

Underdevelopment's gravitation

“The energy necessary to escape the gravitational pull of underdevelopment and to enter an evolutionary trajectory dependent on the gravitational pull of development is unintelligible in economic terms.”

As it is shown by the global statistics, underdevelopment has a stronger gravitational pull than development. There is no other explanation for the constantly high ratio of the population finding themselves below the line of income standards and quality of life accepted as normal by the civilized world. The realm of poverty absorbs, as if by force of gravity, the most part of the planet's inhabitants within its sphere of influence.

We have no genetic explanation, while geography is also unconvincing in attempting an answer. History perpetuates myths. Anthropology puts forth the founding folklore. Sociology doesn't go beyond measuring the surface.

Against general belief, the state of the world experiences shuffles in the long term whose causal explanation is not all too clear. The rule of change proves confusing within the framework of rationality, while its ethical aspect marginally structures behaviours. In consternation, fleeing from the norms seems to have been the winner throughout history. Breaking ranks appears as an option, which when emotionally accepted for bearing the risk of failure in progressive contexts, often leads to the prize of an innovative horizon.

Operations regulated by the global framework do not lead to the same result that everyone expects. Addition and multiplication are the methods of calculation which make sense for the conservation of the power obtained by subtracting and dividing global wealth. Cynicism is intrinsic to the system of calculation. People either use, or are being used by the system. Except that some can create the system, with the others being naturally a part of it.

The gravitational law of development operates for large masses or for unleashed energies. The understanding of the positioning in the development's universe is proven to be a calculation problem in which only the rule of will functions. The

explanation is unbeatable in terms of order. From a social point of view the configuration of the world is unequal, while being utopian at the individual level, with freewill being irrelevant to the law of large numbers.

What is certain is that the energy necessary to escape the gravitational pull of underdevelopment and to enter an evolutionary trajectory dependent on the gravitational pull of development is unintelligible in economic terms. Attempting to judge reality within the framework of political perspectives will only lead to the confusion of correctitude. Alterity in policy does not appear to strive toward breaking the precepts of mainstream theory.

The group of the seven developed nations is the expression of the state of segregation in the universe of wealth. Beyond the materiality represented by the development of G7 there's the extended space which is specific to dark matter and energy, in economic terms the Physics suggestion having the consistency of poverty. We could say as such that dark matter and energy are being deduced from the effects of the emergence of the countries which, by joining G7, make up G20. Of course, the perception of the G13 differential is the critical interface of what is the much more expansive G189 to the solidity of the developed nations group. The Scruton-Fergusonian expression of the west and the rest, which does not completely define the G7/G189 ratio, exhibits the segregationist ethos of wealth and poverty in the structure of the world.

In geopolitical terms the mainstream theory proves to be the reverse of its logical suggestions: the perverted vehicle of the status quo conservation of societal structures. The reality is that the world remains stratified, with development laid on the over enlarged pedestal of underdevelopment. The Smithian idealism of the wealth of nations did not displace – in a relativistic statistical way at least – the all-encompassing reality of the wealth and poverty of nations, to use the Landesian word of warning.

Built today on the neoliberal axioms of the Washington Consensus, the leading vision generates development parsimoniously. In time development occurred only where there had been non-liberal behaviours and decisions. In the area where underdevelopment needs to be overcome, the policies built on the main theory generate slowdown effects in reaching the distinct development milestones.

The unexpected effects of the economic crisis reveal the fact that the natural interactions in the human actional field trigger a virus escaped from the laboratories of ideologies centred on the power of wealth. The constitutive values of the modern world are thus redefined in terms of prevalence, even though it's rather a case of dependency on a vertical of geopolitical arrangements. Justice is no longer fulfilled as freedom, because progress and tolerance have meaning only

for power, as an equivalent of wealth. With governance having become corporate, efficiency interrupts the supply of equity.

Conceiving a development strategy in the context of neoliberal constraints is not a theme of Economics, regardless of the amount of inspiration and dedication put into its resolution. The present structure of the world turns development into a geopolitical problem of the global order. Development is today the number one political issue whose solving must be achieved while acknowledging the closest of encounters with the apocalypse.

In this context, the reality of the deepening disparities between the developed and the developing nations which have adopted the vision of the Washington Consensus is shown to be a source for the collapse of peaceful coexistence.

Marin Dinu

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The sustainable company: new challenges and strategies for more sustainability

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Abstract. *The sustainability becomes a model of development only if countries, industries, businesses and citizens become sustainable. The contribution of the business to a promising future should come from a fully integrated sustainability in its DNA and strategies.*

This paper focuses on the needed sustainable strategies for scaling up the contribution of the companies to sustainable development in the future. At the beginning, we analyze the main theoretical points of view on sustainability. Then, we explain how companies could achieve the sustainability by following the steps of a difficult process and the present performances in sustainability of large companies around the world. Finally, we suggest four strategies that businesses could design and implement in order to scaling up their sustainability in the future.

The research has two important conclusions on sustainability in business. One is that the sustainability pays off if it is integrated in the DNA of the companies. The other conclusion says that the companies will succeed to make the needed transformation for achieving a better sustainability in the future only if they design and perform strategies focused on improving sustainability.

Keywords: sustainable company; sustainable strategy; sustainability performance; sustainable management; eco-efficiency; sustainable innovation; sustainable competitive advantage.

JEL Classification: L2, K32, M14, Q01, Q2, Q3, Q4, Q5.

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1. Introduction

The sustainability, the only business success strategy of the future. The awareness of the sustainability in business has increased in the last two decades. The business traditionally focuses on providing goods and services that meet customer demands can be sold at competitive prices, in a profitable way. In a world that is a resource constraint, where the ecosystems are degraded, the climate change is now dearly linked to human activity and where growth has so far been enable to include all citizens on our planet, the traditional role of the business is not good enough to achieve a sustainable development. The United States Report of World Commission on Environment and Development (1987), known as Brutland Commission, judges the sustainable development as “a kind of development that meets the needs of the present generation without compromising the ability of future generations to meet their own needs”. The Federal Minister of Environment, Nature Protection and Reactor Safety in Germany suggests that sustainability is a large concept of development which “has as goal what is environmentally consistent, socially fair and economically possible” (Nachhaltige Entwicklung als Handlungsauftrag, Mai 2012). The French approach of sustainability advances the new term of societal/social responsibility (fr. Responsabilite societale/sociale) along with that of sustainable development (fr. developpement durable). The social business responsibility is the business contribution to the efforts for sustainable development. With that end in view, the businesses have to take into account the social and environmental impacts of their best practices in order to contribute to the improvement of the society and to the environment protection (Responsabilite societale des enterprises, 15 fevrier, 2013). As *Entreprise pour L’Environnement* (octobre, 2005) thinks, the term “responsibilite sociale” has the advantage of being business oriented, but it fail to include the development dimension.

Even if there are some differences about the used terms, there seems to be a consensus on the component parts or dimensions of sustainable development. Von Hauff and Kleine (2009, p. 10), P. Chapuy (2009), Raderbauer (2011) and researches as The SIGMA Project (2001) are among those that have a three interacting dimensions meaning of the sustainability. These dimensions are the environmental, the social and the economic sustainability. The *environmental sustainability* refers to the business ability to use the natural resources in a way that they last longer and to control the waste. The environmental sustainability also means the ability of the business to reduce the negative impact of its actions on the environment. Therefore, the environmental sustainability has as goal to preserve the environmental system which includes the life support system. The *social sustainability* is concerned with the social interaction, relations, behavioral patterns and values between people. The main goal of the social responsibility is maintaining the social peace. The *economic responsibility* of the business means

its ability to make profit, in order to survive and benefit the economic systems at local, national and international scale. The goal of economic sustainability is to keep the quality of life. The achievement of such a goal asks for a drastic change of the production methods and the consume style that are not sustainable yet (von Hauff, Kleine, 2009, p.18). All efforts for a sustainable life style should be directed towards the preservation of both material and immaterial conditions of life. In order to get the economic sustainability an ecologic economy is needed. This type of economy needs to bring into life renewable resources if needed, using non-renewable resources when the renewable resources diminish and monitoring the level of emissions with negative impact on the environment (von Hauff, Kleine, 2009, p. 31). The economic sustainability is integrally linked to the environmental and social outcomes a company achieves.

The sustainability of an economy is ultimately dependent on the ability of natural ecosystems to capture and store sufficient quantities on energy to sustain human life on Earth (Ikerd, 2013). At business level, the sustainability is about managing a company in such a way as to ensure it stays around for future generations with social and environmental programs firmly intact (The SIGMA Project, 2001). Broadly speaking, the sustainable business development involves the application of the sustainability principles to business operations. In the business operations, the sustainability calls for using the resources so that the business continues to function over a number of years while consistently returning profits. The sustainability encourages the responsible use of resources. This involves not only making sure that the business is making profit but that the operation is not creating environmental concerns that could cause harm to the balance of the environment. By being mindful of the impact of the operations on the community, the business is able to choose raw materials that are more environmentally friendly and design a waste disposal strategy that does not cause damage (What is Economic Sustainability?...). In financial terms, the three parts of sustainability could be structured as environmental capital, social capital and economic capital. None part of the capital can't be sustainable by itself. Therefore, the sustainability of the business depends on the contribution of each of environmental, social and economic interacting sustainability dimensions. The sustainability is achieved only if the business succeeds in getting economic efficiency, social equity and environment preservation.

No matter the approach on sustainability within the business context, this should be guided by the appropriate principles that support the right understanding, developing and implementing the sustainability as an integral part of the strategy of the company (Ikerd, 2013). A first principle that must be followed is *holism*. The sustainability is a system which has the environmental, social and economic as components and they need strong relationships in order to correctly work the

system. In the case of sustainability, ignoring the holism has critical consequences. The most important challenges of the sustainability are ecological, social and economic where the relationships matter. The *diversity* of sustainability suggests the variety of its different or dissimilar elements, strategies and solutions. The diversity gives the sustainability of business its capability to generate, produce and reproduce and evolve. It allows business to adapt and evolve to accommodate its ever changing environment and society. The principle of diversity in sustainability is entropy related. The entropy is the process of degrading or rising up the usefulness of energy and matter (Ikerd, 2013). The entropy of a system shows the conditions of its development; that means that the more unbalanced becomes the system its entropy will increase accordingly (Danciu, 2006, p. 8). The systems completely lacking in diversity are incapable of supporting life, that meaning that they are highly entropic and their transformation has become irreversible. Here comes the role of sustainability in preserving the diversity of the whole environmental, social and economic system by keeping its entropy under control. That means the changes and transformations of the system are reversible. The sustainable way of functioning of the business can have a particular contribution for maintaining and improving the quality of life due to its initiatives and activities that ensure the resources needed by future generations. The principle of *interdependence* refers to the reward of pay off for respecting the principles of holism and diversity. In other words, between the component parts of the ecosystem establish interdependent relationships which give mutual benefices for all and a win-win situation arise. People and businesses are interdependent with their external ecosystem. They have a choice between continuing to exploit and extract from nature or instead renewing and regenerating, maintaining it sustainable for the future generations. The sustainability has also a *long-term* characteristic. The people and the businesses have act non-appropriately for a long period of time and this way of action has unbalanced and degraded the ecosystem. These outcomes will continue with a more accelerated pace in the future if sustainable initiatives, strategies and solutions with long-term benefits are not put in place. Slowing and reversing the trend of life and environmental degradation are a matter of time. All efforts aiming at the scale up of the sustainability must be driven on a long-term period of time in order to keep the business alive while returning profit without endangering the wellbeing of future generations.

The need of sustainability in the future. Each generation has the same goals which are the technologic, economic and social growth and development which means a better life. The achievement of these goals has brought the humankind at the present state of development. Even if the progress remains a constant characteristic of the humanity evolution, the side-effects interfere with the favorable effects. More resources become scarce, climate is changing, damages of

the environment grow for the worse. The society becomes more and more non-balanced, the rich become richer, the poor become the poorer and numerous countries have serious troubles in having enough food, money or other resources. Under the increased pressure of environmental, social and economic constraints, the humanity began to understand that if it continues to consume, waste and ignore the signals of this lifestyle it will destroy itself. The present crisis is only a hard evidence of the negative effects of bad habits and overconfidence. The prolonged prosperity from the last thirty years bred these bad habits and overconfidence and this does mean that one promise of modern economics can create the conditions for its own failure (Samuelson, 2012). The low inflation, high employment, rising stock and real estate prices drove economic growth and the economy seemed less risky. The confidence becomes foolish optimistic and people took more risks (Samuelson, 2012). Hundred of studies and books has advanced theories about the causes of the crisis, but we agree with T. Palley (2012) which thinks that the root explanations of the global economic crisis are the following three hypothesis that are government failure, market failure and shared prosperity. The discussion of these hypothesis show that the crisis is the outcome of the undesirable effects of a non-sustainable way of life and underline the need of a new development model. This new model is that of sustainable development (Weisberg, 2010) which is a systematic tool for our future welfare by respecting the limits of the Planet as Wijkman and Rockstrom (2013) think. The companies are more and faster interested in becoming sustainable due to the pressure of several reasons and “mega-forces” as a study performed by KPMG having as title “Expect the Unexpected: Building Business Value in Changing World” (Ten Sustainable Mega-forces, March 6, 2012) and ADP Total Source White Paper (2010) have found how the environmental forces may impact the business. A company must integrate the sustainability in its overall strategy as reaction to the trends and behavior of external forces of the macro and micro environment with global coverage.

The climate change is maybe the force that at the most impacts the business. It has a qualitative and quantitative impact on the entire planet. The predictions of annual output losses from climate change range between one percent per year, if strongly and early actions for slowing it are taken, to as much as five percent a year if policy makers fail to act.

Energy and fuel challenges. The main challenge is about the higher volatility and unpredictability of fossil fuel markets because of higher energy demand. The changes in the geographical pattern of consumption, supply and production uncertainties and the increasing regulatory interventions related to climate change are other strong trends. *Water scarcity* becomes progressively effective since the predictions show that by 2030, the global demand for fresh- water will exceed the

supply by 40 percent. The businesses may be vulnerable to water shortages, declines in water quality, water price volatility and reputation challenges. *Deforestation* will increasingly contribute to the decline of material resources. The OECD projects that forest areas will decline globally by 13 percent from 2005 to 2030, mostly in South Asia and Africa. The timber industry and downstream industries such as pulp and paper are vulnerable to potential regulations to slow or reverse the deforestation. The companies may also find themselves under increasing pressure from the customers to prove that their products are sustainable through the use of certification standards. Business opportunities may arise through the development of market mechanisms and economic incentives to reduce the rate of deforestation.

Population growth is a constant force for sustainability because the pressures it puts on the entire planet Earth. The world population is expected to grow to 8,2 billion by 2032 and to more than 9 billion by 2050. This trend will place intense pressures on the ecosystems and the supply of natural resources such as food, water, energy and raw materials, and all these are threats for the business.

Wealth dynamics. The middle class is predicted to grow 172 percent between 2010 and 2030. The challenge for businesses is to serve this new middle class market at a time where the resources are likely to be scarce and more price-volatile. The advantages many companies experienced in the last two decades from “cheap” labor in the developing countries are likely to be eroded by the growth and the power of global middle class.

Urbanization trends will act for a growing majority of the population living in cities. In 2009, for the first time ever, more people lived in cities than in the country-side. By 2030, all developing regions, including Asia and Africa, are expected to have the majority of their inhabitants living in urban areas. Virtually, the population growth over next 30 years will be in cities. These cities will require extensive improvements in infrastructure, including construction, water and sanitation, electricity, waste, transport, health, public safety, and Internet and cell phone connectivity.

Food security will be an increasing challenge in the next two decades under increasing pressure on the global food production from mega-forces including the population growth, water scarcity and deforestation. The global food prices are predicted to rise 70 percent to 90 percent by 2030. In water- scarce regions, the agricultural producers are likely to have to compete for supplies with other water-intensive industries and with consumers.

Ecosystem decline will continue because historically the main businesses ask for declining biodiversity and ecosystem services has been to corporate reputation. At the same time, as the global ecosystems show, increasingly sign of breakdown and stress, more companies are realizing how dependent their operations are on the

critical services these ecosystems provide. The decline in ecosystems is making the natural resources scarcer, more expensive and less diverse, increasing the costs of water and escalating the damage caused by invasive species to sectors including agriculture, fishing, food and beverages, pharmaceuticals and tourism. *Government regulations* will become more demanding and numerous. As public and government concern about climate change, industrial pollution, food security, and natural resources depletion, they will intervene with unprecedented levels of new regulations and policies.

Consumer concerns and employee interest. The consumers and the employees are increasingly demanding for the companies to produce goods and/or services in a more eco-friendly and socially responsible way and are rewarding such companies through greater loyalty, embracing new products and some willingness to pay higher prices for premium products and services.

