
INTERRELATIONS BETWEEN ECONOMIC FREEDOM, KNOWLEDGE ECONOMY AND GLOBAL COMPETITIVENESS – COMPARATIVE ANALYSIS ROMANIA AND EU AVERAGE

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Abstract:

Economic Freedom, Knowledge Economy and Global Competitiveness are three of the many and very different dimensions which characterize the level of a country's performance. This paper tries to present these three important directions, the specific indicators that measure them – IEF, KEI, GCI – and the relationship between them. Also, it will try to demonstrate that countries with free economy can turn into knowledge and competitive economies. Furthermore, it will make a comparative analysis of Romania with the EU countries' average in order to identify for Romania which pillar's scores it has to improve.

Keywords: *economic freedom, knowledge economy, global competitiveness, Romania, European Union*

1. Introduction

The beginning of the new millennium brings in attention more processing / stages that countries must go through to in order to become more competitive. For countries which already are in the 3-rd stage of development, being innovation-driven economies (according to Global Competitiveness Report 2009-2010), it will be a struggle to move towards free economy based on: business freedom, trade freedom, fiscal freedom, labor freedom, monetary freedom, financial freedom, freedom from corruption, rights freedom. For countries which are in the 2-nd stage of development or in transition to the 3-rd stage – being efficiency-driven economies (like Eastern European countries), it will be a tougher fighting and this will be given on “two fronts”: first, to become a free economy, and, secondly, to move to the 3-rd stage of development, to become knowledge economies.

2. Measuring Economic Freedom – Index of Economic Freedom

In these times, when the global economy is at the crossroad, “economic arrangements play a dual role in the promotion of a free society. On one hand, freedom in economic arrangements is itself a component of freedom broadly understood, so economic freedom is an end in itself. On the other hand, economic freedom is also an indispensable means toward the achievement of political freedom” (Friedman, 1962).

Many authors, Barro (1991), Carlsson and Lundstrom (2002), Haan and Sturm (2000), (2003), demonstrated in their studies that the economic freedom and economic growth are directly interrelated. More over according to Gwartney and Lawson (2003) “the key ingredients of economic freedom are personal choice, voluntary exchange, freedom to compete, and protection of persons and property. When economic freedom is present, the choices of individuals will decide what and how goods and services are produced”. Shaanan (2009) also emphasizes that “unrestricted economic freedom enhances our economic and political well being. On the other hand, he demonstrates that while economic freedom provides benefits, its unchecked version, including the right to profit through government, inflicts a heavy toll on democracy, free markets and, paradoxically, on economic freedom itself”.

The Heritage Foundation postulates that economic freedom is “the absence of government coercion or constraint on the production, distribution or consumption of goods and services beyond the extent necessary for citizens to protect and maintain liberty itself” (Cummings, 2000). Heritage Foundation and Wall Street Journal proposed for calculating an index to measuring the economic freedom – **Index of Economic Freedom (IEF)**. This index emphasizes the link between economic opportunity and prosperity. The ten pillars of IEF are: business freedom, trade freedom, fiscal freedom, government freedom, monetary freedom, investment freedom, financial freedom, property freedom, freedom from corruption, labor freedom. Terry Miller and Anthony B. Kim (2010) describe the 10 pillars as follows:

Business freedom is a quantitative measure of the ability to start, operate, and close a business that represents the overall burden of regulation as well as the efficiency of government in the regulatory process. The business freedom score for each country is a number between 0 and 100, with 100 equaling the freest business environment. The score is based on 10 factors, all weighted equally, using data from the World Bank’s Doing Business study. Economic freedoms generate growth primarily because they promote underlying productive private-sector entrepreneurial activity (Kreft and Sobel, 2005).

Trade freedom is a composite measure of the absence of tariff and non-tariff barriers that affect imports and exports of goods and services.

Fiscal freedom is a measure of the tax burden imposed by government. It includes both the direct tax burden in terms of the top tax rates on individual and corporate incomes and the overall amount of tax revenue as a percentage of GDP.

Government Freedom - This component considers the level of government expenditures as a percentage of GDP. Government expenditures, including consumption and transfers, account for the entire score. No attempt has been made to identify an ideal level of government expenditures. The ideal level will vary from country to country, depending on factors ranging from culture to geography to level of development. On these lines, Ezra Solomon (1989) said: "a free economy is most suitable to a free polity."

