might force a country to import, or increase its imports, of food. All countries are exposed to both food security and food safety risks, although poorer and less developed countries (where subsistence agriculture is prevalent) are more vulnerable to food security associated risks while developed countries (due to their reliance on industrial agriculture and processed food) are more vulnerable to

food safety associated risks (food scares). High environmental risks are also associated with industrial agriculture.

The paper is organized as it follows: Section 2 discusses some issues related to food security. Section 3 briefly presents the environmental risks associated to modern, industrial agriculture. Section 4 explains why industrial agriculture is related to an unsuccessful integrated rural development while Section 5 introduces sustainable agriculture as a possible solution for the conundrum of modern agriculture. Section 6 argues how food safety associated risks are alleviated by sustainable agriculture. Section 7 concludes.

2. Food security

According to the ideas presented by Clark (1940), Kuznets (1966) and many other neoclassical development economists, the agricultural sector is the support system for the rest of the economy, providing key resources so that the economy can be transformed into an industrial, commercial, and service economy. For this objective to be accomplished public policy must be designed to generate and sustain a structural transformation of an economy. However, no country has ever achieved rapid economic expansion without first being food secure (Timmer, 1998: 205). Therefore, the growth of the agricultural sector must also be encouraged.

Despite the fact that developed countries became food secure and successfully completed a structural transformation of their economies, many, if not all, developed countries are arguably food insecure today, relying on industrial agricultural approaches which has led to monocropping and importing food. Any food crisis, whether a shortage or spike in prices, can cause political and economic instability. This instability causes households to spend more of their income on food and increases their precautionary savings for periods of uncertainty. In turn, these changes by households can have a significant spillover effect on the rest of the economy. Those looking to profit turn to speculation rather than productive investment which slows economic growth (Timmer, 1998: 207). For example, food prices, particularly grain, spiked in 2008 contributing to the financial crisis that occurred late that year. Once again, food prices spiked in 2010 and 2011 causing many forecasters to speculate that further economic, political, and

social disruption will follow. In fact, one news report suggested that the end of cheap food may be drawing to a close (Arasu, 2011).

Since the United States changed their agricultural policy in the 1970s, prices for agricultural inputs have risen steadily over time while the agricultural output price index has remained relatively stable (Fuglie, MacDonald and Ball, 2007). Price variability of important agricultural commodities is correlated with oil prices. Not surprisingly, the major variability in food prices occurs when there is a shock to petroleum prices. This price variability has resulted in small farms going out of business because they are not able to cope with these price changes.

While the price ranges of commodity food prices are uncertain, one thing that is sure is that food prices will remain at a higher level and be more volatile than the world population has experienced the past forty to fifty years. As many countries have little agricultural production and/or infrastructure in-place or have specialized in the production of certain fruits or vegetables, the increase in food prices is highly likely to cause food security issues. Therefore, food production should be a priority of any country. However, the focus should not be just on food production but rather on diversified, sustainable food production. This form of agriculture will counter the speculators investing in commodities and reduce their effects on food prices. Furthermore, focusing on food security through sustainable agriculture would ensure that a nation would not be dependent on food imports. Economic growth could follow as food prices would be stable, domestic farmers would have greater security as their products will have a market, and rural households would have more disposable income to spend spurring rural economic development.

The 2008 global economic crisis was mostly caused by higher energy prices and a breakdown of financial institutions. It triggered higher food and commodity prices, a decrease in profits from exports, and less income that could be used for food purchases or for remittances. Higher food prices caused riots in more than two dozen countries, and renewed political and scientific interest in food security (Barrett, 2010). Also, in many of these countries, riots lasted more than five months and caused companies to go bankrupt (Singh, 2011).

The food price inflation was again the precipitator for more social upheaval in early 2011. Throughout the Middle East and Northern Africa, protests

resulted in the overthrow of the governments in Tunisia and Egypt. Furthermore, many other countries in the region, such as Jordan, Lebanon, Syria, and Algeria, were on the verge of complete turmoil. While there are other reasons that contributed to this social unrest, such as high youth unemployment, the increase in food prices was the main cause for protests in countries with little agricultural production, largely developing countries, and which have been affected the most.