2. Sustainability, a long march for the company

2.1. The process of sustainability as challenge for success

The contribution of the company to a promising future should come from the increased positive impact of the business in society and this could be achieved only if it becomes sustainable. In order to assume such a challenge, more and more companies should fully integrate themselves the sustainability in their strategies and operations. But the sustainability is not easy to achieve. Nidumolu, Pralahad and Rangaswami (2009) and Willard (2012) suggest that the sustainability may become an integral part of the business strategy and operations only if the company overpasses the different challenges at each stage of the process for sustainability and develop new capabilities to tackle these challenges. The French author Pierre Chapuy (2009) has an environmental approach on the sustainability but includes its all three dimensions during a four stages process of achievement of the environmental sustainability. According to Chapuy (2009, p. 66), the sustainability is achieved in the last stage that is the sustainable development which has economic, social and environmental content with a long-term vision within a total confrontation of interests which are fundamentally political. Willard (2012) proposes a five stages process which are pre-compliance, compliance, beyond compliance, integrated strategy and passion and purpose. These stages can be identified in a more expressive and lucrative earlier concept proposed by Nidumolu, Pralahad and Rangaswami (2009) who advance also a five stages process of sustainability which are compliance, sustainable value chain, design of sustainable goods and services, development of new business model and creation of next-practice platforms. *The compliance* is considered as an

opportunity that usually arise from the law, but companies feel pressed to abide by voluntary codes, in addition to legal standards. It's tempting to adhere to the lowest economic, social and environmental sustainability standards, but the companies that focus on meeting the most stringent even emerging rules and norms gain more time to experiment with materials, technologies and processes and the first-movers yield substantial advantages in terms of fostering innovation. The companies in vanguard of compliance naturally spot business opportunities first and save money, contrary to the popular perception of using them. Once the companies have learned to keep the pace with regulations, they become more proactive about the environmental issues. The drive to more efficiency extends from manufacturing facilities and offices to *the value chain*. In order to make it sustainable, the companies work with suppliers and retailers to develop eco-friendly raw materials and components and reduce waste. They develop sustainable operations by analyzing each link in the value chain. First, the companies make changes in the obvious areas such as returned products. The operational innovations are central to building a sustainable supply chain. They lead to greater energy efficiency and reduce the dependence of the companies on fossil fuel. Other sources of scaling up the sustainability are the reduction of the workforce costs and the reuse of returned products aiming at recapturing some of the lost value. When they create environmental friendly value chains, the companies uncover the monetary benefits that energy efficiency and waste reduction can deliver. They also learn to build mechanisms that link the sustainability initiatives to business results. A new step towards sustainability is *the design of sustainable goods and services*. At the beginning, the companies start waking up the fact that a sizable number of consumers prefer the eco-friendly offers, and that they can score over rivals by being the first to redesign existing products or develop new ones, if they use the competencies and tools they acquired at earlier stages of their sustainability revolution. In order to design sustainable products, the companies have to understand the consumer concerns and carefully examine the product life cycles. They must combine the marketing skills with their experience in improving the raw materials supplies and distribution. In the fourth stage, the company becomes able to develop *new business models*. Many companies are tempted to assume that creating a sustainable business model entails simply rethinking the customer value proposition and figuring out how to deliver new one. But the existing models should be questioned and act entrepreneurially to develop new mechanisms. Designing and developing a new business model requires exploring alternatives to current ways of doing business as well as understanding how the company can meet consumers' needs differently in a key of sustainability. As the company over-cross the previous stages it becomes able to create *new sustainable business practices known as next-practice platforms*. The next practices change the

existing business paradigm. As a new assumption, the sustainability can lead to interesting next practice platforms. One such a platform is emerging at the intersection of the Internet and energy management. This is called “the smart grid” and it uses the digital technology to manage the power generation, transmission, and distribution from all types of sources along with the consumer demand (Nidumolu et al., 2009). The smart grid will lead to lower costs as well as the more efficient use of energy. The grid will also enable the development of cross-industry platforms to manage the energy needs of cities, companies, buildings, and households.

2.2. Present performance of sustainability in business

More and more companies take steps to tackle the sustainability challenges they face as pressures for better sustainability in business mounted. Their sustainability performances are estimated by well known consulting organizations such as Deloitte, and EIRIS or studies performed by different researchers. The researches are using methodologies such as Environmental, Social and Governance (ESG) and EIRIS Global Sustainable Ratings and are based on various surveys.

The information from EIRIS Sustainability Report 2012 correlated with the results of a study performed by Eccles, Ioannou and Serafeim (2012) provide evidence on sustainability performances of global and multinational companies, some of them US originated. The EIRIS Sustainability Report 2012 (Robertson, 2012) assesses the sustainability performance of 2063 global large cap companies from different sectors and countries world-wide. The report shows that globally the companies are demonstrating positive sustainable impacts and there are good volumes of leadership on ESG issues overall. At a global level, United Kingdom (UK) and continental European companies outstrip their United States and Asian counter parts on sustainability performance. Thus, a fifth of UK companies score the highest grade in EIRIS Global Sustainability Ratings based on environmental, social and governance issues. They are followed by 12 percent of mainland European companies. By contrast, only 2 percent of US companies and 1 percent of Asian companies achieve the highest grade according to EIRIS methodology. The smaller companies generally lag behind larger ones on sustainability performance. The investors in smaller businesses should therefore closely monitor ESG performance or engage on sustainable issues. The greatest sustainability has those industries that provide goods and services with a sustainable benefit. They include healthcare with 21 percent highest grade of sustainability, alternative energy-20 percent and food and drug retailers-14 percent. The above findings are consolidated by the Top ten global sustainability leaders 2012 from Table 1.

Table 1. *Top 10 global sustainability leaders 2012*

Company	Country	Sector
Puma	Germany	Personal goods
First Group	UK	Travel & Leisure
National Australia Bank	Australia	Banks
GlaxoSmithKline	UK	Pharmaceuticals
Roche	Switzerland	Pharmaceuticals
Novartis	Switzerland	Pharmaceutical
Philips Electronics	Netherland	Leisure goods
Deutsche Boerse	Germany	Financial services
Novo Nordisk	Denmark	Pharmaceutical
The Go Ahead Group	UK	Travel & Leisure

Source: Robertson, 2012.

In order to better understand why a company is positioned at the top, one could assess its sustainability using the “sustainability strengths analysis”. Puma, the global sustainability leader in 2012, has as sustainability strengths its exceptional environmental management systems and practices in place which is bolstered by their significant improvements in environmental performance; industry leading supply chain policies, systems and disclosure in place; meaningful disclosure regarding its stakeholder engagement opportunities the company provides; a comprehensive policy on equal opportunities for its employees information about workplace health and risk management systems; and programmes designed to train and develop the work force of the company. These sustainability strengths provide a balanced economic, social and environmental sustainability.

The innovation is a key strategic part of the ceaseless process for improving the sustainability. Deloitte (2010, p. 12) has performed a survey on a panel of CEO from 48 US- originated multinationals, in 2009 and 2010. Within a section on “innovation sustainability“, the results show that the innovations were made in products, processes and business models, in order to increase the sustainability of the company. Thus, 25 percent all respondents mentioned they were pursuing the efforts to make their products more efficient mainly by reducing product’s energy use. The business processes to become more sustainable have been changed by 44 percent of respondents. These changes focused mainly on reducing operational costs, or the cost of production for their products and capital cost, and educating the workforce on sustainability efforts and goals and changing the employee behavior. Another study on present state of sustainability was based on a comparison between a sample of 90 US-based companies the authors classified as high-sustainability and another sample of 90 classified as low-sustainability (Eccles, Ioannou, Serafeim, 2012). The main conclusion of the research was that the sustainability pays off. The companies that manage their environmental and social performance have superior financial performance and actually create more value for their stakeholders. They do so by attracting and keeping better and more committed employees and have more loyal customers.

The researches and the practices of many companies outline a three dimensions context of present sustainability. First, there are more and more companies that make constant efforts for achieving and improving their sustainability in all economic, social and environmental dimensions. Second, even high-sustainability companies don't always succeed to fully integrate all individual parts into a whole balanced model of sustainability, and this make enough room for future improvements. Third, smaller companies are behind the large ones in terms of sustainability awareness and particularly of sustainability performances. This evidence convincingly shows that a lot remains to be done in the future and the true sustainability business is yet to be invented.

3. New strategies for better sustainability in business

3.1. The main particularities of the sustainability strategy

The ability of the company to successfully gaining the sustainability depends on its social and environmental sensitivity. In other words, the business must first become an eco-centric one and then it must become a sustainability focused business and all these need many efforts and take time. The strategic sustainability represents a commitment demonstrated by top management that moves beyond compliance and efficiency to avoid risks and minimize costs (Raderbauer, 2011). So, the sustainability strategy must become the company strategy and the company strategy must become the sustainability strategy. That is way the sustainability is to be perceived as a company-wide goal that incorporates every aspect of the business and its relationships. A genuine sustainability strategy of the company should be based on solid and sound *principles or pillars* as Townsend (2013) called them. First of all, the business sustainability strategy needs to mature and shift up a level from the narrow ego-centric pursuits of market domination, becoming the biggest, best or maximizing returns to aligning with higher, more meaning sustainable purposes. Second, if the company are to be genuinely and sustainable successful, its management needs to be the adept of managing both short and long-term perspective concurrently. A third pillar of the sustainability strategy consists in the genuine alignment with all activities of the company and between the business activities and the changing environment. That means a more responsible approach to the key drivers, risks and opportunities impacting on the business strategy, in order to find lasting pathways to sustainable business value. The need of keeping an open mind for exploring the full range of possibilities, particularly the new ones, is another principle. The business can build so on risks management perspectives, considering the likelihood, impacts and consequences, and its key management responses. In the context of falter economies, the customers, the stakeholders and the markets are hurting. The companies need to take into account all strategic options which will permit it to keep them by offering something they continue to

need and value and which they can also afford. As pillar of the business sustainability strategy should be also considered a rediscovery of the entrepreneurship. The company should turn the apparent crisis into real opportunities, create genuine advantages for transforming the business model and make legitimate profits from sustainable goods and services.

The above principles can also be found in the *traits* of the sustainability strategy (Azua, www.masi.Net/documents/file) and which are clearly defined and differentiated identity, constant commitment to innovation, decided process of growth and internationalization, use of innovative management mechanisms and a network of collaborators and partners. The company that observes these principles and traits and makes them work can develop a successful sustainable strategy if it complies with the guidelines which are presented as the 4C's by T. Ellis (2011). The sustainability strategy should have a Clear purpose. That means the strategy makers must select the social and environmental activities that match the company business sustainable competences and reflect its culture, value, challenges and overall business strategy. Then, the company should engage itself in strategic Changes in the company's "hardwiring" and as well in its "softwiring". That means the changes must be performed in the structures, processes, performances and measurement systems in support of the sustainability ambitions as well as communications, employees, and leadership development programmes design to encourage sustainable value creation, thinking, skills and practices. A third step in the business sustainability strategy is the Collaborative co-creation. The sustainable creation also implies that the external stakeholders are turned into potential strategic partners by inviting them to join the innovation process. They can infuse the mainstream companies with new mindsets, values and energy. Openness, transparency and Clear communication of both successes and failures towards internal as well as external stakeholders in order to build trust and mutual understanding that is critical to sustainable business success can be seen as the fourth trait of the sustainability strategy. The company must be interactive if it wants to harvest potential ideas and feedback from external stakeholders and to develop a sustainable adjustment of its strategy accordingly.

3.2. Four strategies for better sustainability of the company

SSI: Sustainability management has a decisive role for the company strategy success, and it should include all departments and operations. Becoming a sustainable company needs leadership, commitment, stakeholders and employees engagement and disciplined mechanisms for execution with business management supervising and coordinating all. *The risk management* is needed for evaluate and fight against the sustainability risks that may occur. *The sustainability risks* include existing and emerging environmental, social and governance risks. These

risks may arise when the corporate behavior or the actions of others in a company operating environment such as suppliers, media, government create vulnerabilities that may result in financial, operational and reputation losses in value (Sustainability Through Risk Management, Asherleaf Consulting, May 2011). *The environmental risks* include carbon emissions due to climate change, drought and flood, constrained resources and their diversity or biodiversity and pollution. As a result of the diversity and the displacement of the population, the lack of access to people healthy safety and cultural changes, lack of availability of resources or lack of access to them could occur *the social risks*. *The governance risks* could have as sources the corporate policy if not comply, compensation and bribery, lack of compliance to regulations and so on. The risk management has a very difficult task but if it works successfully the benefits are multiple and significant. It also could enhance the decision-making capacity, agility and adaptability of the company, supply a wealth of insight, knowledge and intelligence on emerging and current issues and opportunities, manage the stakeholders' expectations with greater certainty, and provide a framework and principles for innovation (Sustainability Through Risk Management, Asherleaf Consulting, May 2011, p. 4). *The reputation risk management* is one of the most significant parts of the sustainability risk management. As an intangible asset greater than the brand (Kucuk Yilmaz, Kucuk, 2010, p. 229), the corporate reputation is an integral part of the company performance. But the reputation is one of the most vulnerable values the company has to stay sustainable. That's way the company has to have a continue commitment to behave ethically and contribute to the economic development while improving the quality of life of all involved stakeholders, in order to add social, environmental and economic value to its conduct, products and services. The sustainable companies are beginning to understand that the importance of building and protecting their reputation is greater maybe than in the case of traditionally profit-oriented companies. Since the companies can convert the reputation from being an intangible asset to an asset with tangible value to the company, they try to better manage the risks in the case of sustainability. The reputation risk management should also be integrated with sustainability risk management if the company wants to maintain and enhance the value of its reputation. Integrating the risk with the strategy setting helps a sustainable company to manage its risks to protect and enhancing the business value in many ways (Kucuk Yilmaz, Kucuk, 2010, p. 242). First this integration helps to establish sustainable competitive advantage. Second, it optimizes the cost of managing the risks. Third, managing the risks helps the management to improve the performances of the company. The sustainable leading companies ensure that the risk management to corporate sustainability is embedded throughout the whole organization, in order to succeed protecting and enhancing their reputation and, thus, their corporate value.

The sustainable resource management should find ways to spare the progressive scarcer resources such as food, water, energy and a wide range of raw materials. A fierce battle is against the constant increase of food and water prices as extreme weather exacerbates the production of food. The mature clean energy sources such as hydro, biomass, solar PV and onshore wind have making good progress. Other sources of clean energy such as offshore wind and concentrated solar power must grow faster as alternatives to fossil resources. *The stakeholder management* refers to sustainable relationships with customers, suppliers, investors and employees. The goals of the sustainable customer management are the education of consumers, their attraction and maintaining them. These could be educated through sustainability communication and they can be attract and maintained by offering sustainable goods and services they can afford and deliver more value to them. *The sustainable supplier management* has a critical role for an effective supply chain. The sustainability successful business strategy needs more resilient supply chains. They can be put in place through new models of dealing with transportations and supply risks, a more comprehensive view, better supplier self-assessment or a more aggressive risk-focused stance given the world is at risk of 6 degrees C warming. The rising fuel costs leads to a rethinking of current approaches of sustainable packing. *The investor management* becomes more critical to sustainable company strategy since the sustainable solutions ask for more resources. In the United States, the sustainable and responsible investing accounted for more one out of every nine dollars under professional management, in 2012.

SS2: Sustainable innovation. The sustainable development and the creation of value ask the company for innovating not only in technical area but also in environmental, social and organizational fields. The sustainable innovations are critically dependent of qualified workforce, management systems results and stakeholders oriented, dialog between stakeholders along the value chain, interactions between the actors of economy, state and civil society, changes in business development and jobs creation (Lemken, Helfert, Kuhndt, Lange, Merten, 2010, p. 7). The sustainable innovation has three component parts which are the targets, the mechanisms and the impacts (La production durable et l'eco-innovation, OCDE, 2009). The targets refer to the main areas which are environment, products, marketing methods, organizations, businesses included, and institutions. The environment, the products and the processes is about technologic advance, while marketing, organizations and institutions sustainable innovation belongs to non-technologic changes. The mechanisms of sustainable innovations are about the way of operating the changes in the target-fields. These ways can lead to modify the existing practices, redesign them, replace them by others or create new ones. All these innovation moves should start by respecting minimum requirements for environmental, social and economic parts of the sustainability. A genuine sustainability can't be gained only by observing minimum standards. Every step requires further developments, additional

objectives and activities, in order to persuade the company environment, market and target-groups of its philosophy. These impacts show the effects of sustainable innovation on environment, market and society. The improvements of the sustainability depend also on the ethic of the company. It should pull the demand of ethically made products. In order to succeed, the producer should ask the appropriate questions about the sustainable raw materials such as green chemistry, fair-trade, ecologic components, uses them and so get a pull-effect in the market. *The sustainable environmental innovation* is the strategy inspired by the objective of environment preservation. A company can take into account two major types of environmental innovations depending on the scale of change each assumes. One type is the additive environmental innovation which consists in improvements after the negative effects have occurred. The replacement of pieces for the process improvement, management and waste reduction are such examples of reactive techniques. The integrated environment innovation is the second type and this is a proactive step which addresses to the roots of the environment lack of balance. This approach makes easier the production and process innovations mostly by replacing the current practices and creating new ones. They help the reduction of consumption of raw materials, energy and non-renewable resources at the same time with a better quality of the environment. The integrated measures that are targeting the environment protection ease the acquisition cost and competitive advantages and increase the attractiveness of local environment while the additive ones have negative impacts as a result of increasing costs for producers. *The sustainable product innovation* should follow strategies that target the design and the development of products with a reduced amount of non-renewable resources and preferably from renewable resources, reduced costs, zero pollution, zero waste, biodegradable packing and environment neutral, having a more lasting working, reduced consumptions and with non-pollution fuel use at the same time. *The sustainable organizational innovation* can be achieved with the help of the environment management system. This could be done if the management of environment protection is included in the integrated management system. Acting this way, the environment protection can be managed together with quality management, labor protection management and social management (von Huff, Kleine, 2009, p. 58).