Monetary freedom combines a measure of price stability with an assessment of price controls. Both inflation and price controls distort market activity. Price stability without microeconomic intervention is the ideal state for the free market. The weighted average inflation rate for the most recent three years serves as the primary input into an equation that generates the base score for monetary freedom.

Investment Freedom - In an economically free country, there would be no constraints on the flow of investment capital. Individuals and firms would be allowed to move their resources into and out of specific activities both internally and across the country's borders without restriction. In this context, most studies (McMillan, 1999, Bebassy-Quere, Fontagne, Lahreche, 2001) conclude that macroeconomic liberalization and stability are crucial for attracting foreign investment.

Financial freedom is a measure of banking security as well as a measure of independence from government control. State ownership of banks and other financial institutions such as insurers and capital markets reduces competition and generally lowers the level of available services.

Property Freedom - The property rights component is an assessment of the ability of individuals to accumulate private property, secured by clear laws that are fully enforced by the state. It measures the degree to which a country's laws protect private property rights and the degree to which its government enforces those laws.

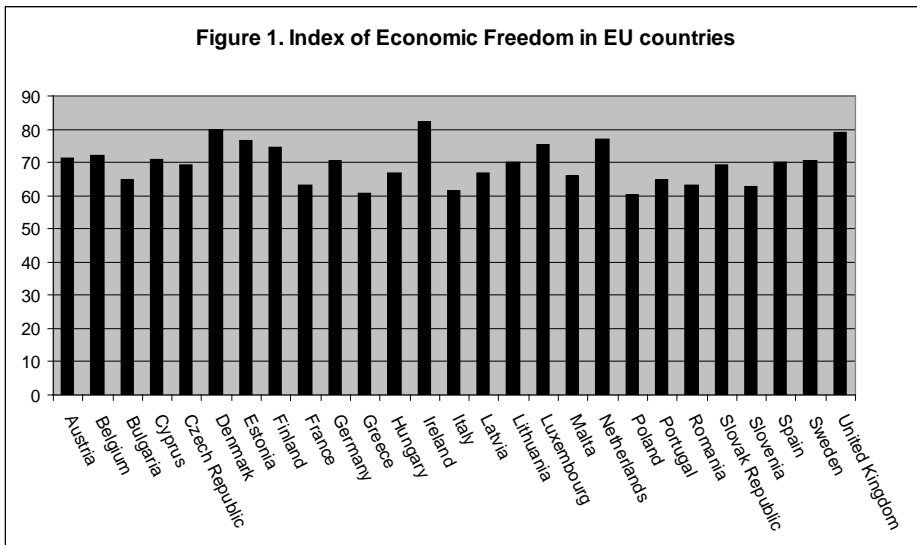
Freedom from Corruption - Corruption erodes economic freedom by introducing insecurity and uncertainty into economic relationships. The score for this component is derived primarily from Transparency International's Corruption Perceptions Index (CPI), which measures the level of corruption in 180 countries. Stansel and Swaleheen (2007) demonstrate in their studies that „for countries with low economic freedom (where individuals have limited economic choices), corruption reduces economic growth. However, in countries with high economic freedom, corruption is found to increase economic growth. Our results contradict the generally accepted view that corruption lowers the rate of growth... Thus, in economies where economic freedom is high, if bribing makes public officials less diligent in enforcing restrictions on firms' activities, output will increase. However, corruption will restrict output when bribes reduce competition and increase market rigidities”.

The **Labor freedom** component is a quantitative measure that looks into various aspects of the legal and regulatory framework of a country's labor market. It provides cross-country data on regulations concerning minimum wages, laws inhibiting layoffs, severance requirements and measurable regulatory burdens on hiring, hours, and so on.

Countries with an IEF between:

- 100-80 are free;
- 79.9-70 are mostly free;
- 69.6-60 are moderately free;
- 59.9-50 are mostly unfree;
- 49.9-0 are repressed.

Ireland is the only country with more than 80 IEF showing that of all EU countries it is the only one free. Countries such as Denmark, United Kingdom, Luxembourg, Germany, Spain, and Lithuania had an IEF scores between 70 and 79.9 which means that they have mostly free economies. Other EU countries have IEF scores between 60 and 69.9 which mean they have moderately free economies. No EU country has a score below 60. Romania has an IEF of 63.2 against 69.6 of the EU average (see Figure 1).