All of these issues have emphasized the importance of agriculture. Agriculture is an especially important sector for economic growth. Periods of economic slowdown reduce the ability of developing countries to import food which creates severe food security issues. Nearly all countries, developed and developing, rely, to varying degrees, on food imports. In fact, the dependence on imports for food from 1970 to 2003 increased the most among least developed countries. In 2003 imports by low income countries accounted for 17% of grain consumption, 45% for sugar and sweeteners, and 55% of vegetable oils, an increase from 8%, 18%, and 9% respectively in 1970 (Rosen and Shapouri, 2009). International trade, globalization, can have the greatest negative impact on developing countries because they have the least influence on world market prices. Furthermore, given today's environmental problems, limits of arable land, water constraints, and increasing reliance on agricultural products for energy, agricultural commodity prices will continue to raise.

3. Ecosystem risks

Some countries developed agricultural policies that focus on the intensification of agricultural production. Many of these policies were centered on high-yielding crop varieties grown in an industrial fashion; in other words, monocropping. Concentration occurs largely because industrial agricultural firms that use high cost external inputs to production, such as fertilizer, can lower per unit cost by farming large plots of land thus obtaining higher profits. Centralization has led to a reduced variety of crops being produced. For example, the number of commodities produced per farm in the United States has significantly decreased in the past century. Currently nearly 70% of agricultural land in the Midwestern United States is devoted to growing corn, soy, and sugar on a farm averaging 14,000 acres (equivalent to slightly more than 7,000 American football fields) (Barber,

2005). Furthermore, California grows approximately 93% of grapes, 50% of tomatoes, 78% of lettuce, 100% of almonds, and 76% of strawberries produced in the United States. Additionally, over 55% of California grapes were grown in three adjacent counties and nearly 78% of lettuce in six bordering counties (Cameron and Pate, 2001).

Other Western countries that have adopted this industrial agricultural approach have had a similar decrease in the number of commodities per farm. While industrial agriculture allows farmers to obtain high yields of one crop, the environmental damage is just as high. Intensive monocropping depletes nutrients from the soil causing fertility to decrease. This, in turn, causes farmers to have to apply higher levels of chemical fertilizer and pesticide. This statement is particularly true for communities or countries which diminish, destroy, or use-up their natural resources that are needed to produce food, as well as for their survival. The Western agricultural system has relied on machinery and biological and chemical technology. These efforts have been made in an attempt to improve output yields and to cut costs. Initially, this was not a problem as the price of fertilizer and pesticides decreased in relation to the price of land, causing fertilizer and pesticide use per hectare to increase substantially. Over time the annual amount of fertilizer in pesticides required to produce the same amount of agricultural output has continuously increased to the point where soon yields will decrease. The extensive use of fertilizer and pesticides will eventually lead to farmland becoming brown-fields, leaving the land unproductive for agricultural use; the total farm output has flattened out in the United States since 1998 (Fuglie, MacDonald and Ball, 2007).

As a result, environmental services, such as the absorption of the residuals from agricultural production, have been treated as a free good. This mindset has caused scientific and technical innovation to be biased toward substitutions for land such as external chemicals and management systems that have overvalued land and undervalued the social costs of the negative externalities of the industrial agricultural process (Runge et al., 1990; Ruttan, 1994).

In addition to pollution caused by fertilizer use, agricultural land has also been negatively affected by other environmental problems such as polluted water and acid rain. Many of these issues came to the forefront during the late 1980s and the early 1990s with the release of the Brundtland report and

the UN conference on the environment and development in Rio de Janeiro (Staatz and Eicher, 1998). Later, in the late 1990s and early 2000s climate change became an important issue with the global populace and concern grew over how agricultural production would be affected. The increased levels of man-made gases such as carbon dioxide in the atmosphere, massive deforestation, as well as other human caused environmental problems are believed to be a major contributor to climate change. These changes to global climate will have an effect on agricultural systems. Models have been simulated to illustrate how global agricultural systems may be affected (Cline, 2007; Mendelsohn and Dinar, 2009; Lobell and Burke, 2010). Not surprisingly, developing countries will be most negatively affected.