SS3: Eco-efficiency. The World Business Council on Sustainability Development (WBCSD) defines the eco-efficiency as “being achieved by the delivery of competitively produced goods and services that satisfy human needs and bring quality of life while progressively reducing the ecological impact and resource intensity throughout the life cycle, to a level at least in line with the Earth’s estimated carrying capacity” (Sustainable Practices. The Sustainable Scale Project...). Each company which tries to gain the sustainability should design and use sustainable business practices based on a new way of thinking about meeting the customer needs. One major technique for eco-efficiency is increasing the

resource productivity. This issue came forward as the extension of the producer's responsibility beyond the sale of the product had profound changes on how the companies provide goods and services. They became much more interested in the design of their products, because once the useful life of the goods is over these goods come back the producer. This encourages designs that are more durable, allowing the products to be easily dissembled and, once dissembled, to be reused or composted. Their packing being biodegradable or recyclable it leaves no toxic residues to deal with. What was formerly waste and a liability now becomes an asset, a source of new product materials. European automobile manufacturers have agreed the European Union to take back their motor after their useful life is over. Several countries, primary in Europe, Romania included, have also enacted take-back legislation for large home applications, office equipment and electrical and electronic equipment and they organize "sessions" for collecting them. The waste reduction is another procedure that aims at eco-efficiency. It deals with ways of diminishing the financial effort for disposal. Many companies judge the waste as a measure of inefficiency and several set a goal of "zero waste" for their operations trying to change the statute of the output from operations that becomes input for another operation. A way for increasing the eco-efficiency is also the green certification.

SS4: Sustainable competitive advantage. A sustainable competitive advantage is that competitive advantage which could be maintained on a long-term period, in opposition with one competitive advantage which results from short-term strategies and operations. The sustainable competitive advantage can leverage the sustainability to increase all business value if it becomes an integrated part of the global sustainable strategy of the business. A study performed by Deloitte (2010, p. 18) suggests improvements in four areas for increasing the ability of the company to achieve the competitive advantage through sustainability. The first area is putting *in line the sustainability strategy with the strategy of the company*. Setting specific goals with set timelines, associated metrics and leadership accountability is an effective way of driving the alignment between sustainability and company strategy. Once set, these goals may be pursued by allocating economic resources, hiring key skill sets, creating new collaborations, and helping the sustainability teams navigate internal organizational boundaries. *Integrating the sustainability into operations and processes across the value chain* is another source of sustainable competitive advantage. The company could build an operational model that takes into account the potential costs and benefits associated to sustainability in four areas: supply chain, demand chain, emerging technology and new regulatory requirements. The company should identify the key metrics for understanding the current and desired sustainability outcomes and evaluate the impact of its operations on the entire value chain. A third source of sustainable competitive advantage consists in *restructuring non-traditional collaborations and extending collaborations*. The collaboration with upstream and

downstream value chain partners, as well with external parties such as academics and non-governmental organizations can help the company create innovative solutions to sustainability issues. Up stream collaboration with suppliers can involve formal collaborative practices such as formal supplier requirements and audits, and informal practices such as sponsoring conventions and working groups to share best practices. Downstream collaboration with customers, consumers and waste management organizations may entail activities such as involving customers in the product design process, educating users on appropriate disposal practices, and working with waste management companies or government to bolster the recycle and waste management infrastructure, working with non-governmental organizations as well as the academic, scientific and regulatory communities can spur the development of sustainable solutions that are advantageous to both the company and the broader society. Finally, *setting up a governance structure that is supported by the right infrastructure* can enhance the value of the company and derive sustainable competitive advantage. As the company progress to higher level of maturity in its approach on sustainability and creates substantial competitive advantages, its favorable impact becomes more marked compared to its rivals (Kern, 2011). The company can better meet the customers and suppliers expectations and its informed and significant customers increase. Another competitive advantage the company can achieve is the improvement of its image. The ecologic products are supposed to have a greater value and more consumers prefer the companies and products if they are convinced that they act in a sustainable way. A source of competitive advantage can also be the correct evaluation of the climate change risks and their reduction.

4. Conclusions

4.1. The present state of the company sustainability

The existing development model that is a on-sustainable one has climate change, eco-system decline, lack of social equity and resource depletion as undesirable effects. A new development model calls for a fully integrated sustainability in all strategies and operations of the company. The sustainability is hard to achieve and the company needs to overpass the different challenges at each stage of sustainability and to develop new capabilities to tackle these challenges. A company that has results under the sustainability principles needs the responsible use of resources so that it not only makes a profit but its operations are not harming the balance of the environment and of the society. All environmental, social and economic parts of the sustainability can be considered as capital of the company.

The awareness of the sustainability in business has increased in the last twenty years. More and more companies take steps to tackle the sustainability challenges and get progressively more sustainability performances that are assessed by well

known consulting and research organizations. The researches and the practices of many companies illustrate interesting conclusions. First, there are more and more companies that make constant efforts for achieving and improving their sustainability in all its component parts. These companies have better sustainability performances as they integrate the sustainability in their general strategy and implement concrete programmes and operations. Secondly, even high sustainability companies don't always succeed to integrate all individual parts of the sustainability into a whole balanced model, and this makes enough room for future improvement. Third, the small companies are behind the large ones in terms of sustainability awareness and particularly of sustainability performances. All these show that a lot remains to be done in the future and the true sustainability business is yet to be invented. Even so, the sustainability pays off, as a fourth conclusion. The companies that manage their environmental and social performance have superior financial results and actually create more value for their stakeholders, attract and have more loyal customers.

The contribution of the company to a promising future through sustainability becomes a reality if the sustainability is judged as a progressive process that begins with the compliance, continues with the sustainable value chain and the design of sustainable goods and services and ends with the development of new business models and the creation of next-practice platforms. In order to overpass each stage of the sustainability process, the company needs a sustainable strategy as business general strategy. That business strategy has as goal a company-wide goal that incorporates every aspect of the company and its relationships.

4.2. Future directions for scaling up the sustainability of the company

At a global level, the contribution of sustainability to a better future is recognized and the World Business Council on Sustainable Development (WBCSD) has developed Vision 2050 which outlines a pathway to reach a sustainable global society by 2050. This pathway will enable us to live within of the limits of the planet Earth, diminishing the distraction of key ecosystem services, including climate, forest, fisheries and farmland, and easing human hardship through inclusive growth (UN Global Compact and the Principles for Responsible Investment. Communication of Progress 2012/13, 2013, p. 2). Vision 2050 includes a call for a new agenda for the companies. This call has as objective to convince the companies to work for a strong transformation that supports a better sustainability. Considering the requirements and the results in the sustainability theory and practice, the companies will succeed to make the needed transformation for achieving a better sustainability if they implement at least the following four strategies: sustainability management, sustainability innovation, sustainability eco-efficiency and sustainable competitive advantage. The

contribution of the above strategies to more sustainability in the future will be more powerful if the companies will direct them according to a four steps process. More companies are to be inspired to not do harm and compete with integrity and sign up the UN Global Compact standards for responsible behavior and report their sustainability performances annually, in the first place. For more companies achieve a better sustainability performances an involvement of the leading sustainable companies in more sharing best practices to further enhance the business case for sustainability is needed. Then, the companies should integrate the sustainability in their cross-company strategies so that their core business becomes the engine of solutions for the challenges in the environmental and social impact of their business and products. The sustainability should continue to be an integrated and integral corporate aim and strategic factor for success, a windfall in the course of the development process and the ultimate objective of the innovation process. Another step is the need for business and capital markets to formalize the way that sustainability challenges are reflected in the long-term risk assessment of a company. Finally, a system change must aim at the creating of better ways to measure and value the true performance.

The companies which choose sustainable strategies and practices will be in the position to drive value by growing revenues through new products and services, reducing costs through eco-efficiency, managing operational and regulatory risks more effectively and building intangible assets such as brand, reputation and collaborative networks with customers, competitors and suppliers.

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The impact of accounting information on managerial decisions – Empirical study conducted in the hospitality industry entities in Romania

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Abstract. *Our research is an empirical one and it is based on a survey conducted between November 2012 and January 2013, using a questionnaire that consists of 38 questions administered online and on field to managers in the hospitality industry in Bihor county, Romania. The total population consists of 146 entities from Bihor county, authorized to operate in this sector, the sample comprised 91 tourism entities and the response rate to our questionnaire was 62.33%. The study adds value to the literature regarding managerial accounting in the hospitality industry and tourism in Romania. In what regards the limitations of our research, these are related to the restricted area of application of the questionnaires (Bihor county), the large number of questions in the questionnaire that require maximum concentration of the respondents as well as managers losing patience while filling out the questionnaire.*

Keywords: accounting information; accounting management; managers; hospitality industry.

JEL Classification: M41, L83.

REL Classification: 141.

Introduction

Hospitality and tourism industry represent one of the sectors that are nowadays facing a major dynamic, as it provides the main services that meet the vital needs of tourists, namely accommodation and catering, but also services that offer the guests the opportunity of leisure and services aimed at the satisfaction of desires, preferences and motivations requested by tourists. Each economic entity in this sector is facing an increasingly high demand for accounting information, which is managed through the informational system. The accounting information represents the basis for determining the economic indicators regarding all economic and financial operations and for all transactions; it also provides the certainty needed to develop reliable forecasts.

The effects of the global crisis as well as the continuously increasing expectations of the guests create a huge competition in this sector, the role of effectively piloting the business being vested in managers. In this context, the managerial accounting must be a useful means to provide relevant, reliable and timely information in order to effectively manage entities in this sector of activity.

1. Research methodology

Our study aimed to investigate the perception and attitude of managers in hospitality business in Romania regarding the usefulness of the information provided by the management accounting, the frequency of using this information and also the importance associated by managers to the formulation of clear objectives of management accounting as well as the way the information can be used in decision making. Our research is an exploratory one and it describes and analyzes human behavior: it is based on a questionnaire administered to a sample of managers in the hospitality industry from Bihor County, Romania. In this regard we have identified a number of 146 economic entities legally constituted as stock companies or limited liability companies (from the 230 entities of tourists' accommodation licensed to operate, according to information published on the ministry website <http://www.mdrtr.ro/ro/turism/unitati-clasificate>). From our total population we have eliminated a total of 84 entities that were operating as sole proprietorship, family business or freelancers. The questionnaire consists of 38 questions divided into four parts, as follows:

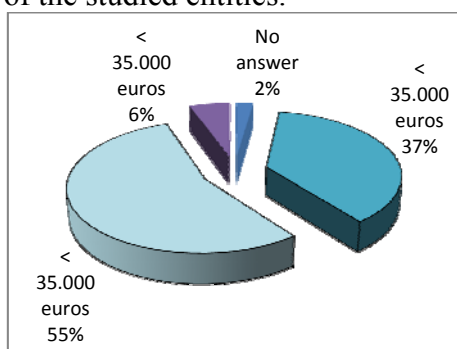
- general questions, that will reveal some characteristics of the economic entities in our sample and the profile of managers interviewed. These questions were arranged in the first parts of the questionnaire - *Part I. Data on the economic entity* and *Part IV. Personal profile of managers*;
- questions regarding the perception of managers in the hospitality and tourism industry on the usefulness of accounting information, especially that provided

by management accounting, the way of using this information for taking decisions for a sound management of the existing capacity. These questions are to be found in *Part II. Aspects of the importance of accounting information* as well as in *Part III. Aspects on organizing management accounting and cost management*.

In order to fill out the questionnaire we have used the direct approach, trying to talk to one of the people in the management teams (general manager, assistant manager, hotel manager) from the larger entities in our sample, or to the owner of the accommodation unit for smaller entities. We have also posted the questionnaire on a website at <http://bit.ly/ToN16W> and asked the potential respondents to fill it out.

3. Descriptive analysis of the responses

The general questions of the survey are related, on the one hand, to aspects that shape the identity of the respondents and, on the other hand, to the characteristics of the studied entities.



Source: own elaboration based on the answers in the questionnaires.

Figure 1. Distribution of entities by size of turnover

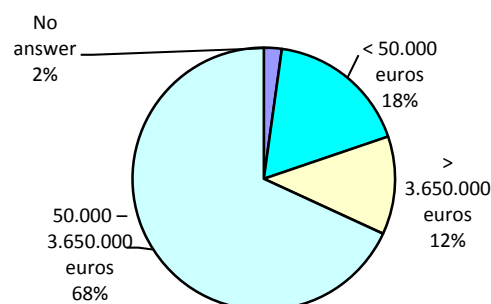


Figure 2. Distribution of entities by value of total assets

First we will describe the firms included in the sample, from different points of view. The general aspects highlighted by the questions in Part I of the questionnaire were focusing on the distribution of entities from the sample in terms of turnover, the value of total assets, number of employees and the classification of the accommodation unit and additional facilities of the entity (the treatment base, opportunities for leisure time). As shown in the previous figures, 54.9% of companies have a turnover of between 35,000 and 7,300,000 Euro; in what regards their total assets, 68% of our respondents said that this value is between 50,000 and 3,650,000 Euro. A percentage of 2% of the surveyed managers considered that the answers to these questions are confidential. In what

regards the number of employees, 45.1% of the entities in the sample have less than 10 employees, 33% have between 10 and 49 employees, 8.8% between 50 and 99 employees, while only 2.1% declared having more than 249 employees, here included employees from all offices.

Respondents were questioned on the classification of accommodation units they run as well as on their categories. To characterize the sample of firms from this point of view, we have built a crosstabulation between the two variables, as seen below.

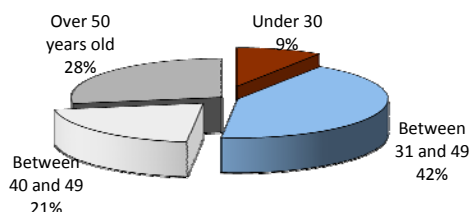
Table 1. *Distribution of the firms in the sample by classification and category of the accommodation unit*

		Classification of the accommodation unit							Total
		**	***	****	1 Daisy	2 Daisies	3 Daisies	4 Daisies	
STRUCTURES WITH ACCOMMODATION FUNCTIONS	Tourist cottage	0	1	0	0	0	0	0	1
	Hotel complex	7	3	4	0	0	0	0	14
	Hostel	3	1	0	0	0	0	0	4
	Hotel	8	14	6	0	0	0	0	28
	Mini-hotel	0	1	0	0	0	0	0	1
	Motel	1	4	0	0	0	0	0	5
	Villa	0	2	1	0	0	0	0	3
	Rural guest-house	2	4	1	0	3	17	3	30
	Urban guest-house	1	1	0	1	1	1	0	5
	Total	22	31	12	1	4	18	3	91

Source: own elaboration based on the answers in the questionnaires.

Our sample is representative, given that there is sufficiently good representation of the tourist structures with accommodation functions, both as category and as classification according to Government Decision no. 1267/2010 on the issuing of classification certificates, licenses and tourism patents and the MDRT Order no. 1051/2011 approving the Methodological norms regarding the issuing of classification certificates, licenses and tourism patents. The proportion of 4 star accommodation units in our sample is 13.18%. Of these, half are hotels and a third are hotel complexes. Most guest houses are classified as of three daisies (51.4%), but among them there is also a four star one.

The Part IV of the questionnaire contains general questions that reveal the profile of the managers. Regarding their profession, as seen in Figure 4, the majority of managers had declared to be economists (58.24%), while nearly 25% of those surveyed declared themselves to be engineers. In the case of entities a significant proportion of the managers in the hospitality industry in Bihor county have other professional training than those expressly mentioned by us (13.94%). Regarding the gender of the managers, the proportions are similar, 50.5% being men and 49.5% women.



Source: own elaboration based on the answers in the questionnaires.

Figure 3. Distribution of managers by age

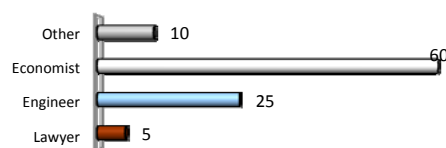
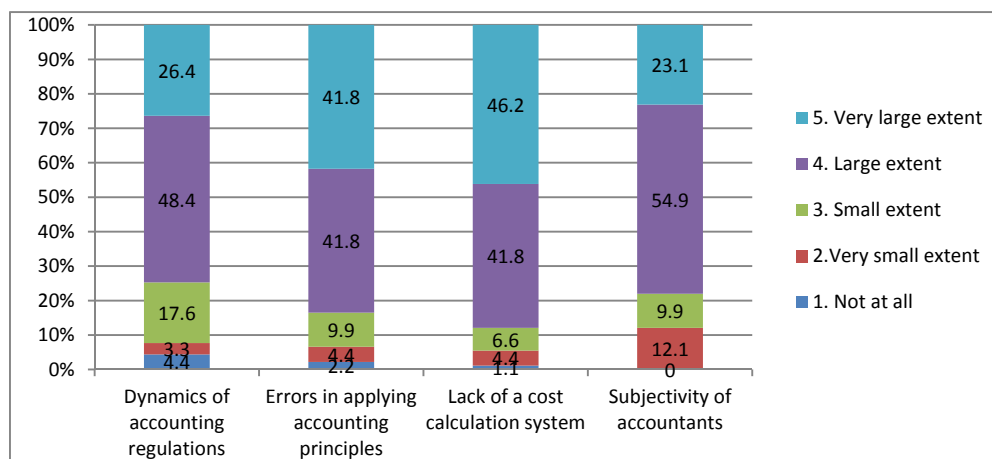


Figure 4. Distribution of managers by their profession

While part II of the questionnaire includes questions on the frequency and purpose of the use of accounting information, on the perception of managers about the qualitative characteristics of accounting information as well as the factors that can influence these characteristics. Part III shifts the focus mainly on aspects regarding the organization of management accounting and of cost management in the industry of hospitality and tourism.

We consider also relevant the managers' perception on the factors that influence the qualitative aspects of the information provided by management accounting. Here are the answers to question II. 4. What are, in your opinion, the factors that may affect the quality of the accounting information provided by management accounting?