3. Measuring Knowledge Economy – Knowledge Economy Index

It is not a new idea that knowledge plays an important role in the economy, nor is it a new fact. In the study “A Primer on the Knowledge Economy” Houghton and Sheehan (2000) emphasize that “all economies, however simple, are based on knowledge about how, for example, to farm, to mine and to build; and this use of knowledge has been increasing since the Industrial Revolution. But the degree of incorporation of knowledge and information into economic activity is now so great that it is inducing quite profound structural and qualitative changes in the operation of the economy and transforming the basis of competitive advantage”.

In their view, the emergence of the knowledge economy can be characterized in terms of the increasing role of knowledge as a factor of production and its impact on skills, learning, organization and innovation.

More and more authors (Marrano, Haskel, Wallis, 2007) argue that developed countries have no future in a globalised economy unless they specialize in knowledge intensive activities.

Knowledge economy is, according to Brinkley (2006), "one in which the generation and exploitation of knowledge has come to play the predominant part in the creation of wealth. It is not simply about pushing back the frontiers of knowledge; it is also about the most effective use and exploitation of all types of knowledge in all manner of economic activity".

With sustained use and creation of knowledge at the center of the economic development process, an economy essentially becomes a knowledge economy. Chen and Dahlman (2005) emphasize also that a knowledge economy is one that utilizes knowledge as the key engine of economic growth. It is an economy where knowledge is acquired, created, disseminated and used effectively to enhance economic development. Also Powell and Snellman (2004) define the knowledge economy „as production and services based on knowledge-intensive activities that contribute to an accelerated pace of technological and scientific advance as well as equally rapid obsolescence”.

Various authors (Archibugi and Coco, 2005, Veugelars and Mrak, 2009) describe the development economy as a knowledge economy, or an information society. But the rules and practices that determined success in the knowledge economy of the 21st century need rewriting in an interconnected world where resources such as know-how are more critical than other economic resources.

The World Bank Institute's Knowledge for Development Program (K4D) helps build the capacity of countries to access and use knowledge to become more competitive and improve growth and welfare. K4D helps countries assess how they compare with others in their ability to compete in the global knowledge economy.

The World Bank KAM methodology proposed an index for calculating to measure the knowledge economy – **Knowledge Economy Index (KEI)**. According to World Bank the Knowledge Economy Index (KEI) takes into account whether the environment is conducive for knowledge to be used effectively for economic development. It is an aggregate index that represents the overall level of development of a country or region towards the Knowledge Economy. The KEI is calculated based on the average of the normalized performance scores of a country or region on all 4 pillars related to the knowledge economy - economic incentive and institutional regime, education and human resources, the innovation system and ICT.

The four pillars of the knowledge economy framework and for the Knowledge Economy Index (KEI) are (Chen and Dahlman, 2005):

Economic incentive and institutional regime, that provides good economic policies and institutions that permit efficient mobilization and allocation of resources

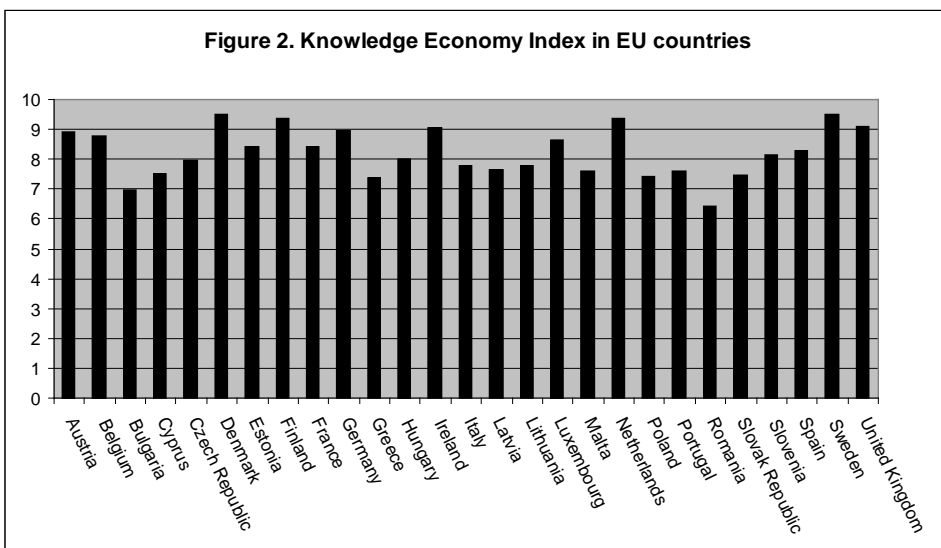
and stimulate creativity and incentives for the efficient creation, dissemination and use of existing knowledge.