Agricultural practices pollute the surrounding ecosystems, which in turn negatively impacts output yields. Thus, there is a vicious feedback loop. Modern agricultural approaches, which require the use of increasing amounts of external man-made inputs, degrade the land in direct use for agricultural production, pollutes the groundwater and the surrounding ecosystem. In turn, the contaminated water and animal excrement are returned to the land which further deteriorates the soil.

4. Industrial agriculture and the unsuccessful integrated rural development

Although agricultural subsidies are the main reason agricultural policies developed for rural economic development are not implemented, a variety of other reasons exist for an unsuccessful integrated rural development program. First, and related to agricultural subsidies, there is a lack of commitment from individual and collective governmental agencies and politicians (World Bank, 1987). This statement is true for both developed and developing countries. Governments and politicians in developed countries do not want to alter agricultural policy because the agricultural corporations and farmers in their respective countries have considerable influence through lobbying groups and political contributions. In developed countries the agricultural corporations and large-scale farmers benefit from a lack of a cohesive rural development strategy. Therefore, the politicians and government agencies are often afraid to challenge the agricultural corporations and farmers because they are fearful of losing political power

as well as monetary contributions from these special interest groups. This lack of government commitment and power of the agricultural industries and large-scale farmers create an adverse policy environment that hampers agricultural policy reform from occurring.

A second reason for an unsuccessful integrated rural development program is the lack of infrastructure. This reason is more generally a problem for developing countries as infrastructure is often limited due to insufficient funds to carry-out expensive development projects. In particular, the lack of revenue has a major impact on the accessibility of technology (World Bank, 1987). Infrastructure, such as roads, food processing plants, and railways are needed to expand rural development. Without proper infrastructure additional agricultural production will not occur because farmers will not grow additional product that they cannot bring to market to sell. Therefore, infrastructure is a necessary investment in rural areas if a country seeks to increase agricultural development. Additionally, initial investment in technological improvements such as irrigation systems and tractors would most likely need to be financed by national governments until the agricultural system moved away from subsistence or semi-subsistence agriculture. However, these issues also exist because in many countries struggling to achieve development there is a lack of institutions in rural regions. To facilitate rural development, local and regional institutions, such as agriculture agencies, are needed to monitor development programs (World Bank, 1987). However, perhaps most important is access to financial services for rural dwellers. Often in rural areas there is either a severe shortage of or no financial institutions at all for people living in these regions to receive credit or to save their earnings. While in recent years microfinancing has filled this void somewhat, there is still a large problem for those living in rural regions to obtain financing. Access to financial services is a vital component of rural economic development because without access to these services farmers cannot make the appropriate investments they need to expand their productive capacity.

A third reason for an unsuccessful integrated rural development program is that the benefits for participating in agricultural development are often unrecognized. Farmers, especially in developing countries, do not see the point in expanding their production if the support programs and institutions, such as those listed above, are not available because they do not have access

to markets that are large enough to sell their goods. From a governmental perspective, financing of these initiatives must occur without a guarantee that agricultural development will occur. The government must convince farmers that if they produce more they will earn more money and be better off. In many countries this obstacle is very difficult to overcome as many citizens do not trust their government because of bad previous experiences in their relations. Therefore, a major problem is the lack of beneficiary participation (World Bank, 1987).

Despite these complex issues and problems, small, sustainable farms can result in growth in the agricultural sector as productivity is often higher on small farms than larger farms (Berry and Cline, 1979) supporting the opinion that sustainable agriculture is an acceptable alternative to modern, industrial agricultural systems. However, over time the most fertile land was already in use and agriculture was in an ever-increasing competition for land with industrial, commercial, and residential developers. Therefore, the land suitable for agriculture is already in some form of use, leaving only marginal land, at best, for farming. This realization has led to the second concern nations and individuals have about sustainable agriculture which is related to producing sufficient output yields. In the industrial agriculture approach farmers have turned to fertilizer, pesticides, herbicides, and irrigation to increase output yields. However, sustainable agriculture does not use artificial, external inputs to increase output yields. This reality has caused concern that productivity growth using sustainable agriculture will not be possible.