- Dynamics of accounting regulations,
- Errors in applying accounting principles,
- Lack of a cost calculation system,
- Subjectivity of accountants,
- Others (please specify).



Source: own elaboration based on the answers in the questionnaires.

Figure 5. Distribution of factors that can affect the quality of the accounting information provided by the management accounting, according to the managers in the sample

As seen in Figure 5, 88% of the managers of the entities in our sample stated that the most important factor that can affect the quality of the information provided by management accounting is the lack of a cost calculation system (46.2% stating that the influence is present to a very great extent and 41.8% to a large extent) and what matters the least is the dynamics of accounting regulations (74.8%). The role of the human factor is significant, "the professional with glasses and sleeves", being capable, in the opinion of 78% of the interviewed managers, to influence the quality of the accounting information by his/her subjectivity.

4. Testing the research hypotheses

In what follows, we will analyze the validity of certain research hypotheses at the level of the sample and generalize the results on the total population.

Hypothesis H1: The perception of managers with regard to the usefulness of the accounting information is in correlation with (their) formulating of some clear objectives of the management accounting.

We will test the validity of this research hypothesis using the answers to the following questions in our questionnaire:

II 5 b. How would you rate the importance and usefulness of accounting information provided by management accounting?

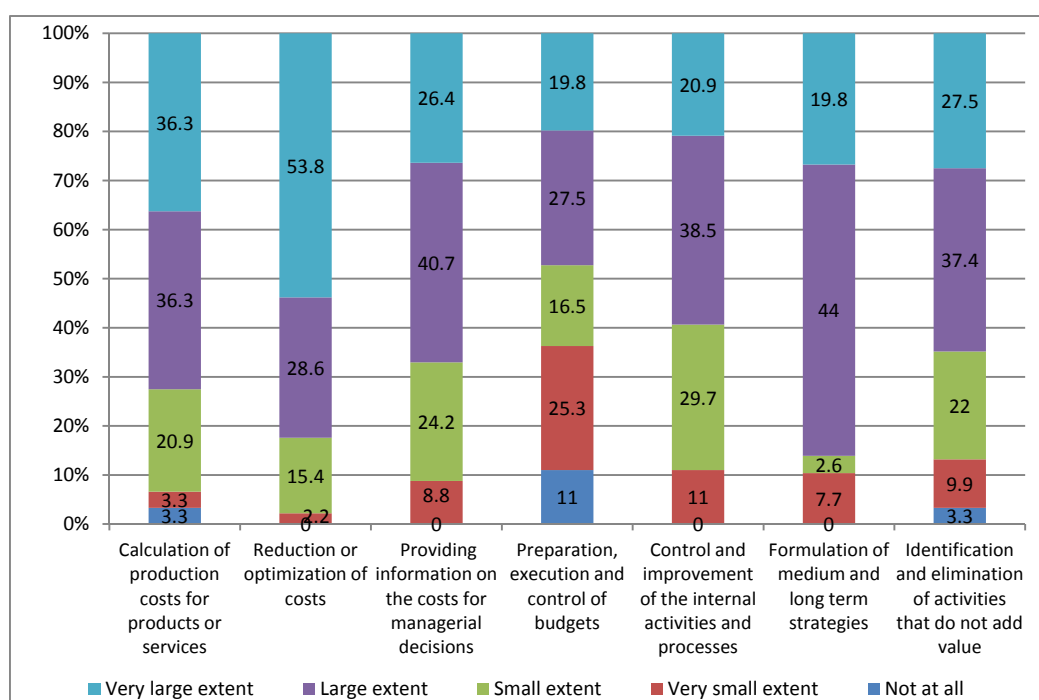
III. 4. On a scale from 1 to 5 please present the managerial accounting objectives within your entity:

- Calculation of production costs for products or services,
- Reduction or optimization of costs,
- Providing information on the costs for managerial decision-making,
- Preparation, execution and control of budgets,
- Control and improvement of the internal activities and processes,
- Formulation of medium and long-term strategies,
- Identification and elimination of activities that do not add value to the business.

Analyzing the distribution of the answers given by the 91 managers from our sample, we find that 57 managers (62.63%) stated that the information provided by financial accounting is very useful in decision-making; in what regards the managerial accounting, 60 of them (65.93%) considered that it provides very useful information for decision-making.

The answers to question III.4 are shown in Figure 6. Most managers believe that controlling and reducing costs constitutes the most important interest among the objectives of managerial accounting, followed by the calculation of production costs for the services provided.

The managers in our sample were asked to evaluate on a scale from 1 to 5 the importance associated with the objectives of managerial accounting within the entity to which they belong, namely: calculation of production costs for products or services, cost reduction and optimization, providing information on the costs for founding managerial decisions, preparation, execution and control of budgets, control and improvement of internal processes and activities, formulation of medium and long-term strategies and, respectively, identification and elimination of activities that do not add value.



Source: own elaboration based on the answers in the questionnaires.

Figure 6. Evaluation of the importance associated by managers to management accounting objectives, at the level of the sample

In order to use this information to validate our research hypothesis, we have associated importance scores for each answer, allotting five points to managers who appreciate an objective of management accounting as important to a very large extent and one point to those who appreciate the objectives as not important. We have then determined average scores on each manager and we assigned these scores based on the appreciation given by managers to the importance and usefulness of accounting information. The crosstabulation between the scores associated to the variables is presented in Table 2.

Table 2. Distribution of average scores for the variables used in the validation of hypothesis H1

		Appreciation given by managers to the importance and usefulness of accounting information				Total
		Not very useful	Useful	Quite useful	Very useful	
Appreciation of the importance attributed by managers to the objectives of managerial accounting	(2 - 2.5]	1	1	0	0	2
	(2.5 - 3]	0	5	7	4	16
	(3 - 3.5]	0	2	3	7	12
	(3.5 - 4]	0	2	3	22	27
	(4 - 4.5]	0	2	2	17	21
	(4.5 - 5]	0	0	3	10	13
Total		1	12	18	60	91

Source: own elaboration based on the answers in the questionnaires.

The distribution of the frequencies in the table reveal a positive correlation between the two variables. The more the managers appreciate the importance and usefulness of accounting information, the higher the significance scores associated to the importance of managerial accounting objectives. In order to extend this result on the total population we will apply the χ^2 method. The table of

recalculated frequencies, using the formula $n'_{ij} = \frac{n_{i\cdot} \cdot n_{\cdot j}}{n}$ is presented as follows:

Table 3. Table of recalculated frequencies associated to Table 2

		Appreciation given by managers to the importance and usefulness of accounting information				Total
		Not very useful	Useful	Quite useful	Very useful	
Appreciation of the importance attributed by managers to the objectives of managerial accounting	(2 - 2.5]	43.52	2.06	0.40	1.32	2
	(2.5 - 3]	0.18	3.96	4.65	4.07	16
	(3 - 3.5]	0.13	0.11	0.17	0.11	12
	(3.5 - 4]	0.30	0.68	1.03	0.99	27
	(4 - 4.5]	0.23	0.21	1.12	0.72	21
	(4.5 - 5]	0.14	1.71	0.07	0.24	13
Total		1	12	18	60	91

Source: own elaboration based on the answers in the questionnaires.

Since the $\chi^2_{\text{calculated}} = 68.10$ is greater than 0, there is a correlation between the analyzed variables in our sample, so the *perception of managers with regard to the usefulness of accounting information is correlated with their formulation of some clear objectives of managerial accounting*. To extend our result on the total population - all managers in Bihor county, the following hypotheses are issued:

$$H_0 : \chi^2 = 0$$

$$H_1 : \chi^2 \neq 0.$$

The calculated value, 68.10, is compared to the critical value of the test, for 15 degrees of freedom and a probability of 95%, which in our case is 25.00. Since the calculated value is greater than the critical one, the null hypothesis is rejected and

hypothesis H1 is accepted, so there is a strong correlation between the two variables at the level of the total population, as the difference between the two values is significant.

Hypothesis H1: The perception of managers with regard to the usefulness of the accounting information is in correlation with (their) formulating of some clear objectives of the management accounting is validated.

Hypothesis H2: The frequency of using the accounting information in the activity of entities in the hospitality industry is closely related to the relevance and reliability of information provided by management accounting.

The questions based on which we will test the validity of this research hypothesis are II.3. and II.1. These are:

II.3. How would you rate the importance of the following qualitative characteristics of the information provided by management accounting?

- Relevance
- Reliability.

II.1. On average, how frequently do you use accounting information in your work? We will proceed to the validation of hypothesis H2 using the χ^2 – Chi-square method. The crosstabulation between the scores determined from the answers referring to the assessment of the qualitative characteristics of the information provided by management accounting (relevance and reliability) and, respectively, the frequency of its use, is presented in Table 4.

Table 4. Distribution of responses for the variables used in validating hypothesis H2

		Frequency of using accounting information				Total
		2-3 times a month	monthly	weekly	daily	
Average scores of evaluation of some features of accounting information (relevance, reliability)	2.50	0	0	0	1	1
	3.00	0	0	2	6	8
	3.50	1	1	5	1	8
	4.00	3	4	7	15	29
	4.50	0	2	1	13	16
	5.00	2	1	4	22	29
Total		6	8	19	58	91

Source: own elaboration based on the answers in the questionnaires.

The distribution pattern of the frequencies in the table reveal a positive correlation between the two variables. The high values of the average scores for the evaluation of certain characteristics of the accounting information (relevance, reliability) correspond to the managers that use frequently the accounting

information in their work. The table of recalculated frequencies using the formula $n'_{ij} = \frac{n_{i\bullet} \cdot n_{\bullet j}}{n}$ is presented as follows:

Table 5. Table of recalculated frequencies associated to Table 4

		Frequency of using accounting information				Total
		2-3 times a month	monthly	weekly	daily	
Average scores of evaluation of some features of accounting information (relevance, reliability)	2.50	0.53	0.70	0.07	0.16	1
	3.00	0.42	0.13	6.64	3.30	8
	3.50	0.62	0.83	0.15	0.66	8
	4.00	1.05	0.25	1.64	0.77	29
	4.50	0.00	0.94	0.70	0.67	16
	5.00	0.53	0.70	0.07	0.16	29
Total		6	8	19	58	91

Source: own elaboration based on the answers in the questionnaires.

With the help of $\chi^2_{\text{calculated}} = \sum_i \sum_j \frac{(n_{ij} - n'_{ij})^2}{n'_{ij}}$ formula, we have determined the

$\chi^2_{\text{calculated}}$ value, which equals 20.21. Since this value is much greater than 0, there is a correlation between the two variables at a sample level. The high frequency of using accounting information in the activities of the economic entities in the hospitality industry is closely related to the relevance and reliability of the information provided by the management accounting.

To extend our result on the total population - all managers from the hospitality industry in Bihor county, the following hypotheses are issued:

$$H_0 : \chi^2 = 0$$

$$H_1 : \chi^2 \neq 0.$$

The calculated value, 20.21, is compared with the critical one, for 15 degrees of freedom and a probability of 95%, which in our case is 25. Since the calculated value is lower than the critical one, the null hypothesis cannot be rejected, so between the high frequency of using accounting information in the activities of the economic entities in the hospitality industry and the relevance and reliability of information provided by management accounting there is no correlation at the level of the total population.

Hypothesis H2: The frequency of using the accounting information in the activity of entities in the hospitality industry is closely related to the relevance and credibility of information provided by management accounting is not validated.

5. Conclusions and further research

The information provided by the financial accounting and the one revealed given by the managerial accounting in the hospitality industry have sometimes different though very important roles (Zubac, 2012). As indicated by several authors (Mia, Patier, 2001, Sharma, 2002, Pellinen, 2003, Mongiello, Harris, 2006, Pavlatos, Paggios, 2007, Pavlatos, Paggios, 2009, Santos, 2010), only few aspects are known, as yet, with respect to the usefulness and relevance of the information provided by management accounting and of the managerial practices in the hospitality industry. The studies on this topic in the Romanian literature are extremely rare.

This paper presents only a few aspects regarding the managerial accounting, as result of a broader research. The study was conducted on a sample of 91 entities in the hospitality industry its results being in accordance with the scientific literature on the importance of accounting information in decision making.

Results obtained

- 88% of the managers surveyed said that the most important factor influencing the quality of information provided by management accounting is the lack of a cost calculation system and on the second place as a factor of influence is the subjectivity of the accountants (78%);
- 65.93% of the managers surveyed believe that the accounting information resulting from the managerial accounting is very useful in decision making, while in what the financial accounting is concerned 62.63% of the managers stated that managerial accounting provides very useful information for the decision making process;
- At the level of the sample the managers' perception of the usefulness of accounting information is correlated with the formulation (by them) of clear objectives of managerial accounting and this correlation can be extrapolated to the level of the total population as well;
- At the level of the sample there is a close link between the frequency of using the information and two of the qualitative characteristics of the information provided by the management accounting (relevance and reliability), but this assertion cannot be extended to the total population.

In spite of its limitations related to the formulation of the questions in the questionnaire and the choice of the sample, our research brings new and original elements to the Romanian literature on the subject of managerial accounting in the hospitality industry.

In our future researches we will continue to investigate the managers in the hospitality industry with regard to various aspects concerning the capitalization of the information provided by management accounting, the particularities of cost calculation in this branch of activity, as well as different management practices in the sector.

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Exchange rate volatility effects on export competitiveness. Romanian Case

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Abstract. *In this paper we determine and analyze the impact of the exchange rate variation over the international trade of Romania. We highlighted the sense of the relationship between exchange rate and exports or imports, but the intensity between the variables and the lags that characterize the interdependency between them. In the context of actual great imbalances in the global economy and other risks (financial, political or social) that drive to the decrease in aggregate demand on global level, we consider that external competitiveness became one of the key variable for the economic growth in Romania like an integrated process in the European economy.*

Keywords: exchange rate; import; export; competitiveness; volatility.

JEL Classification: C5, F31, F40, F41, F43.

REL Classification: 8H, 8N.

1. Introduction

Currency and its evolution in relation with other currencies are important for both: *internal stability* of the national economy (employment and NAIRU, price stability, domestic money demand and supply, interest rate) and *external stability* (in terms of sustainable current account deficit). Furthermore, inflation and nominal exchange rate are interdependent elements which reflect the evolution of a balanced and sustainable national economy.

As a result of the subject complexity regarding the currency fluctuations (like a consequence of the national economy evolution), in this article we analyze the impact of exchange rate volatility on external trade and, in particular, on the categories of goods exported. Export is an important component in terms of economic stability in Romania and for the national economic recovery. Exchange rate volatility is the result of internal economic dynamics and economic policy measures adopted and also of the economic developments in international markets. The impact of the global developments on the national currency is justified by the size of the Romanian economy and its high degree of openness. Thus, we aimed to determine and analyze the correlation between exchange rate and the evolution of interstate trade.

We structure this paper in four parts, starting with the theoretical background offered by the literature and the evolution of the main macroeconomic indicators relevant for the topic investigated, then we applied some quantitative methods to data series for Romanian economy to determine the correlation between selected variables (exchange rate, inflation, export, import) and highlighting the results and their interpretation. Finally we draw the conclusions of the study.

2. Theoretical background

In the literature the subject is intense debated from the 1980s and when the international trade became more intensified. Furthermore, since 2000s the issue of exchange rate undervaluation or overvaluation is discussed in relation with economic growth, current account balance, internal consumption and exports of goods.

The studies reveal a variety of results. Razin, Collins (1999) have found that an overvaluation can hinder economic growth, and the same results was obtained by Rajan and Subramanian (2009), or Gala (2008). Other studies, have found that growth could be boosted by an undervaluation of the national currency (Berg, Miao, 2010).

The relationship between exchange rate and exports was analyzed by a numerous authors and, in particular, was analyzed the effect of the devaluation of exchange rate over the exports. Fang et al. (2006) have studied the effect over the exports of

the exchange rate depreciation for a group of economies from Asia (Malaysia, Thailand, Indonesia, Japan, Philippines, Singapore, Republic of Korea and Chinese Taipei) and they found that the effect is weak and it varies across countries.

Otherwise, Wang and Ji (2006) concluded on the China international trade (during 1986-2003) that the Chinese Yuan didn't have any influence over the exports or imports.

Some interesting results have been obtained for the Turkish lira and the influence of this currency over the imports and exports of Turkey. First of all, Aydin and al. (2004) have studied the situation from 1987 and 2003 and their conclusion was that the exchange rate doesn't have any influence over export, but it influences the imports. Secondly, Binatli and Sohrabji (2009) analyze the period 1999-2008 and have found that a depreciation of the Turkish lira has a negative effect on imports and exports.

Bernard and Jensen (2004) have focused on the economy of US for the period 1987-1992 and they have found that the variability of exchange rate was an important determinant of export increases.

Lemmers and Vancauteran (2009) analyze the Dutch economy and they had found over the period 1978-2007 that the Euro variation with 10% (in terms of depreciation) over the US dollar reduces the Dutch exports with 1.8%, but doesn't have any notable effect over imports. Also, they have focused over the effects of exchange rate on re-exports and exports of Dutch products for the period 1996 and 2007. If there is an acceleration of the depreciation of the dollar in the precedent quarter, which has a negative effect over the volume of the re-exports in the next quarter (a depreciation of dollar by 10% drive to a decrease by 2.9%).

For the Romanian case, Ghiba (2010) analyze the relation between exchange rate and international trade (period 2005-2010, monthly data series) and shows that the depreciation of Romanian leu has a small effect of the exports increase and the relation with imports is extremely weak.