Educated and skilled workers, who can continuously upgrade and adapt their skills to efficiently create and use knowledge.

Effective innovation system of firms, research centers, universities, consultants and other organizations, which can keep up with the knowledge revolution and tap into the growing stock of global knowledge and assimilate and adapt it to local needs.

Modern and adequate information infrastructure, that can facilitate the effective communication, dissemination and processing of information and knowledge.

At the level of EU there are 6 countries that have KEI-s higher than 9, such as: Denmark (9.52), Sweden (9.51), Finland (9.37), Netherlands (9.36), United Kingdom (9, 10), and Ireland (9.05). 9 other countries including Germany, Austria, Estonia, France, Slovenia and Hungary have KEI with values between 8 and 8.99. The next group of 10 countries has a KEI value between 7 and 7.99. The only 2 EU countries, which have values of KEI below 7, are Bulgaria (6.99) and Romania (6.43) in 2009 (see Figure 2).



4. Measuring Global Competitiveness – Global Competitiveness Index

Competitiveness, which is inextricably related to the concept (and reality) of competition, was and remained a desired target for both firms and countries (because all of them wish to outperform others and enjoy such advantage over time).

Nevertheless, the term itself gets a different definition from every author/scholar or authority/organism that uses it. From the “classical” approaches of Michael Porter (Porter, 1990) or Paul Krugman (Krugman, 1994) to the more recent

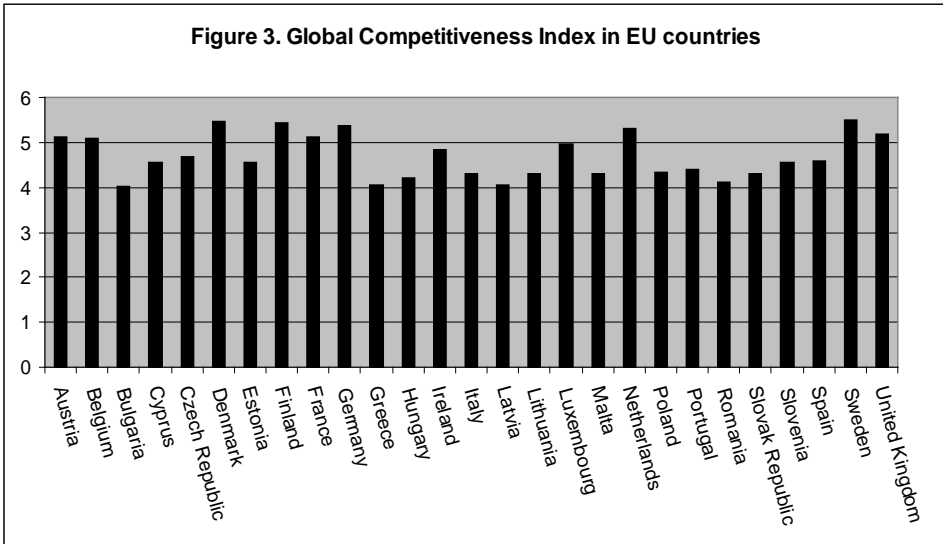
ones, emphasized by Mark Gehlhar et al. (Gehlhar *et al.*, 2006), and Sule Onsel Sahin et al. (Sahin *et al.*, 2006) competitiveness remained an “obsession”, especially under the pressure of global competition. The main idea of competitiveness remained the same over time; what has changed, are the ways to achieve it, the sources for sustaining competitiveness in a perpetually and rapidly changing business environment (Herciu and Ogreaan, 2008). According to Snieska and Draksaite (2007) national competitiveness of a county is „commonly defined as its ability to provide high levels of prosperity to citizens”.

“Since 2005, the World Economic Forum has based its competitiveness analysis on the **Global Competitiveness Index** (GCI), a highly comprehensive index, which captures the microeconomic and macroeconomic foundations of national competitiveness. We define competitiveness as the set of institutions, policies and factors that determine the level of productivity of a country. The level of productivity, in return, sets the sustainable level of prosperity that can be earned by an economy.” (Sala-I-Martin et al., 2009).