Therefore, reliance on industrial agriculture has continued despite increased calls and demand for sustainable agricultural approaches. This reliance on industrial agriculture has limited the capacity of countries to respond to the concerns of food shortages, particularly in developing countries where there is considerable difficulty in developing and maintaining agricultural research (Eicher, 1994). Furthermore, the external inputs used in industrial agricultural practices, fertilizer, herbicides, pesticides, and irrigation, are heavily energy intensive. As stated previously, ever-increasing amounts of these external inputs will be needed to maintain production yields consuming more energy. However, as energy prices increase these external inputs will increase the costs of production in the industrial agricultural

approach and become a significant primary resource constraint to expanding production further (Desai and Gandhi, 1990; Chapman and Barker, 1991).

5.   Sustainable agriculture: a possible light at the end of the tunnel
Making matters worse there has been a worldwide decrease in the number of farms. Furthermore, the farms that remain are much larger in size. Effland and Conklin (2005) show the inverse relationship between average farm size and the number of farms in the United States.

Other Western countries have a similar relationship. In large part these changes to the structure of farms has come as a result of globalization. As Western countries have increasingly shifted their production to grow but just a few crops for biofuels and other non-food purposes, developing countries are exporting their agricultural production for money, taking food out of their system and, on many occasions, making their countries food insecure. For example, India has been successful in increasing agricultural production the past decade or so, yet the country still has a high percentage of citizens which are either under- or malnourished because they export their food crops. Although some may think this to be an isolated case, due to financial considerations many developing countries are also exporting their agricultural production. The result has been for small farms all over the world, developed countries and developing countries alike, to go out of business while large farms relying on the industrial agricultural method of monocropping has become the norm. Governments, using neoclassical economic theory, have promoted industrial agriculture with mega-sized farms to shift labor to non-agricultural purposes because technological advancements, as discussed previously, would cause the prices of agricultural products to decrease. Furthermore, the neoclassical theory also encourages that resources are employed in non-agricultural sectors because the returns will be greater in these other sectors now that agricultural prices are lower.

Thus, neoclassical economic theory has contributed to the agricultural conundrum that exists today; large, mega-farms producing relatively few crops. However, these same policies in conjunction with environmental concerns and apprehension over population pressures has caused many individuals to understand that the current industrial agricultural methods will result in lower agricultural productivity, higher food prices, and

increased poverty in rural regions (Eicher and Staatz, 1998). This realization has resulted in a demand driven movement for sustainable agricultural products that has significantly expanded in the past decade.

Using sustainable agricultural techniques can halt, and with some methods reverse, the negative externalities caused by industrial agriculture. Rural household incomes and living standards, given some external assistance, can increase substantially using a sustainable approach to agriculture. Agricultural products made using sustainable methods have higher value-added and cut costs due to the reduction of external inputs to production and the goods are sold locally. However, there are indirect benefits to sustainable agriculture as well. Rural economic development will lead to improved public health, better public services such as education and sewage treatment, a cleaner environment, and improved rural-urban equity.

Furthermore, sustainable agricultural practices can also alleviate food inflation risks. Since food is not imported from long distances, transaction costs are not incurred because food is available locally. Additionally, if food was produced and sold locally, world prices would drop keeping food inflation in check.

6. Food safety

Due to various international trade agreements such as the World Trade Organization, the European Commission, and the North American Free Trade Agreement the levels of food actively traded has reached unprecedented heights which has put undue pressure on inspection centers and reduced food safety. Import shares of U.S. food consumption have steadily increased from 1981 to 2001 in every major food consumption category. From 1990 to 2007, total fresh and processed fruit and vegetable imports in the United States have more than doubled (USDA, 2003). According to the FAO (2010), food imports in developing countries are projected to increase considerably in the coming years in most major food consumption categories.

The increase in imported food causes domestic farmers in a country to quit farming because of increased competition. In particular, farmers in developing countries often cannot compete with farmers in developed countries. Furthermore, the importation of agricultural products has led to the monocropping that is prevalent in industrial agriculture.