Our study is concentrated over the period 2006-2011 for data series with monthly frequency. We chose the 2006 year because in this year was the full liberalization of capital account and the capital flows have increased volatility on the Romanian market from that moment. We estimate the elasticity of exports and imports at variation of exchange rate, and also we estimate the elasticity of different groups of goods exported by Romania.

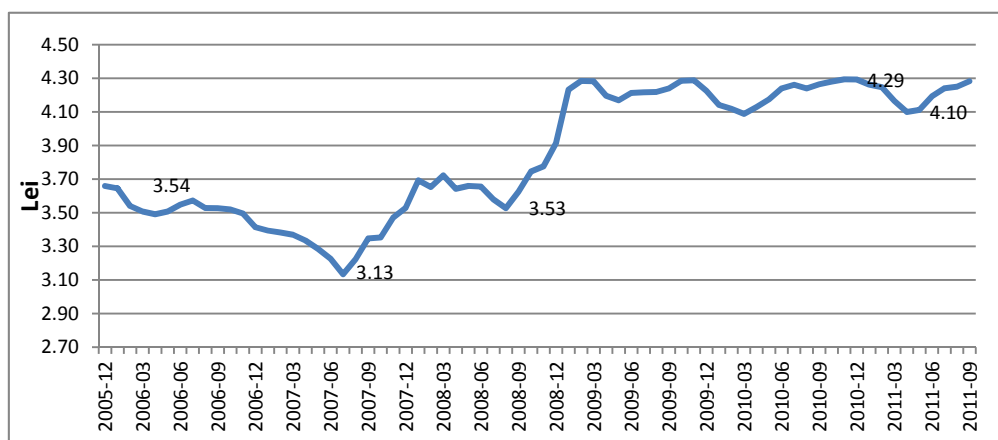
The groups of good exported was defined like the Eurostat database in:

- Raw materials;
- Mineral fuels, lubricants and related materials;
- Food, drinks and tobacco;

- Chemicals and related products;
- Other manufactured goods;
- Machinery and transport equipment.

In the following paragraphs are presented the evolutions in the period 2006-2011 of the exchange rate and of the other factors that, in our opinion, have a big influence over the Romanian exports and the external competitiveness of them. Obvious, just a depreciation of national currency can't make the exported goods most demanded to foreign markets. Some internal and external factors influence the demand from international partners and we focused over imports of main trade partners, industrial production, foreign direct investments, intermediate imported goods and used for export goods and fiscal incentives.

In the analyzed period the trend of exchange rate was descending between 2006 and 2007 and after the last quarter of 2007 the national currency started to depreciate and reaching a maximum average level of about 4.3 lei for one Euro. How the next figure shows, in the last two years the national currency was found in a band of variation of 4.1 and 4.3 lei for one Euro.

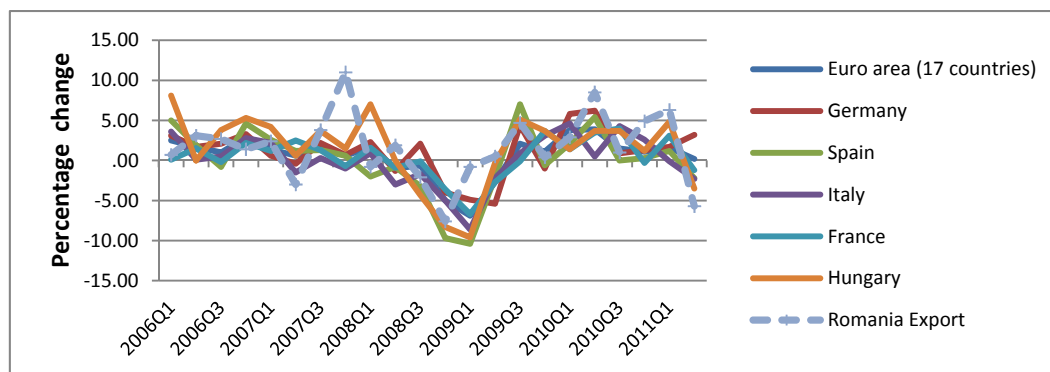


Source: BNR.

Figure 1. *Evolution of exchange rate (2006-2011, average monthly data series)*

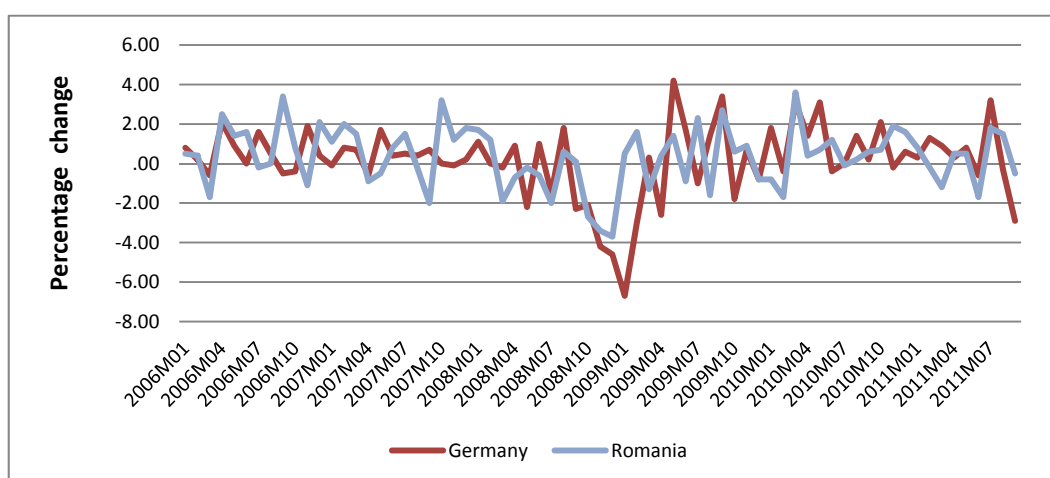
Figure 2 shows the evolution of Romanian exports and the imports evolution from the main trade partners (Germany, Italy, France, etc.). A very big part of Romanian exports is with countries from the Euro Zone and European Union and we can see that is a positive relationship between external demand from these countries and the Romanian exports. Also, Germany is first commercial partner Romania (with a share of 18.5% in total exports in 2011) and the evolutions from Germany have a strong influence over Romanian exports. Figure 3 shows a similar evolution of

industrial production in these two countries and that an increase in Germany will lead to an increase in industrial production from Romania.



Source: Eurostat.

Figure 2. Evolution of external demand (imports) for the core trade partners and the exports of Romania (quarter-to-quarter)



Source: Eurostat.

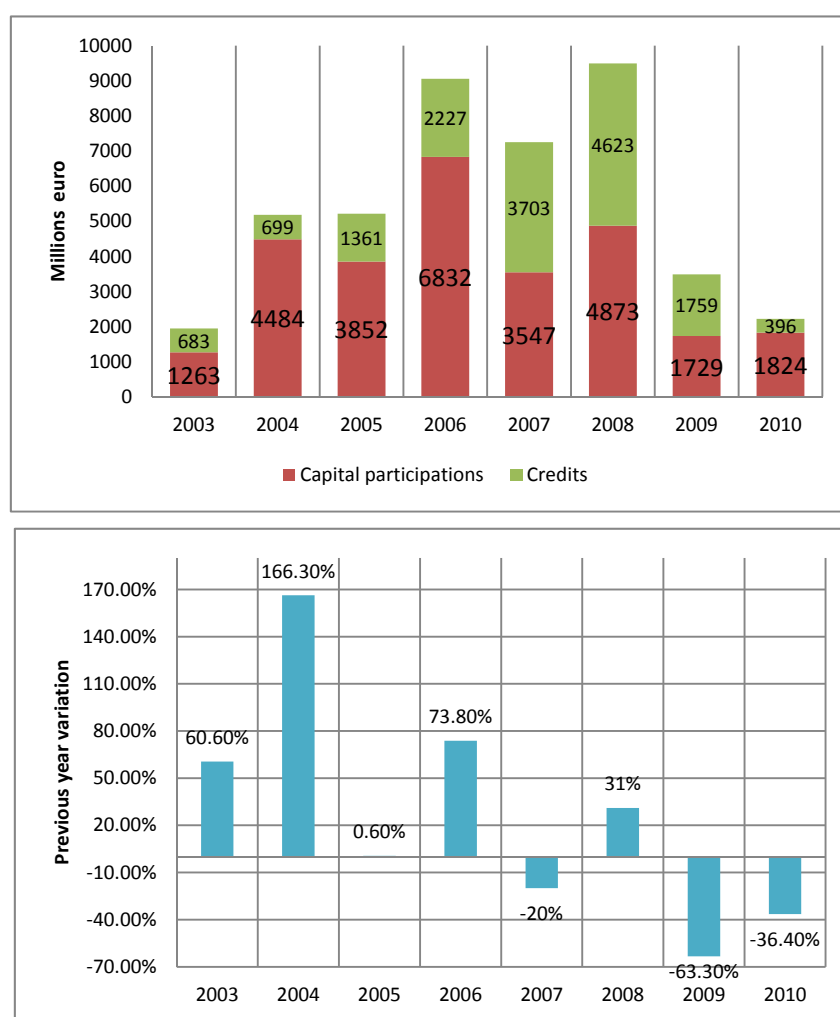
Figure 3. Evolution of industrial production in Romania and Germany (month-to-month)

In Figure 4 is presented the evolution of FDI inflows in Romania. Inflows reached a maximum in 2006 and 2008, about 9 billion Euro. After year 2008, the FDI have collapsed in 2009 (decrease of 63.3% from previous year) and in 2010 (decrease of 36.4% from 2009).

Literature considers FDI an essential factor for catching-up process between developed and developing countries and a pillar for economic competitiveness. In

terms of Romanian economic sectors, (according National Bank of Romania – Report about FDI inflows for 2010), the FDI were mainly located in manufacturing sector (32% from total). In this sector the best industries are oil processing, chemical products, rubber and plastic materials (6.9% from total) metallurgy (5.3%), transport equipment (4.9%) and foods, drinks and tobacco (3.9%).

Other significant activities are financial intermediation and insurance (representing 19.1% of total FDI), retail and wholesale trade (12.4%), construction and real estate (9%), information and communications technology (5.9%).



Source: BNR.

Figure 4. Evolution of FDI inflows

The next important factor is represented by the fiscal incentives that could have a direct impact over exports, or an indirect impact if are for stimulate the production

of goods that could be exported. In this last case, an decisive role may be owned by Eximbank (the state bank for export) that could help Romanian firms in obtain funds for increasing them external competitiveness. Also, beside the internal influences, could be external influence on the exports due to “economic programs” that have place in some countries. An example for that situation are the incentive programs for auto industry from Germany in 2009, that have boosted exports of the countries from Central and Est Europe, like Romania, Czech Republic and Poland, that counted an increase of car exports.

The last analyzed element is represented by the intermediate imported goods. These goods are used then for the production of final goods (for internal demand or for external markets). The next table shows that the share of intermediate goods is the highest in the all imported goods (both 2008 and 2009) and could explain that these goods are very important for future exports.

Table 1. Imports on production stages

	2008 (millions euro)	2009 (millions euro)	Structure (%)	
			2008	2009
TOTAL	52834	35955	100.0	100.0
Raw materials	7269	3953	13.8	11.0
Intermediate goods	24511	18345	46.4	51.0
Capital goods	12646	6619	23.9	18.4
Consumer goods	8408	7038	15.9	19.6

Source: INS, BNR.

3. Empirical analysis for Romania

The first dependence we decided to study is the one between the exogenous variable exchange rate and the dependent variable IPC (Table 2) using a time series data for the period 2006-2011(monthly series). After we removed the seasonal factors that could disrupt the normal evolution we could establish the dependency ratio that exists between the two variables. The simple regression showed us there is a strong dependency relationship for our country. We can see from the model there is a very low probability the exchange rate variable coefficient to be zero.

Result also shows when exchange rate increases by one unit the rate of inflations moves in the same way indicating a direct dependency. It is very important to understand that the relationship of dependency does not imply a causal relationship between variables. A causal relationship means exchange rate depreciation causes inflation increases and can be demonstrated by Granger Test.

Table 2. *The relation CPI – exchange rate*

Dependent Variable: IPC_SA

Method: Least Squares

Date: 11/10/11 Time: 09:42

Sample (adjusted): 2006M02 2011M02

Included observations: 61 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
CURS_SA1	1.500294	0.796391	1.883866	0.0545
C	100.4947	0.057115	1759.505	0.0000
R-squared	0.056739	Mean dependent var		100.5095
Adjusted R-squared	0.040751	S.D. dependent var		0.451119
S.E. of regression	0.441831	Akaike info criterion		1.236460
Sum squared resid	11.51768	Schwarz criterion		1.305669
Log likelihood	-35.71203	Hannan-Quinn criter.		1.263584
F-statistic	3.548951	Durbin-Watson stat		1.898344
Prob(F-statistic)	0.004514			

Source: Results obtained with Eviews 5 program.

Further we focus on the export response to exchange rate fluctuations (Table 3) and for this we decided to perform a regression for these variables. This indicates that depreciation of the Romanian currency will have a positive effect on exports and will register an increase. There is a very low probability for the exchange rate coefficient to be zero, Durbin-Watson coefficient is about 2.24 placing them in a frame interval proving very weak autocorrelation of errors. R-squared test result is not significantly closer to economic reality but it must be said the importance of this indicator for unifactorial linear models is very low.

Table 3. *Relation exports – exchange rate*

Dependent Variable: EXPORTURI_SA1

Method: Least Squares

Date: 11/10/11 Time: 09:52

Sample (adjusted): 2006M02 2011M02

Included observations: 61 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
CURS_SA1	651.9715	429.1610	1.519177	0.0341
C	34.22076	30.77842	1.111843	0.0707
R-squared	0.037644	Mean dependent var		27.77907
Adjusted R-squared	0.021333	S.D. dependent var		240.6760
S.E. of regression	238.0950	Akaike info criterion		13.81545
Sum squared resid	3344664.	Schwarz criterion		13.88466
Log likelihood	-419.3713	Hannan-Quinn criter.		13.84258
F-statistic	2.307899	Durbin-Watson stat		2.242139

Source: Results obtained with Eviews 5 program.

The results from the simple regression of imports and exchange rate (Table 4) indicates an indirect relationship between the two variables analyzed, in other words we can say that an increase in exchange rate can be translated as a currency depreciation leading to a decrease in imports. Indirect relationship can be observed through the exchange rate coefficient value (-241.30).

Table 4. *Relation imports – exchange rate*

Dependent Variable: IMPORTURI_SA

Method: Least Squares

Date: 11/10/11 Time: 10:00

Sample (adjusted): 2006M02 2011M02

Included observations: 61 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
CURS_SA1	-241.3084	997.2541	-0.241973	0.0096
C	3582.977	71.52073	50.09704	0.0000
R-squared	0.180009	Mean dependent var		3585.361
Adjusted R-squared	0.165941	S.D. dependent var		548.9106
S.E. of regression	553.2684	Akaike info criterion		15.50180
Sum squared resid	18060247	Schwarz criterion		15.57101
Log likelihood	-470.8049	Hannan-Quinn criter.		15.52892
F-statistic	0.058551	Durbin-Watson stat		2.235341
Prob(F-statistic)	0.009640			

Source: Results obtained with Eviews 5 program.

Another thing we focus is the disaggregated export effect by development status of the trading partners and by type of sector involved in trade. Given the rise of some developing countries in world trade and the change in the composition of world trade during the last decades it is important to understand how export responses to shocks may vary by trading partners and by sectors to explain aggregate responses. Moreover this exercise informs the existing debate on the substitution elasticity between domestic and foreign goods.

The values of the correlation coefficient (about 0.367, respectively 0.3360) are supporting the idea that relationship between trade and exchange rate is relatively low and there are other factors that influences commercial process.

We also made a multi-factorial regression between exchange rate and export and we decided to analyze how the exchange rate influences the volume of exports from a gap. That means exports will experience a delay after a longer period of time. The exchange rate at a gap of four lags shows that the national currency depreciation has an effect in order to increase exports only after four months (Table 5). Another exogenous variable is EXPORT_SA1 and here we can discuss

about “the effect of reputation” that means that a growth of exports in the past generates increasing exports in the present.

Table 5. *Dependence from the past exports*

Dependent Variable: EXPORT_SA

Method: Least Squares

Date: 04/14/11 Time: 22:45

Sample (adjusted): 2006M05 2011M02

Included observations: 58 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
EXPORT_SA1	0.824967	0.079206	10.41544	0.0000
CURS_SA4	-154.3347	95.27132	-1.619949	0.1110
C	-92.19979	331.8779	-0.277812	0.0822
R-squared	0.736369	Mean dependent var		2670.151
Adjusted R-squared	0.726783	S.D. dependent var		462.7236
S.E. of regression	241.8666	Akaike info criterion		13.86499
Sum squared resid	3217469.	Schwarz criterion		13.97156
Log likelihood	-399.0846	F-statistic		76.81254
Durbin-Watson stat	2.553411	Prob(F-statistic)		0.000000

Source: Results obtained with Eviews 5 program.

In the last part of the analysis we tested the relationship between different groups of the exported goods and in the next table we synthesized the obtained results. The coefficient of elasticity is 0.87 and indicates a strong dependence between the two variables. It must be said that the influence of exchange rate on exports of foods occurs later (there are four lags) so we can conclude a currency depreciation will not affect the export immediately. This evolution explains the existence of two parts previous contracts, these contracts are not depending on the evolution on the currency. The export of foods are influenced by the previous month export with creates “the effect of reputation”. An increase in export in the past generates an increase in the current export. Also, for transport equipment group we have a strong dependence effect of the past exports.