Given the complexity of the concept and of its consequences, it is obvious that the determinants of the national competitiveness are very heterogeneous, in time and in space; in order to accurately identify, evaluate and measure the dynamics of competitiveness – in volume, as well as in structure – WEF identified and developed (within the Global Competitiveness Report, which is prepared each year) 12 pillars of competitiveness – serving as benchmarks: Institutions (INST), Infrastructure (INFR), Macroeconomic stability (MaS), Health and primary education (HPE), Higher education and training (HET), Goods market efficiency (GME), Labor market efficiency (LME), Financial market sophistication (FMS), Technological readiness (TR), Market size (MS), Business sophistication (BS), Innovation (INNO).

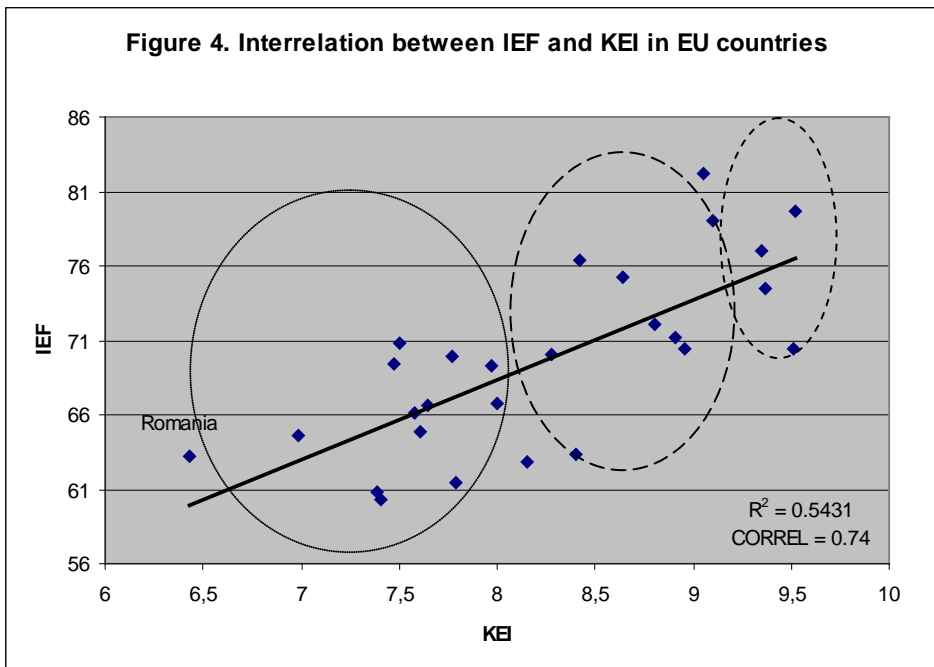
According to the findings of the most recent Report (2009-2010), “what began as a financial crisis in the United States and the United Kingdom quickly turned into the largest global recession in decades. (...) Today’s difficult economic environment underscores the importance of not losing sight of long-term competitiveness fundamentals amid short-term urgencies. Competitive economies are those that have in place factors driving the productivity enhancements on which their present and future prosperity is built.”(Sala-I-Martin et al., 2009).

In the EU there are 9 countries that have GCI-s higher than 5, and these are: Sweden (5.51), Denmark (5.46), Finland (5.43), Germany (5.37), Netherlands (5.32), United Kingdom (5.19), France (5.13), Austria (5.13) and Belgium (5.09). All other 18 countries have GCI with values between 4.96 and 4.02. Romania has a GCI score with the value 4.11, higher than Latvia, Greece and Bulgaria (see Figure 3).