Domestic agricultural products, especially in developed countries, are much less likely to have harmful bacteria. That does not mean that foodborne illnesses do not occur domestically. For example, the United States has had a number of high profile outbreaks of Salmonella in the past few years. Additionally, the United Kingdom experienced a large outbreak of foot-and-mouth disease in 2001. However, domestically produced food will typically be safer to consume. First, domestically produced agricultural goods are easier to inspect, whereas the amount of imported food is very large and requires an extensive inspection system. Secondly, consumers have a resistance to the bacteria in domestically produced food while imported food will most certainly contain bacteria that are foreign to their bodies leaving them susceptible to disease and illness. Lastly, if an outbreak does occur, domestically produced agricultural products are much easier to track in order to find the source of the outbreak. Imported agricultural products are combined with domestic products which severely complicates the ability to find a contamination source because the food has been cross-contaminated.

Perhaps the greatest indirect impact on economic development from using local, sustainable agricultural practices is the reduction in health care costs, both monetarily and with improved health of workers which leads to higher productivity. There are a few reasons for health improvements. First, because food is grown locally and does not have to be picked before maturity in order to be shipped thousands of miles, the food will be more nutritious. Second, agricultural products produced using sustainable methods do not have harmful pesticide and herbicide residues. According to the United States FDA (Food & Water Watch, 2008) imported fruit is four times more likely and vegetables twice as likely to have illegal levels of pesticide residues. Other Western countries are likely to have similar results. Beru and Salisbury (2002) reported that imported produce to the United States was more than three times more likely to contain Salmonella and Shigella than domestic produce.

7. Conclusion

Despite all the advantages of a sustainable agricultural approach for economic development, the environment, and society, industrial agriculture remains the leading method today. Countries and policy-makers around the world have been led to believe that agricultural commodities can be treated

like any other product and traded on the global marketplace. This belief has become the dominant viewpoint based upon neoclassical economic theory and the concept of comparative advantage which stresses that each country has their own development path given resource endowments and their stage of development. The result was economic policies promoted by economic development agencies that stressed industrialization for developing countries which resulted in monetary resources being diverted from agriculture. Unfortunately, in many instances, those economic policies led to stagnant economic growth and countries that were once food secure are now relying on imports of agricultural products. In developed countries the impact has been slightly less severe. In these countries, as development expanded, both population and household incomes rose, which increased the demand for food. To feed this economic growth, labor was shifted from the agricultural sector to nonagricultural production. The key difference between developed and developing countries is that developed countries already have high agricultural production and the necessary support infrastructure. However, whether a developing country or a developed country, it is clear that agricultural development is a real opportunity to raise national income and improve the welfare of rural dwellers.

References
- Arasu, K.T. 2011. "An Era of Cheap Food May Be Drawing to a Close." Reuters News Service. http://www.msnbc.msn.com/cleanprint/CleanPrintProxy.aspx?1296437095005
- Barber, D. 2005. "Stuck in the Middle." The New York Times, November 23, 2005.
- Barrett, C.B. 2010. "Measuring Food Insecurity." Science. 327 (5967): 825 -828.
- Berry, R.A., and Cline, W.R. 1979. Agrarian Structure and Productivity in Developing Countries. Baltimore: Johns Hopkins University Press.
- Beru, N. and Salsbury, P.A. 2002. "FDA's Produce Safety Activities." Food Safety Magazine. 2: 13-19.