The relationship between exchange rate and export of fuels, capital goods and chemicals is weaker than the relationship between exchange rate and export of foods. Durbin Watson coefficient shows a lack of autocorrelation errors while F-statistics results indicate a representative model. The value of the coefficient over 0.6 in all these cases supports the accuracy of the model.

The result of these regressions shows a higher dependence between exchange rate and export of foods compared to the relationship established between exchange rate and the rest of goods.

It must be said that the model captures only a small part of the reality because are missing important exogenous variables and qualitative variables (dummy variables), that's way the veracity of the model is partial affected.

Table 6. *Relationship between groups of exported goods and exchange rate*

Dependent variable	Independent variable	Elasticity coefficient	Interpretation
Food	Food (-1) Exchange rate (-4)	0.873329	An increase with a unit of the exchange rate, food exports increase with 0.87 monetary units (m.u.)
Transport equipment	Transport equipment (-1) Exchange rate (-4)	0.174387	An increase with a unit of the exchange rate, transport equipment exports increase with 0.17 m.u.
Fuels	Fuels (-1) Exchange rate (-4)	0.028525	An increase with a unit of the exchange rate, fuels exports increase with 0.02 m.u.
Capital goods	Capital goods (-1) Exchange rate (-4)	0.228317	An increase with a unit of the exchange rate, capital goods exports increase with 0.22 m.u.
Chemicals	Chemicals(-1) Exchange rate (-4)	0.147351	An increase with a unit of the exchange rate, food exports increase with 0.14 m.u.

Source: Results obtained with Eviews 5 program.

4. Conclusions

The exchange rate fluctuations have a significant impact on various key variables and on them evolutions. Qualitative analysis and quantitative dependencies show that there is a close dependence relationship between exchange rate and CPI in the case of Romanian economy. Also, it reveals that is a direct relationship between exchange rate and export and an indirect relationship between exchange rate and imports. It is interesting to emphasize firstly the intensity of the relationship between variables and lags with which these interdependencies are manifested, and secondly, the sense of the relationship that is in line with the economic theory.

The results of these regressions performed on data series for the Romanian economy indicates a much higher dependence between exchange rate and export of food compared with the relationship that is established between the exchange rate and the rest of exported goods (transport equipment, fuels, capital goods and chemicals). It should also be noted that in Romania a large proportion of inputs for exported goods are imported, a fact that leading to decrease the overall effect of the exchange rate on exports.

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Do investors consider composite leading indicators? Time series evidence from emerging countries

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Abstract. *The nexus between macroeconomic indicators and stock market has been worthy of examination in emerging markets in the recent years. This paper therefore aims to investigate the long run and causal relationship between Composite Leading Indicators (CLI) and share prices in the thirteen emerging markets. Findings obtained from the analyses do not provide consistent results across all emerging markets. Empirical evidences of this study indicate that component structure of CLI and financial development level of questioned countries appears to play important role in determining the effectiveness of CLI in investors' decisions.*

Keywords: share prices; composite leading indicators; emerging markets.

JEL Classification: E44, F37.

REL Classification: 10F.

1. Introduction

Policymakers and researchers need to have an indicator that anticipates the fluctuations in economic activity earlier especially soon after crisis experiments in recent years. OECD has developed a system of “Composite Leading Indicators” to provide early signals of peaks and troughs between expansions and slowdowns of economic activity cooperatively with relevant country.

Anticipation of financial sector clearly contributes to development of real sector. From this viewpoint, proving the nexus between macroeconomic indicators and share prices also makes major contribution to this anticipation. Thus, it is very crucial to find out whether there exists any relationship between leading indicators and share prices both for financial and real sectors.

One would argue that the relationship between economic indicators and share prices could exist via the development of capital markets. Since investors trade through financial intermediaries, especially banks in emerging stock markets, for example, the development level of banking sector is positively correlated with the development level of stock markets (Demirguc-Kunt, Levine, 1996, Yartey, 2007).

The papers that examine the relationship between macroeconomic variables and stock markets contain different macroeconomic determinants. However, established models normally involve multicollinearity problem. In this sense, this paper aims to find out long run and causal relationships between macroeconomic indicators and share prices in emerging markets by utilizing CLI. The countries classified as emerging markets changes somewhat from year to year but typically MSCI determines 21 countries as emerging⁽¹⁾. In our analysis, we use 13 of them, namely Brazil, Chile, China, Czech Republic, Hungary, India, Indonesia, Korea, Mexico, Poland, Russia, South Africa and Turkey because of lack of data.

Present literature includes a large number of studies on the relationship between macroeconomic variables and stock markets. Nonetheless, empirically little is known about the impacts of composite leading indicators to share prices. Besides, despite of a relatively lots of papers on developed countries, to our knowledge, there is no other study which explores this issue in the case of emerging markets. Hence, this paper aims to fulfill this gap and contributes to empirical literature.

Since the long run and causal relationships between macroeconomic indicators and stock markets in emerging countries mostly differ from one to another, it is very difficult to discuss the theoretical relation between CLI and stock market. Another goal of this paper is therefore to provide a linkage between question variables on country or continental basis.

This study is composed of six sections. Following the introductory part, related literature was analyzed in the second part, model and data of the study were put forth in the third part, methodology and findings were interpreted in fourth, policy implications were made in the fifth part and finally a general review was presented.

2. Literature review

The relationship between stock prices and macroeconomic variables such as exchange rate, interest rate, industrial output, inflation, slope of the yield curve and money supply is well documented for the United States and other developed markets (Abdallah, Murinde 1997, Bredina, Gavin, O'Reilly, 2005, Chaudhuri, Smiles 2004, Chen et al. 1986, Cheung, Lilian, 1998, Darrat, Dickens, 1999, Fama, 1981, 1990, Flannery, Protopapadakis, 2002, Fama, French, 1989, Hamao, 1988, Humpe, Macmillan, 2009, Nasseh, Strauss, 2000, Thornton, 1993, Kim, 2003, Rahman, Khan, 2009, Ratanapakorn, Sharma, 2007, Wang, Lim, 2010). There exist relatively little papers including a few of emerging markets but these papers are lack of consensus. Hence it is still ambiguous that what this relationship looks like in emerging markets.

Because there exist no other study exploring the CLI-stock markets nexus, literature part is composed of the relation between macroeconomic indicators and stock markets in order to reveal empirical links. Muradoglu, Metin and Argac (2001) examined the long-run relationship between stock returns and overnight interest rate, money supply and foreign exchange rate during the period from 1988 to 1995 in Turkey. They found no cointegration relationship between stock prices and any of monetary variables or groups of variables of concern.

Samitas and Kenourgios (2007) investigated whether current and future domestic and international macroeconomic variables can explain long and short run stock returns in four “new” European countries (Poland, Czech Republic, Slovakia and Hungary) and “Old” Western European countries (UK, France, Italy and Germany). They tested the relationships between share prices, industrial production in the US, domestic industrial production, interest rates in the US and domestic interest rates using cointegration theory. They found that interest rates had a significant relationship with all countries stock prices, while domestic industrial production was found to have a significant effect only on share prices of European developing countries.

Gay (2008) investigated the time-series relationship between stock market index prices and the macroeconomic variables of exchange rate and oil price for Brazil, Russia, India, and China (BRIC) using the Box-Jenkins ARIMA model. He found

that no significant relationship between exchange rate and oil price on the stock market index prices in all of BRIC countries and no significant relationship found between present and past stock market returns.

Kandir (2008) investigated the role of seven macroeconomic factors in explaining Turkish stock returns in the period from July 1997 to June 2005. Macroeconomic variables used in his study are growth rate of industrial production index, change in consumer price index, growth rate of narrowly defined money supply, change in exchange rate, interest rate, growth rate of international crude oil price and return on the MSCI World Equity Index and the analysis is based on stock portfolios rather than single stocks. He found that exchange rate, interest rate and world market return seem to affect all of the portfolio returns, while inflation rate is significant for only three of the twelve portfolios.

Liu and Shrestha (2008) investigated the relationship between the Chinese stock market indices and a set of macroeconomic variables, such as money supply, industrial production, inflation, exchange rate and interest rates. They discovered the evidence of cointegration relationships between stock prices and macroeconomic variables and they also found that macroeconomic situation is positively influenced by long-run stock-market performance.

Alam and Uddin (2009) examined the impacts of interest rates on stock exchange. Their findings showed empirical relationship exists between stock market index and interest rates for fifteen developed and emerging countries: Australia, Bangladesh, Canada, Chile, Colombia, Germany, Italy, Jamaica, Japan, Malaysia, Mexico, the Philippine, South Africa, Spain, and Venezuela. They found that changes of interest rates have significant negative relationship with changes of stock prices.

Kumar (2011) examined the causal relationship between stock prices and macroeconomic variables in India for the period from 1st April 2006 to 31st March 2010 using techniques of unit-root tests, cointegration and the Granger causality. He found that there is no co integration between Nifty index and all other variables except Wholesale price index (WPI) as per Johansen cointegration test. Furthermore, causal relationship between such macro economic variables and Nifty index is also not established.

Auzairy, Ahmad and Ho (2011) investigated the effects of macroeconomic factors: exchange rates, interest rates, oil prices and market liquidity, on stock market performances in Malaysia, Thailand and Indonesia. They found that macroeconomic variables have significant impact on the performances of liberalizing countries' stock markets in some of these events.

Hsing (2011) examined the relationship between Hungary's stock market index and relevant macroeconomic variables. He found that Hungary's stock market index has a positive relationship with real GDP, the ratio of the government debt to GDP, the nominal effective exchange rate and the German stock market index, a negative relationship with the real interest rate, the expected inflation rate and the government bond yield in the euro area, and a quadratic relationship with real M2 money supply.

3. Model and data

In this paper, the relationship between composite leading indicators and share prices is investigated for thirteen emerging markets. For this purpose, co-integration and causality methodologies are employed in order to find out questioned relationship. Basic econometric specification of each country is as follows:

$$sp_t = \alpha_0 + \alpha_1 \times CLI_t + \varepsilon_t \quad (1)$$

In established model, left-hand-side variable is share prices. The variable is in logarithmic form and denoted by *sp*. On the other hand, right-hand-side variable is composite leading indicators consisting of macroeconomic indicators of relevant countries. This variable is also in logarithmic form and denoted by *CLI*. Data used in this paper gathered from OECD Database. As base year index, 2005 share prices are counted as 100. The data are monthly and sample period is 2000:1-2011:10⁽²⁾.

4. Methods and findings

As the first step, we need to determine optimum lag length by considering information criteria. With respect to Schwarz Information Criteria (SIC), lag lengths are chosen as 3 for Mexico and 4 for the rest of the countries.

In time series analyses, testing the stability of series before the identification of the relationship between variables is very important prior to the empirical procedure as well as the panel data analyses. Augmented Dickey-Fuller (ADF) (1981) and Phillips-Peron (PP) (1988) tests are commonly used for stationary in empirical applications. Table 2 reports unit root test results for questioned variables using ADF and PP tests considering only intercept and intercept+trend. ADF and PP tests confirm that all data series are integrated of I(1) except for Indonesia, Korea, Mexico and Turkey.

Long run relationship between non-stationary two series can be analyzed by employing co-integration test. Co-integration between the common components can be investigated by using standard time series tests such as the Although Engle and Granger (1987) is more favored in co-integration analyses with two variables, it is

better to employ Johansen's (1988) reduced rank approach, possibly supported with a model that corrects for small sample bias as this technique resolves most of the other matters attached with Engle-Granger technique. Hereby, Johansen (1988) method is used in the paper in order to examine long run running.

Table 3 shows the co-integration results⁽³⁾ for the countries where $I(1)$ is detected. It is seen from the table that while no evidence of co-integration is found in the cases of Chile, Hungary, and India; co-integration is detected in the cases of Brazil, China, Czech Republic, Poland, Russia and South Africa.

The common causality type in time-series analyses in order to investigate causal running is standard Granger causality. Because the causality between the variables has to be investigated by employing error correction model in this procedure in the cases where co-integration is detected, it demands more documented examinations. Toda and Yamamoto (1995) procedure, however, minimizes the risk associated with possibly wrongly identifying the orders of integration of the series and the presence of co-integration relationship. This paper therefore employs Toda-Yamamoto approach since it does not require whether the series are in the same order or co-integrated.

Table 4 contains Toda-Yamamoto causality results. According to table, while there exists bi-directional causality running in the cases of Brazil, Chile, China, Korea and Turkey; uni-directional causal running from CLI to share prices is detected in the cases of Czech Republic, Hungary, India, Indonesia, Mexico, Russia and South Africa. Additionally, no causal running is found for Poland.

5. Policy implications

Since emerging markets have higher average returns rather than developed markets, attentions have turned to these markets recently. Moreover, the fact that emerging countries have gained ground to become future's central countries increases demand for emerging markets, as well.

As CLI provide early signals of turning points between expansions and slowdowns for an economy, they should be regarded as important factor by investors and policymakers. In this context, three major implications have been appeared in this study. First, while investors in some emerging economies consider CLI in their long term decisions, some of them do not. This may result from the component structure in CLI of a country. If the combination of the components shows incoherent changes over time in a country, investors or shareholders in this country are expected not to consider CLI in long term decisions. This makes sense that the elasticity of emerging stock markets to the changing structure of macroeconomic indicators in CLI is relatively more volatile

in non-cointegrated countries. However, it does not seem as strict evidence and can be considered in investors' long term decisions if the changes in the structure of CLI components become consistent over time.

Second, investors in emerging countries except Poland should take CLI into account in short run decisions. Because the CLI react in the same direction with share prices, it is possible to expect that CLI are positively correlated with share prices in emerging markets. While an upturn movement in CLI is anticipated to have an expansionary effect, an adverse movement is anticipated to have a contractionary effect on emerging stock markets.

Finally, in several countries such as Brazil, Chile, China, Korea and Turkey, there also exist a causal running from share prices to CLI in addition to the adverse running. Since CLI summarize information on early signals contained in a number of key economic indicators, policymakers in these emerging markets should consider share prices in computing CLI. The reason makes these countries different may be about that development of a well-functioning stock market requires a well-functioning banking sector. Thereby, it could be inferred that these countries have more advanced banking structure than the others and the bi-directional running could be explained via the development level of banking sector which is not directly aimed in the paper. In that sense, examining this issue by following researchers will be useful for the literature.

6. Conclusions

This study investigates the link between composite leading indicators and share prices in emerging markets. We employ cointegration and causality methodologies based on monthly data ranging from January 2000 to December 2011. The empirical results indicate no cointegration relationship between leading indicators and share prices in Chile, Hungary, India, Indonesia, Korea, Mexico and Turkey; while there is cointegration for Brazil, China, Czech Republic, Poland, Russia and South Africa. On the other hand, causality results indicate that macroeconomic fluctuations cause changes in share prices for all emerging countries except for Poland as expected. Nonetheless, in the case of five markets - Brazil, Chile, China, Korea and Turkey, changes in share prices also led to macroeconomic fluctuations. This classification proves that share prices should be considered in computing CLI for the countries whose banking sector is relatively more advanced. As a consequence, two points can be highlighted as emerging market feature: considering leading indicators as a long term determinant by investors or shareholders depends on economic stability of relevant country and share prices are very responsive to macroeconomic fluctuations in the short run.

Notes

- (1) See Table 1 to see this classification detailed.
- (2) Due to lack of data, sample period is started from 2000 which is oldest available for all countries and variables.
- (3) In multivariate co-integration analysis, five different models are available, which are based upon various specifications of intercept and trend term. We run the model with 'unrestricted intercept and no trend' following estimations including intercept and trend.

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APPENDIX

Table 1. *Emerging markets-country coverage*

Americas	Europe, Middle East & Africa	Asia
Brazil	Czech Republic	China
Chile	Egypt	India
Columbia	Hungary	Indonesia
Mexico	Morocco	Korea
Peru	Poland	Malaysia
	Russia	Philippines
	South Africa	Taiwan
	Turkey	Thailand

Source: MSCI Emerging Market Indices.

http://www.msci.com/products/indices/country_and_regional/em/.