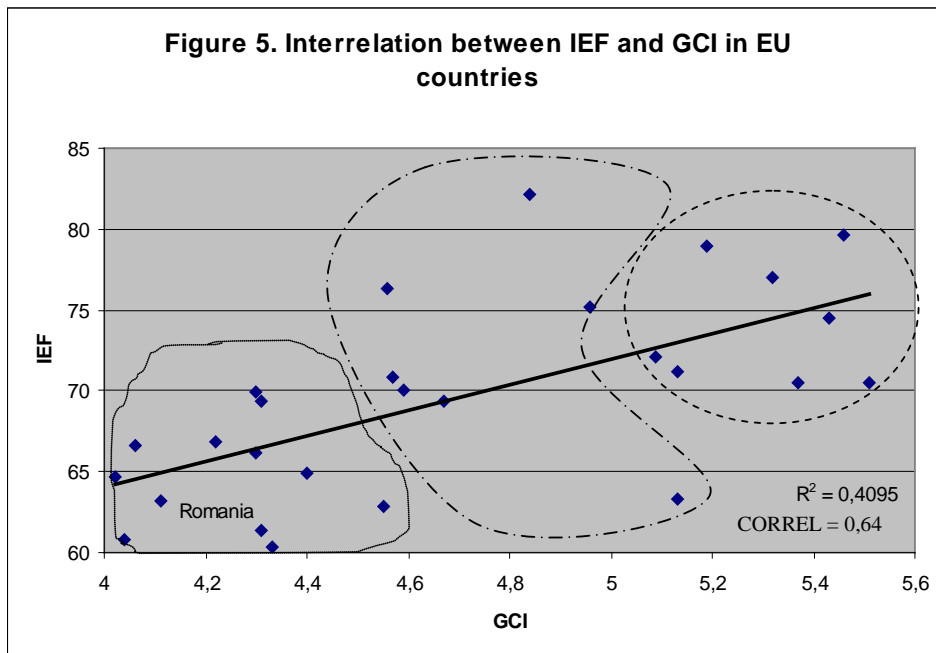
5. Interrelations between IEF, KEI and GCI

R^2 and COREEL is calculated in order to identify the **link between IEF and KEI**. The results of 0.54 for R^2 and 0.74 for CORREL show a strong and direct link between the two variables. This means that the free economies are economies with very high KEI (see Figure 4).

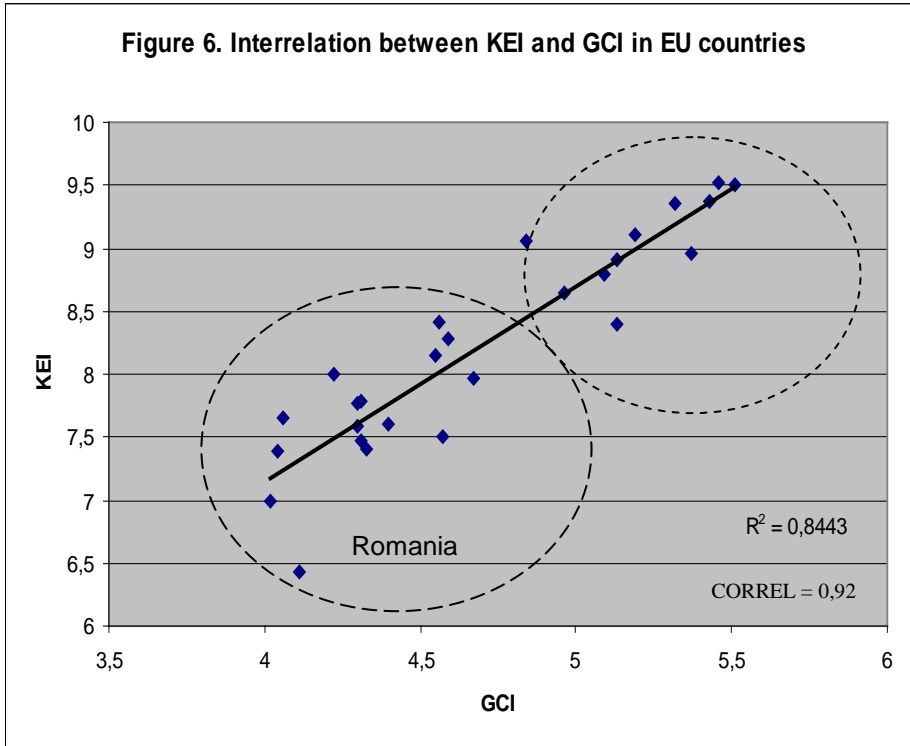


The 27 countries of the EU can be divided into 3 groups based on the two variables, as follows: 6 countries with high IEF (free and mostly free) and high KEI (over 9): Ireland, Denmark, United Kingdom, Netherlands, Finland, Sweden; 10 countries with medium IEF (mostly free) and medium KEI (between 8 and 9): Estonia, Luxembourg, Belgium, Austria, Germany, Spain, Hungary, France, Slovenia, Czech Republic; 11 countries with low IEF (moderately free) and low KEI (between 6 and 8): Cyprus, Lithuania, Slovak Republic, Latvia, Malta, Portugal, Bulgaria, Romania, Italy, Greece, Poland.

R^2 and COREEL is calculated in order to identify the **link between IEF and GCI**. The results of 0.4095 for R^2 and 0.64 for CORREL show a strong and direct link between the two variables. This means that the free economies are countries with high global competitiveness (see Figure 5).