- Cameron, G. and J. Pate. 2001. "Covert Biological Weapons Attacks Against Agricultural Targets: Assessing the Impact Against US Agriculture." Terrorism and Political Violence 13(3): 61-82.
- Chapman, D. and Barker, R. 1991. "Environmental Protection, Resource Depletion, and the Sustainability of Developing Country Agriculture." Economic Development and Cultural Change. 39 (4): 723-737.
- Clark, C. 1940. The Conditions of Economic Progress. London: Macmillan.
  Cline, W.R. 2007. Global Warming and Agriculture: Impact Estimates by Country. Washington, D.C.: Center for Global Development, Peterson Institute for International Economics.
- Desai, G.M. and Gandhi, V. 1990. "Phosphorous for Sustainable Agricultural Growth in Asia: An Assessment of Alternative Sources and Management." In: Phosphorous Requirements for Sustainable Agriculture in Asia and Oceana. Los Banos, Phillapines: International Rice Research Institute.
- Eicher, C.K. 1994. "Building Productive National and International Agricultural Research Systems." In: Ruttan, V.W. (ed.). Agriculture, Environment and Health: Toward Sustainable Development in the 21st Century. Minneapolis: University of Minnesota Press. 77-103.
- Eicher, C.K. and Staatz, J.M. 1998. International Agricultural Development, 3rd Edition. Baltimore: The Johns Hopkins University Press. FAO. 2010
  http://www.fao.org/news/story/en/item/47733/icode/
- FDA. 2003. Risk Assessment for Food Terrorism and Other Food Safety Concerns. Center for Food Safety and Applied Nutrition, U.S. Food and Drug Administration, October 7.
- Food & Water Watch. 2008. The Poisoned Fruit of American Trade Policy: Produce Imports Overwhelm American Farmers and Consumers. www.foodandwaterwatch.org
- Fuglie, K.O., MacDonald, J.M., and Ball, E. 2007. Productivity Growth in U.S. Agriculture. EB-9, U.S. Department of Agriculture, Economic Research Service. September.
- Hayami, Y. and Ruttan, V.W. 1985. Agricultural Development: An International Perspective. Baltimore: Johns Hopkins University Press.

- Kuznets, S. 1966. Modern Economic Growth. New Haven: Yale University Press.
- Lobell, D. and Burke, M. 2010. Climate Change and Food Security: Adapting Agriculture to a Warmer World. Dordrecht: Springer.
- Mendelsohn, R. and Dinar, A. 2009. Climate Change and Agriculture: An Economic Analysis of Global Impacts, Adaptation and Distributional Effects. Cheltenham, U.K.: Edward Elgar.
- Regmi, A. and Dyck, J. 2012. "Effects of Urbanization on Global Food Demand". In 'Changing Structure of Global Food Consumption and Trade / WRS-01-1', Regmi A. (ed.), Economic Research Service/USDA, p. 23-30. Online at http://www.ers.usda.gov/publications/wrs-international-agriculture-and-trade-outlook/wrs01-1.aspx#.UVGPFtbIvSm
- Rosen, S. and Shapouri, S. 2009. "Global Economic Crisis Threatens Food Security in Lower Income Countries." Amber Waves. 7(4): 38-43.
- Runge, C.F., Munson, R.D., Lotterman, E., and Creason, J. 1990. Agricultural Competitiveness, Farm Fertilizer, Chemical Use and Environmental Quality. St. Paul, Minnesota: Center for International Food and Agricultural Policy, University of Minnesota.
- Ruttan, V.W. 1994. "Constraints on the Design of Sustainable Systems of Agricultural Production." Ecological Economics. 10: 209-219.
- Singh, S.D. 2011. "Absorbing the Food Shock of 2011." Bloomberg Businessweek. March 3.
- Staatz, J.M. and Eicher, C.K. 1998. "Agricultural Development Ideas in Historical Perspective." In: Eicher, C.K. and Staatz, J.M. (eds.). 1998. International Agricultural Development, 3rd Edition. Baltimore: The Johns Hopkins University Press. Page 30.
- Timmer, C.P. 1998. "The Macroecomics of Food and Agriculture." In: Eicher, C.K. and Staatz, J.M. (eds.). 1998. International Agricultural Development, 3rd Edition. Baltimore: The Johns Hopkins University Press. Page 187-211.
- USDA. Foreign Agricultural Service, 2003. "Import Share of U.S. Food Consumption Stable at 11 Percent." FAU-79-01. Online at www.fas.usda.gov/ustrade

- World Bank. 1987. World Bank Experience with Rural Development: 1965-1987. (Operations Evaluation Study 6883). Washington, DC: World Bank.
- UN, DESA. 2012. World Urbanization Prospects, the 2011 Revision: Highlights. New York. Online at http://esa.un.org/unpd/wup/pdf/WUP2011_Highlights.pdf

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ŞI MANAGEMENTUL RISCULUI