Table 2. *Unit root test results*

<i>H₀: series have unit root</i>					
Countries	ADF		PP		Decision
	τ_{τ}	τ_{μ}	τ_{τ}	τ_{μ}	
Brazil					
sp	-0,780[0,82]	-2,426[0,36]	-0,739[0,83]	-2,149[0,51]	H ₀ : Accept
CLI	-4,330[0,00]***	-4,319[0,00]***	-2,571[0,11]	-2,701[0,23]	H ₀ : Accept
Δsp	-8,622[0,00]***	-8,593[0,00]***	-8,671[0,00]***	-8,643[0,00]***	H ₀ : Reject
ΔCLI	-3,387[0,01]**	-3,376[0,05]*	-3,373[0,01]**	-3,371[0,05]*	H ₀ : Reject
Chile					
sp	-0,276[0,92]	-2,903[0,16]	-0,280[0,92]	-2,929[0,15]	H ₀ : Accept
CLI	-2,576[0,12]	-2,820[0,19]	-2,573[0,11]	-2,693[0,27]	H ₀ : Accept
Δsp	-9,463[0,00]***	-9,441[0,00]***	-9,546[0,00]***	-9,527[0,00]***	H ₀ : Reject
ΔCLI	-4,695[0,00]***	-4,585[0,00]***	-3,145[0,02]**	-3,146[0,09]*	H ₀ : Reject
China					
sp	-1,639[0,45]	-1,938[0,62]	-1,842[0,35]	-2,066[0,55]	H ₀ : Accept
CLI	-3,444[0,01]**	-3,375[0,05]*	-2,576[0,11]	-2,685[0,24]	H ₀ : Accept
Δsp	-7,351[0,00]***	-7,324[0,00]***	-7,647[0,00]***	-7,623[0,00]***	H ₀ : Reject
ΔCLI	-4,290[0,00]***	-4,286[0,00]***	-3,406[0,01]**	-3,402[0,05]*	H ₀ : Reject
Czech Rep.					
sp	-1,083[0,72]	-1,076[0,92]	-1,326[0,61]	-1,111[0,92]	H ₀ : Accept
CLI	-4,026[0,00]***	-4,008[0,01]**	-2,341[0,16]	-2,356[0,40]	H ₀ : Accept
Δsp	-9,452[0,00]***	-9,433[0,00]***	-9,674[0,00]***	-9,660[0,00]***	H ₀ : Reject
ΔCLI	-3,031[0,03]**	-3,147[0,09]*	-3,536[0,00]***	-3,526[0,04]**	H ₀ : Reject
Hungary					
sp	-1,138[0,69]	-1,648[0,76]	-1,227[0,66]	-1,609[0,78]	H ₀ : Accept
CLI	-2,577[0,11]	-2,847[0,18]	-2,569[0,10]	-2,596[0,28]	H ₀ : Accept
Δsp	-8,781[0,00]***	-8,751[0,00]***	-8,930[0,00]***	-8,902[0,00]***	H ₀ : Reject
ΔCLI	-4,339[0,00]***	-4,352[0,00]***	-3,291[0,01]**	-3,278[0,07]*	H ₀ : Reject
India					
sp	-0,838[0,80]	-2,680[0,24]	-0,533[0,88]	-2,552[0,30]	H ₀ : Accept
CLI	-2,515[0,11]	-2,414[0,37]	-2,576[0,11]	-2,631[0,26]	H ₀ : Accept
Δsp	-5,077[0,00]***	-5,049[0,00]***	-8,461[0,00]***	-8,465[0,00]***	H ₀ : Reject
ΔCLI	-3,635[0,00]***	-3,609[0,05]*	-2,752[0,06]*	-3,146[0,09]*	H ₀ : Reject
Indonesia					
sp	-0,380[0,90]	-3,144[0,11]	-0,104[0,94]	-3,144[0,11]	H ₀ : Accept
CLI	-4,260[0,00]***	-4,258[0,00]***	-2,832[0,05]*	-3,146[0,09]*	H ₀ : Reject
Δsp	-7,598[0,00]***	-7,596[0,00]***	-7,518[0,00]***	-7,519[0,00]***	H ₀ : Reject
ΔCLI	-5,990[0,00]***	-5,960[0,00]***	-3,288[0,01]**	-3,305[0,06]*	H ₀ : Reject
Korea					

<i>H₀: series have unit root</i>					
Countries	ADF		PP		Decision
	τ_{τ}	τ_{μ}	τ_{τ}	τ_{μ}	
sp	-0.961[0,76]	-3,144[0,12]	-0,822[0,80]	-3,141[0,12]	H ₀ : Accept
CLI	-4,579[0,00]***	-4,560[0,00]***	-3,359[0,01]**	-3,349[0,06]*	H ₀ : Reject
Δsp	-8,368[0,00]***	-8,359[0,00]***	-8,419[0,00]***	-8,359[0,00]***	H ₀ : Reject
ΔCLI	-4,366[0,00]***	-4,301[0,00]**	-3,237[0,01]**	-3,191[0,09]*	H ₀ : Reject
Mexico					
sp	-0,393[0,90]	-2,178[0,49]	-0,461[0,89]	-2,067[0,55]	H ₀ : Accept
CLI	-3,421[0,01]**	-3,399[0,05]*	-2,888[0,04]**	-3,146[0,09]*	H ₀ : Reject
Δsp	-9,743[0,00]***	-9,715[0,00]***	-9,816[0,00]***	-9,788[0,00]***	H ₀ : Reject
ΔCLI	-5,285[0,00]***	-5,288[0,00]**	-3,548[0,00]**	-3,579[0,03]**	H ₀ : Reject
Poland					
sp	-0,927[0,77]	-1,837[0,68]	-1,088[0,71]	-1,775[0,71]	H ₀ : Accept
CLI	-3,936[0,00]***	-3,992[0,01]**	-1,902[0,33]	-1,979[0,60]	H ₀ : Accept
Δsp	-8,631[0,00]***	-8,598[0,00]***	-8,893[0,00]***	-8,861[0,00]***	H ₀ : Reject
ΔCLI	-2,579[0,08]*	-3,149[0,09]*	-2,578[0,08]*	-3,149[0,09]*	H ₀ : Reject
Russia					
sp	-1,426[0,56]	-1,891[0,65]	-1,321[0,61]	-1,693[0,74]	H ₀ : Accept
CLI	-3,697[0,00]***	-3,667[0,02]**	-3,552[0,011]	-2,477[0,33]	H ₀ : Accept
Δsp	-8,089[0,00]***	-8,098[0,00]***	-8,110[0,00]***	-8,121[0,00]***	H ₀ : Reject
ΔCLI	-3,857[0,00]***	-3,882[0,01]**	-3,236[0,02]**	-3,250[0,07]*	H ₀ : Reject
South Africa					
sp	-0,903[0,78]	-1,958[0,61]	-0,738[0,83]	-1,935[0,63]	H ₀ : Accept
CLI	-2,578[0,12]	-2,938[0,15]	-2,058[0,26]	-2,035[0,57]	H ₀ : Accept
Δsp	-8,478[0,00]***	-8,447[0,00]***	-8,492[0,00]***	-8,461[0,00]***	H ₀ : Reject
ΔCLI	-3,212[0,02]**	-3,200[0,08]*	-2,750[0,06]*	-3,149[0,09]*	H ₀ : Reject
Turkey					
sp	-0,712[0,83]	-2,486[0,33]	-0,586[0,86]	-2,659[0,25]	H ₀ : Accept
CLI	-4,004[0,00]***	-4,052[0,00]***	-2,930[0,04]**	-3,146[0,08]*	H ₀ : Reject
Δsp	-10,32[0,00]***	-10,29[0,00]***	-10,34[0,00]***	-10,31[0,00]***	H ₀ : Reject
ΔCLI	-4,544[0,00]***	-4,549[0,00]***	-3,702[0,00]***	-3,744[0,02]**	H ₀ : Reject

Note: Probability values of t-statistics are in brackets.

***, ** and * denote significant at %1, %5 and %10 respectively.

Δ signifies the first difference of the questioned variable.

To accept null hypothesis, it is enough to be statistically insignificant for one test.

Table 3. Johansen co-integration results

<i>H₀: series are not co-integrated</i>									
Countries	Trace test results				Maximum eigenvalue test results				Decision
	Hypothesized No of CE(s)	Eigen-value	Trace Stats	0,05 Critical Value	Hypothesized No of CE(s)	Eigen-value	Max-Eigen Stats	0,05 Critical Value	
Brazil	None (r=0)	0,121693	18,02121	15,49471[0,02]	None (r=0)	0,121693	17,77695	14,26460[0,01]**	H ₀ : Reject
	At Most 1 (r≤1)	0,001781	0,244259	3,841466[0,62]	At Most 1 (r≤1)	0,001781	0,244259	3,841466[0,62]	
Chile	None (r=0)	0,062990	8,940436	15,49471[0,37]	None (r=0)	0,062990	8,913474	14,26460[0,29]	H ₀ : Accept
	At Most 1 (r≤1)	0,000197	0,026962	3,841466[0,86]	At Most 1 (r≤1)	0,000197	0,026962	3,841466[0,86]	
China	None (r=0)	0,136170	23,42117	15,49471[0,00]	None (r=0)	0,136170	20,05395	14,26460[0,00]***	H ₀ : Reject
	At Most 1 (r≤1)	0,024279	3,367224	3,841466[0,06]*	At Most 1 (r≤1)	0,024279	3,367224	3,841466[0,06]*	
Czech Republic	None (r=0)	0,112441	18,46192	15,49471[0,01]	None (r=0)	0,112441	16,34142	14,26460[0,02]**	H ₀ : Reject
	At Most 1 (r≤1)	0,015359	2,120506	3,841466[0,14]	At Most 1 (r≤1)	0,015359	2,120506	3,841466[0,14]	

<i>H₀: series are not co-integrated</i>									
Countries	Trace test results				Maximum eigenvalue test results				Decision
	Hypothesized No of CE(s)	Eigen-value	Trace Stats	0,05 Critical Value	Hypothesized No of CE(s)	Eigen-value	Max-Eigen Stats	0,05 Critical Value	
Hungary	None (r=0)	0,069234	11,69171	15,49471[0,17]	None (r=0)	0,069234	9,829343	14,26460[0,22]	H ₀ : Accept
	At Most 1 (r≤1)	0,013502	1,862371	3,841466[0,17]	At Most 1 (r≤1)	0,013502	1,862371	3,841466[0,17]	
India	None (r=0)	0,052508	7,517173	15,49471[0,51]	None (r=0)	0,052508	7,389385	14,26460[0,44]	H ₀ : Accept
	At Most 1 (r≤1)	0,000932	0,127788	3,841466[0,72]	At Most 1 (r≤1)	0,000932	0,127788	3,841466[0,72]	
Poland	None (r=0)	0,118392	19,32756	15,49471[0,15]	None (r=0)	0,118392	17,26303	14,26460[0,01]**	H ₀ : Reject
	At Most 1 (r≤1)	0,014957	2,064531	3,841466[0,15]	At Most 1 (r≤1)	0,014957	2,064531	3,841466[0,15]	
Russia	None (r=0)	0,069200	12,89061	15,49471[0,11]	None (r=0)	0,069200	9,824361	14,26460[0,22]	H ₀ : Reject
	At Most 1 (r≤1)	0,022133	3,066251	3,841466[0,07]	At Most 1 (r≤1)	0,022133	3,066251	3,841466[0,07]*	
South Africa	None (r=0)	0,126254	20,19820	15,49471[0,00]	None (r=0)	0,126254	18,49030	14,26460[0,01]**	H ₀ : Reject
	At Most 1 (r≤1)	0,012389	1,707894	3,841466[0,19]	At Most 1 (r≤1)	0,012389	1,707894	3,841466[0,19]	

Note: Probability values of t-statistics are in brackets. ***, ** and * denote significant at %1, %5 and %10 respectively.

Table 4. Toda Yamamoto causality results

Countries	Null hypothesis	MWald Stat.	Desicion
BRA	H ₀ : CLI does not Granger cause sp	6,940[0.00]***	H ₀ : Reject
	H ₀ : sp does not Granger cause CLI	2,008[0.08]*	H ₀ : Reject
CHILE	H ₀ : CLI does not Granger cause sp	4,770[0.00]***	H ₀ : Reject
	H ₀ : sp does not Granger cause CLI	2,457[0.03]**	H ₀ : Reject
CHINA	H ₀ : CLI does not Granger cause sp	3,458[0.00]***	H ₀ : Reject
	H ₀ : sp does not Granger cause CLI	2,907[0.01]**	H ₀ : Reject
C.REP	H ₀ : CLI does not Granger cause sp	2,987[0.01]**	H ₀ : Reject
	H ₀ : sp does not Granger cause CLI	1,234[0.29]	H ₀ : Accept
HUN	H ₀ : CLI does not Granger cause sp	4,293[0.00]***	H ₀ : Reject
	H ₀ : sp does not Granger cause CLI	1,282[0.27]	H ₀ : Accept
INDIA	H ₀ : CLI does not Granger cause sp	2,803[0.01]**	H ₀ : Reject
	H ₀ : sp does not Granger cause CLI	1,219[0.30]	H ₀ : Accept
INDON	H ₀ : CLI does not Granger cause sp	6,840[0.00]***	H ₀ : Reject
	H ₀ : sp does not Granger cause CLI	0,971[0.42]	H ₀ : Accept
KOREA	H ₀ : CLI does not Granger cause sp	8,824[0.00]***	H ₀ : Reject
	H ₀ : sp does not Granger cause CLI	4,369[0.00]***	H ₀ : Reject
MEX	H ₀ : CLI does not Granger cause sp	5,046[0.00]***	H ₀ : Reject
	H ₀ : sp does not Granger cause CLI	0,569[0.61]	H ₀ : Accept
POL	H ₀ : CLI does not Granger cause sp	1,612[0.16]	H ₀ : Accept
	H ₀ : sp does not Granger cause CLI	1,098[0.36]	H ₀ : Accept
RUS	H ₀ : CLI does not Granger cause sp	7,238[0.00]***	H ₀ : Reject
	H ₀ : sp does not Granger cause CLI	0,296[0.91]	H ₀ : Accept
S.AFR	H ₀ : CLI does not Granger cause sp	12,31[0.00]***	H ₀ : Reject
	H ₀ : sp does not Granger cause CLI	0,906[0.47]	H ₀ : Accept
TUR	H ₀ : CLI does not Granger cause sp	6,353[0.00]***	H ₀ : Reject
	H ₀ : sp does not Granger cause CLI	6,983[0.00]***	H ₀ : Reject

Note: Probability values of t-statistics are in brackets. ***, ** and * denote significant at %1, %5 and %10 respectively.

Can Member States unlock the national competitiveness through export market share effects?

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Abstract. *The gains or losses of world market shares by individual countries are often considered an index of their trade competitiveness. High trade freeness seems to be an important factor in the EU-27 context for the variation of market shares. In this sense, the present study conducts a structural decomposition analysis applied to export market shares through which the variation of the market share of a country is decomposed into three main effects: the market share effect (MSE), the structural market effect (SME) and the market adaptation effect (MAE). The outcomes of the study highlight four main categories of EU countries based on the results of the decomposition analysis.*

Keywords: competitiveness; market share; structural decomposition analysis; European Union.

JEL Classification: C1, F14, F15.

REL Classification: 8N, 16E.

1. Introduction

World economy currently offers a diverse array of competitiveness due to countries' different levels of economic and technological development, or action of some social, demographic, and cultural factors.

At the macroeconomic level, the competitiveness of a nation can be regarded as the country's ability to achieve long-term growth in such a way that economic structure adapts effectively to global economic development, seen as the evolution of world trade. Undoubtedly, economic growth – reflected by an upward trend of the main economic indicators (GNP per capita, production per capita, the export value per capita, etc.) – is a necessary condition.

In an increasingly globalizing world, most countries are integrated into the world economy, voluntarily or by force. National competitiveness has to be in this context both reflected by international and domestic performances. We agree with economists who are stating that a nation to be competitive the double criteria of good internal and external performances have to be accomplished. There are a variety of definitions of competitiveness that lead to different indicators, each with its own particular application.

Countries' competitiveness in the EU context has several components: a structural component (growth due to mix of the products exported), a geographical component (growth due to country's distribution of trade partners) and trade performance.

There is some empirical evidence suggesting that differences in the international competitiveness and growth across countries are determined not only by price factors (cost competitiveness) but also by structural factors such as technological opportunities and production capacities (structural competitiveness). High trade freeness seems to be an important factor in the EU-27 context for the variation of market shares.

In this sense, in our study we will refer to trade performance, more exactly to market share of EU-27 member states, with highlights on Romania, even if the market share performance is not a sufficient statistics for competitiveness. To tackle these issues, we begin by decomposing the market shares by industry group.

The plan of the paper is as follows. The following section reviews the empirical literature on the export performance and export market shares; section 3 presents the decomposition analysis methodology, section 4 reports data and main findings while last section highlights the outcomes.

2. Literature review

The gains or losses of world market shares by individual countries are often considered as an index of their trade competitiveness. But given changes in demand, the relative medium-term inertia of geographical and sectorial specializations affects such outcomes. It is therefore interesting to be able to distinguish the impact of a country's initial position in different markets relative to its capacity to adapt and to its competitiveness (Cheptea et al., 2012). In the study "*European Export Performance*" the authors used a quantitative methodology for breaking down the volume growth in trade for each country into three components: a geographic structure effect, a sectorial effect and a performance effect. The same methodology is also applied in the article "*Trade performance and structural competitiveness developments in the Euro Area: are member states equipped to meet the globalization challenges of the 21st century?*", only that the main effect into which the world exports share of countries are decomposed are: the market share effect, the structural market effect and the market adaptation effect (Ilzkovitz et al., 2012). There is also evidence that structural factors related to European integration boosted export growth (Stephan, 2002). Empirical evidence suggests that changes in the world export market shares can be explained by a set of technological variables at the country and sector level (Fagerberg, 1988, Amendola et al., 1993, Greenhalg, 1990), etc.

Export market shares are often considered to be a signal of deterioration of external competitiveness and a hinder to growth in developing countries. The study "*A disaggregated analysis of the export performance of some industrial and emerging countries*" (Finicelli et al., 2008) describes the evolution of export shares between 1985 and 2003 and quantifies the contribution of the geographical and sectorial specialization for some industrial and emerging market economies. On the same topic, the study "*Portuguese export market shares: an analysis by selected geographical and product markets*" (Cabral, Soares, 2006) analyses the evolution of Portuguese export market shares in each of the 96 individual markets that make up total foreign demand and determine the contribution of each one to the effects on export. These are: market share effect, combined structure effect, geographical structure effect, product structure effect, mixed structure effect. The outcome section highlights that countries from Central and Eastern Europe whose shares grew the most, on average, in the same individual markets where Portuguese exports showed higher losses were Turkey, Romania, Slovakia and Bulgaria, between 2000 and 2005.