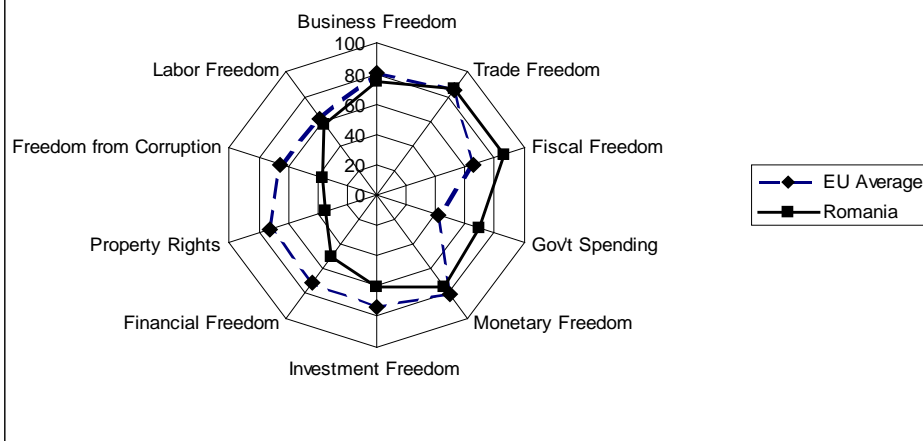
R^2 and COREEL is calculated in order to identify the **link between KEI and GCI**. The results of 0.8443 for R^2 and 0.92 for CORREL show a very strong and direct link between the two variables. This means that the knowledge economies are competitive one (see Figure 6).



6. Comparative analysis – Romania and EU

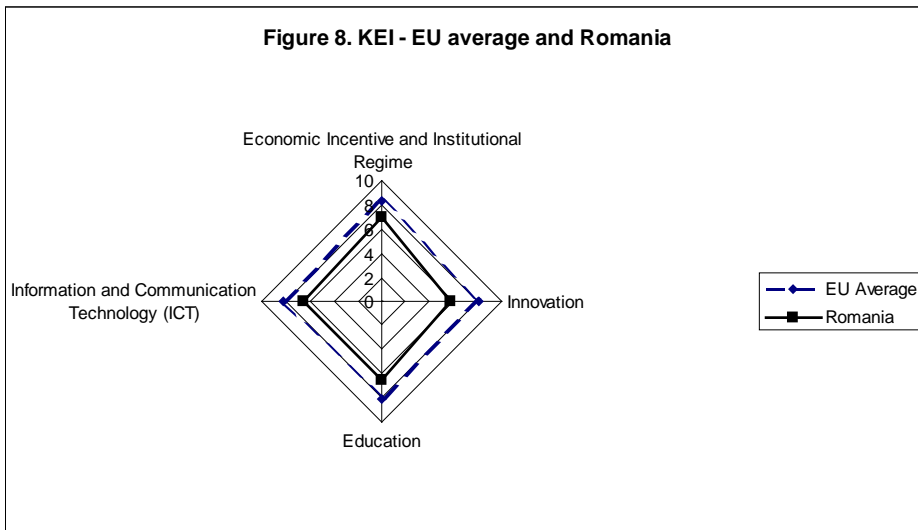
In 3 of the 10 IEF pillars Romania is above the EU average – trade freedom (85.8), fiscal freedom (57), government spending (70), the other 3 groups being close to the EU average with a deviation downwards maximum 5 points – business freedom (74.9), monetary freedom (75) and labor freedom (57.1), while the other 4 pillars' negative deviation from the average is relatively high – investment freedom (60), financial freedom (50), property rights (35) and freedom from corruption (37) (see Figure 7).

Figure 7. IEF - EU average and Romania



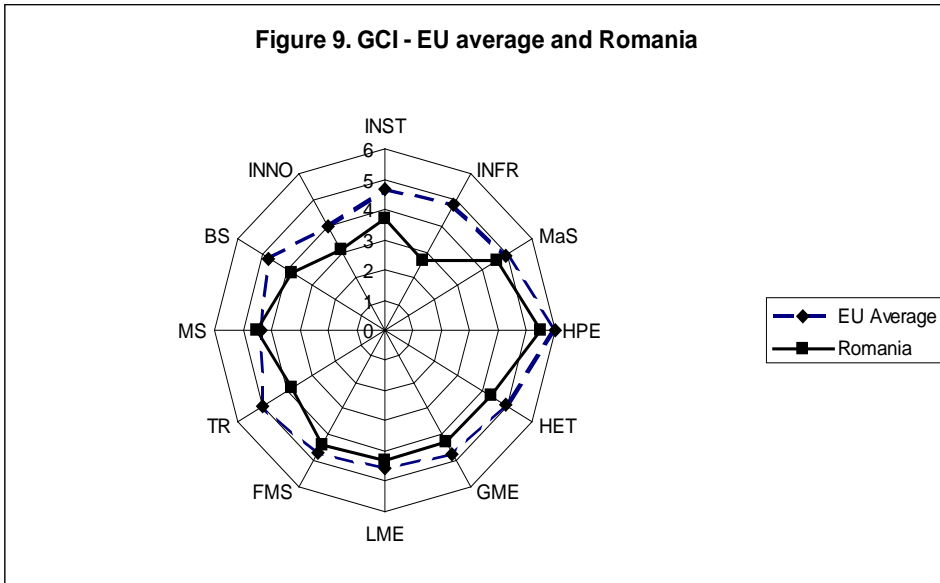
The EU average for KEI is 8.22, higher than Romania’s score which is 6.43. For all 4 pillars that are KEI components Romania has a lower score, as for economic incentive and institutional regime it has 6.98, for innovation 5.74, for education 6.47, for information and communication technology 6.55 (see Figure 8).

Figure 8. KEI - EU average and Romania



The EU average for GCI is 4.69, higher than Romania’s score which is 4.11. For 11 pillars Romania has a lower score than EU average. Only for one pillar – the market size (MS) – Romania has a higher score than EU average (see Figure 9).

Figure 9. GCI - EU average and Romania



7. Conclusions

This paper has tried to identify if economic freedom, knowledge economy and global competitiveness are directly related. In order to emphasize this we used the Heritage Foundation were used – for the Index of Economic Freedom, the World Bank-Knowledge for Development Institute – for the Knowledge Economy Index and the World Economic Forum – for the Global Competitiveness Index. The study aimed to track down disparities that exist between Romania and the EU average for each pillar composing each index.

While the deviation of Romania’s average is not high, for IEF only 6.4 points and for GCI 0.58 points, the gap in KEI terms is much larger; Romania is ranked last in the EU considering this index. According to these results Romania must take a series of measures to improve its three indexes. These measures should reduce disparities between Romania and others EU countries, both in terms of KEI, as well as the IEF, on one hand, but also increase global competitiveness, on the other hand.

As a conclusion, Romania must considerably improve the four pillars of KEI – economic incentive and institutional regime, innovation (which is the lowest pillar of all), education and information, communication technology – as well as the 11 pillars of GCI – institutions, infrastructure, macroeconomic stability, health and primary education, higher education and training, goods market efficiency, labor market efficiency, financial market sophistication, technological readiness, business sophistication, innovation – in order to reduce the gaps toward the EU countries. Also, in order to increase the IEF and transform itself into a mostly free economy, Romania has to

improve the score for monetary freedom, financial freedom, freedom from corruption and the score for property rights freedom.

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THE PROPOSITION VALUE OF CORPORATE RATINGS - A RELIABILITY TESTING OF CORPORATE RATINGS BY APPLYING ROC AND CAP TECHNIQUES

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Abstract:

We analyze the Altman model, a Logit model as well as the KMV model in order to evaluate their performance. Therefore, we use a random sample of 132 US firms. We create a yearly and a quarterly sample set to construct a portfolio of defaulting and a counter portfolio of non-defaulting companies. As we stay close to the recommendations of the Basel Capital Accord framework in order to evaluate the models, we use Receiver Operating Characteristic (ROC) and Cumulative Accuracy Profile (CAP) techniques. We find that the Logit model outperforms the Altman as well as the KMV model. Furthermore, we find that the Altman model outperforms the KMV model, which is nearly as accurate as a random model.

Keywords: Altman Model, Cumulative Accuracy Profile (CAP), Distance to Default, Logit Model, Moody's KMV, Receiver Operating Characteristic (ROC), Z-score.

1. Introduction

'For the second time in seven years, the bursting of a major asset - bubble has inflicted great damage on world financial markets.' While reading economical newspapers, one could find phrases like the one from Stephen S. Roach (Morgan Stanley) in nearly every kind of newspaper. The past crisis found its starting point with defaulting US consumer credits and thus affected banks capital requirements immediately.