Krugman (1989) argued that the propensity of fast growing emerging economies to diversify their bundle of exported products allowed them to increase their

volume of exports without resorting to a real exchange rate depreciation. Hummels and Klenow (2005) used a cross-section analysis of detailed trade data to identify the patterns of exports of 110 countries in 1995, and ask whether large exporters ship more goods to more markets, or ship more of each good to each market. The answer is: two-thirds of more goods, one third of more of each good. Regarding the EU-25 export performance against that of other main world exporters from 1994 to 2007, more precisely high-tech and up-market products, the EU slightly increased its world market share. Such better positioning of the EU-25 among developed countries is due not only to a superior relative export performance, but also to a more pronounced specialization in products with highly growing import demand (Cheptea et al., 2012).

3. Methodology

This section presents the application of the structural decomposition analysis to export market shares which allows us to determine whether a given EU country is helped or penalized by its initial sector specialization and whether it is increasing its specialization in the sectors with high growth in EU-27 demand.

To this end, the change in the EU-27 export's market share of country j , Δa_j , is decomposed into three main effects: the market share effect (MSE), the structural market effect (SME) and the market adaptation effect (MAE).

The export market share of country j can be defined as:

$$a_j = \frac{\sum_i x_{ij}}{\sum_i \sum_j x_{ij}} \text{ where } x_{ij} \text{ represents the exports of country } j \text{ in sector } i.$$

The change in country j 's export market share depends on its share of exports in sector i , b_{ij} , as well as on the importance of sector i in total EU-27 exports, c_i :

$$b_{ij} = \frac{x_{ij}}{\sum_j x_{ij}} \text{ which is the EU-27 export's market share of sector } i \text{ in country } j \text{ to the total EU27 exports of sector } i;$$

$$c_{ij} = \frac{\sum_j x_{ij}}{\sum_i \sum_j x_{ij}} \text{ which is the EU-27 export's market share of sector } i.$$

Laursen (1999) shows that the change in a country's market share depends on the developments in terms of the export performance of that country in the different sectors and on changes in the share of sector's exports in the EU-27 total.

$$\Delta a_j = a_j^t - a_j^{t-1} = SME_j + MAE_j + MSE_j, \text{ where}$$

$SME = \sum_i b_{ij}^{t-1} \Delta c_i$ is the *structural market effect*, which measures whether country j 's historical specialization pattern creates an advantage or a disadvantage to its current overall export performance.

$MAE = \sum_i \Delta b_{ij} \Delta c_i$ is the *market adaptation effect*, which measures whether country j is gaining or losing market shares due to a movement into the sectors providing high market opportunities or exit out of the sectors providing low market opportunities. This last term is further decomposed into the following two terms (Laursen, 1999):

$MAE_j = MGAE_j + MSAE_j$, where

$$MGAE = \sum_i b_{ij} \frac{\Delta c_j + |c_j|}{2}$$

is the *market growth effect* which is different from zero only if $\Delta c_{ij} > 0$, i.e. if sector i is a fast growing sector. The positive (negative) value of this term indicates that country j is moving into (out of) fast growing sectors. It measures thus whether country j is increasing or decreasing its market shares in the sectors characterized by a strong growth in EU-27 demand.

$MSAE = \sum_i b_{ij} \frac{\Delta c_j - |c_j|}{2}$ is the *market stagnation effect* which is different from zero only if $\Delta c_{ij} \leq 0$, i.e. if sector i is a slow growing sector. The positive (negative) value of this term suggests that country j is moving out of (into) the stagnating sectors. This effect shows whether country j is decreasing or increasing its market shares in the sectors with weak demand at the EU-27 level.

$MSE = \sum_i \Delta b_{ij} \Delta c_i^{t-1}$ is the *market share effect* which shows the change in the world export market share of country j , assuming that the sectorial distribution of EU-27 exports remains constant over time. It therefore represents the change in country j 's export market shares assuming out changes in the structure of EU-27 exports. The gain or loss in export market share for country j is due to a number of factors that determine its export competitiveness such as price and cost competitiveness (measured by exchange rate indicators or unit labor costs) as well as the institutional and political framework and other factors that strengthen competition and raise productivity thereby allowing the country's firms to better compete internationally.

4. Data and empirical findings

The Structural Decomposition Analysis (SDA) is a widely spread technique for decomposing indicator changes at the sector level. For example, SDA have been used to analyze changes in indicators such as energy use, CO₂-emissions, labor

demand, value added and export market shares. Structural decomposition analysis has become a popular methodology for several reasons. First, SDA it overcomes many of the static features of input-output models and is able to examine changes over time in technical coefficients and sectorial mix. Thus far, it has only been used for historical analysis, but some recent work indicates how it might be used as a forecasting tool. Another reason for the increasingly widespread use of structural decomposition analysis is that it is a pragmatic alternative to econometric estimation. Analysis of similar topics using econometrics requires a time series covering 15 years or more. In contrast, structural decomposition analysis applied to export market shares requires only two export tables: one for the base year and one for the comparator year in the analysis. In this sense, in the present study I analyze the market share effects of the EU-27 member states, considering the export volume (millions of ECU/EURO) by product group:

SITC0_1 Food, drinks and tobacco

SITC2_4 Raw materials

SITC3 Mineral fuels, lubricants and related materials

SITC5 Chemicals and related products, n.e.s.

SITC6_8 Other manufactured goods

SITC7 Machinery and transport equipment

SITC9 Commodities and transactions not classified elsewhere in the SITC.

Table 1. *Export performance of the EU 27 countries (2007-2011)*

GEO/TIME	Export market share 2007	Export market share 2011	Structural Market Effect	Market Growth Adaptation Effect	Market Stagnation Adaptation Effect	Marker Share Effect
Belgium	8.99	8.80	22.58	6.16	2.73	3.43
Bulgaria	0.31	0.45	0.31	-0.02	0.63	-0.64
Czech Republic	2.87	3.45	-12.13	-4.49	1.41	-5.90
Denmark	1.98	1.91	11.28	-3.17	-3.32	0.15
Germany	23.44	22.37	-55.43	-0.35	-3.43	3.09
Estonia	0.21	0.00	-0.01	0.07	0.48	-0.41
Ireland	2.12	1.89	6.53	3.65	0.70	2.95
Greece	0.42	0.41	1.78	0.27	0.13	0.15
Spain	4.92	5.22	-4.71	-0.20	1.19	-1.39
France	10.06	9.32	0.88	-2.38	-5.60	3.22
Italy	8.35	7.51	-17.20	1.22	-3.16	4.38
Cyprus	0.03	0.03	0.19	0.05	0.02	0.03
Latvia	0.17	0.22	0.64	0.03	0.31	-0.28
Lithuania	0.30	0.44	2.10	2.29	2.36	-0.07
Luxembourg	0.55	0.45	-2.58	0.96	0.10	0.86
Hungary	2.07	2.18	-9.18	0.26	1.39	-1.13
Malta	0.04	0.05	-0.19	0.34	0.28	0.07
Netherlands	11.79	13.13	56.60	-3.05	1.85	-4.90
Austria	3.26	3.22	-6.04	-0.27	-0.32	0.05

GEO/TIME	Export market share 2007	Export market share 2011	Structural Market Effect	Market Growth Adaptation Effect	Market Stagnation Adaptation Effect	Marker Share Effect
Poland	3.03	3.74	-5.44	-2.61	2.02	-4.63
Portugal	1.11	1.12	-1.27	0.09	0.35	-0.26
Romania	0.80	1.14	-2.38	-2.29	0.65	-2.93
Slovenia	0.57	0.63	-2.19	0.27	0.66	-0.39
Slovakia	1.39	1.72	-4.36	-1.55	1.28	-2.83
Finland	1.40	1.13	-0.90	2.56	0.22	2.34
Sweden	2.83	2.69	-1.12	0.61	-0.47	1.08
United Kingdom	7.01	6.51	21.91	2.91	-1.08	4.00

5. Conclusions

When comparing the large European Union Member States among themselves we notice that Germany has by far the highest market share at EU-27 level and is followed at large distance by Netherlands and France. Germany's position remained relatively unaffected during 2007-2010 with a slight decrease of 1 percentage point. France suffered almost the same variation, while Netherlands increased its market share between 2007-2010. Romania is among the countries with a low market share in European Union, even though its market shares increased during this period, confirming the pattern of catching-up economies that are gaining market shares. By far the lowest value of market shares belongs to Cyprus in both 2007 and 2010. It appears from the table that, in general, the countries that have a positive MSE effect are actively moving into the most dynamic sectors, but are also consolidating their positions in the industries with a more stagnant EU-27 demand. Contrary, the countries with a negative MSE effect are also losing market shares in the dynamic sectors while actively moving out of stagnating sectors. For Romania, as well as for the newcomers of EU-27 which goal in the present is to access the Euro Area, there are areas with a low weight to potential, such as textiles, clothing and leather (1.4%), decreasing their attractiveness due to price convergence of the non-tradable goods towards Euro Area prices, according to the Balassa-Samuelson effect. This evolution is associated with the convergence of the emerging economies towards the developed ones.

Based on these results, countries are classified into four main categories. The low market opportunities category are the ones that are moving into sectors with stagnating world demand and are losing market shares in the industries with dynamic world demand (negative market growth and stagnation effects).

The countries classified into the low-medium market opportunities category are moving out of stagnating sectors, but are also losing market share in dynamic sectors (negative market growth and positive market stagnation effects).

The countries in the high-medium market opportunities category are moving into dynamic sectors while also consolidating their position in stagnating industries (positive market adaptation and negative market stagnation effects). A country that is situated in this last category is in a relatively better position than a country that has a positive stagnation effect and a negative adaptation effect (low-medium market opportunities), as it is in fact gaining market shares in both expanding and stagnating sectors, whereas a country in the low-medium market opportunity category is losing market shares in both types of sectors.

Finally, a country is considered to display high market opportunities, if it is moving into dynamic sectors and out of stagnating industries. The countries with high market opportunities (i.e. positive market adaptation and stagnation effects) are in a better position than countries with high-medium market opportunities (i.e. positive growth and negative stagnation effects) because a country with high market opportunities is shifting its entire production structure towards sectors that are benefiting from a strong growth in world demand, whereas in the case of countries having high-medium market opportunities, the shift of the production structure towards sectors with strong growth in world demand is only partial.

Table 2. *Classification of EU Member States based on market opportunities*

Low market opportunities category	Low-medium market opportunities category	High-medium market opportunities category	High market opportunities category
Denmark France Austria Germany	Bulgaria Czech Republic Spain Netherlands Romania Slovakia Poland	Italy Sweden United Kingdom	Belgium Estonia Ireland Greece Cyprus Latvia Lithuania Luxembourg Hungary Malta Finland Portugal Slovenia

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Innovation – a national priority, supported by the regional development agencies

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Abstract. *The European Union is interested in the overall performance of the group of 27, and in the national contributions in innovation. The target is to create an „Innovation Union” which aims to provide to entrepreneurs the necessary support to transform innovative ideas into products and services because it has been found that the rate is inefficient to reduce the gap between Europe and its main competitors. The competition with the emerging countries cannot also be won without carrying out the provisions of the Europe 2020 Strategy. This paper addresses the Romanian vision on innovation supported by the Regional Development Agencies whose experience can be considered best-practice model.*

Keywords: innovation; competition; entrepreneur; administrative; European Union.

JEL Classification: R11, R58.

REL Classification: 17E.

1. The current state of facts both in the European Union and Romania

Annually, in the European Union, the European Innovation Scoreboard is developing – EIS, a document which assesses the national performances in the areas considered important to stimulate innovation. This is part of the Strategy of creating an “Innovation Union” which aims to offer to the entrepreneurs the support they need to transform innovative ideas into products and services. It is found that the majority of the Member States shall take measures to constantly stimulate innovation but the rate is insufficient to reduce the gap between Europe and its main competitors – the USA, Japan and South Korea. Moreover, the old continent “is also fighting” the emerging countries, China, Brazil and India which quickly advance in this field.

The Member States are encouraged to promote public-private partnerships, to facilitate access to funds and a well-trained workforce, to reduce administrative burden and lower the costs of make innovative ideas legal. Considering these issues, the European Union has placed innovation and the elimination of obstacles from the road of transformation ideas into products and services in the centre of the Europe 2020 Strategy for economic growth and employment. This strategy introduces a new vision for the European economy over the next decade, based on enhanced coordination of economic policies, to generate economic growth and increased employment of labor, to help economic and financial recovery of the Union. The new strategy focuses on the following key areas: knowledge and innovation, a more sustainable economy, a high level of employment and social inclusion (www.fonduri-structurale.ro).

According to professional studies, an increase of investment in research and development up to 3 percent of the European GDP could lead to the creation of 3.7 million jobs and to an annual increase of the GDP up to 795 billion Euros by 2025.

The EU institutions have entered a new cycle of negotiations on the multiannual financial framework (MFF) which defines the priorities of the EU budget for the period 2014-2020 and one of them is called innovation. As stated by the European Council President, Herman van Rompuy: “Given today's economic challenges, focusing on jobs, growth and competitiveness is our top priority. We simply cannot afford to sacrifice future-oriented investments in education, research or innovation. That is why the new budget foresees an extra 37% (or €34 billion) precisely in those areas, also setting aside substantial sums for cross-border energy, transport and digital networks (€30 billion). The key initiatives like “Erasmus for all”, the exchange programme for students and teachers, or the

“Horizon 2020”, the continent's biggest research and innovation programme will also sense a real increase in their funding (www.consilium.europa.eu).

As a member of the European Union, it is thus clear that Romania must do more to stimulate and accelerate innovation. Otherwise, it will not be able to maintain – let alone to increase – a high level of the competitiveness. At this moment, our country is a modest innovator (in the fourth and also the last one value group into EIS) (<http://ec.europa.eu>) in the position 24 of the 27 possible ones, with results below the European average. It is characterized by inconsistency, lack of continuity, even if it has recorded innovation growth rates above 5% per year (Enache, Morozan, 2011, p. 410). If Europe transforms both innovation and competitiveness in its priorities for the programming period 2014-2020, therefore, Romania should become part of the gear.

The situation can be seen more clearly from a SWOT analysis on the support system of the innovation policy.

Strenghts:

- the existence of regional innovation strategies, made especially by the Regional Development Agencies (RDAs) which brings together relevant stakeholders (business environment, academia and public authorities) in an effort to get the triple Helix;
- our country is on the second place in Europe, after Poland, as a number of RIS projects in the most recent generation, won through the Sixth Framework Programme – Research and Development;
- stimulating and competitive framework, created by the RDAs at the regional level;
- direct competition between RDAs;
- cooperation and collaboration between RDAs;
- dissemination of knowledge and accumulated experience by the responsible organizations from the EU countries and regions, which the Romanian RDAs implements projects with;
- the creation of organizations exclusively dedicated to innovation, such as the Innovation Union etc.;
- in Romania there are seven growth poles, namely Braşov, Cluj-Napoca, Constanţa, Craiova, Iaşi, Ploieşti şi Timişoara. Moreover, together with the urban development poles there are areas where priority is given to the investment in innovation;
- there are more and more published studies with relevant information about innovation knowledge and about stakeholders interested in it. For example, according to a Statistics National Institute, almost a third of the companies

operating in Romania have brought innovative products and new marketing methods, the most productive sector in this respect was, between 2008 and 2010, the manufacturing of basic pharmaceutical products and preparations of this type (www.business24.ro).

Weaknesses:

- low level of financing innovation;
- lack of qualified personnel;
- low level of technology transfer;
- poorly developed innovation infrastructure;
- lack of incentives for innovation in the research – development institutions;
- lack of information about the financing opportunities for the innovative enterprises;
- a reduced number of eligible projects to attract the funding based on innovation;
- a vague vision on what actually is innovation;
- an industry less innovative, often disinterested;
- predominant top-down approach and an excessive focus on governmental funding, a reduced rate of the EU funding, weak bottom-up initiatives;
- insufficient regional strategies.

Opportunities:

- introducing innovation as a key aspect of the Europe 2020 Strategy;
- Romania's chance to conclude advantageously negotiations for the programming period 2014-2020 in order to obtain funds that have been destined to innovation;
- intensifying the efforts of the whole Europe in the innovative direction;
- developing parliamentary elections on December 2012 which have offered for the current government the legitimacy and the support needed to carry out the agreements negotiated and signed with the European Union;
- launching the National Promoters, Facilitators and Experts Network – EUSDR (PROFEX), which should be the fundamental crucible of the human energy and logistics, capable to operate major technological, economic and social innovation projects, in the macro-region dominated by the Danube;
- the Competitiveness Council (intern market, industry, research and space), reunited in Bruxelles, on may 2012, agreed on the main elements of the programme for business competitiveness and SME's for the period 2014-2020. The Council agreed on the main elements of the frame research and innovation programme for this period, known as "Horizon 2020".

- The rules of the European Institute of Innovation and Technology and its strategic agenda setting for the period 2014-2020 are being updated. The Council adopted conclusions regarding European partnerships for innovation.

Threats:

- generally speaking, Romania's lack of vision but especially that of the stakeholders to innovate and to attract funds raised in this direction;
- political incoherence;
- decreased confidence due to the recent political and social events;
- in parallel with the Europe's efforts for innovation, the main extracomunitarian competitors have similar interests.

2. The Regional Development Agencies – promoters of innovation

Innovation itself is characterized by dynamism and positive change and the ADRs are the most active promoters in this field. Each of the eight institutions has its own experience in this field, more or less unique, exceeding the statements' level and acting effectively. That is why we further propose to present them, briefly illustrated, as there is presented on their websites. We chose online information because we believe that, for all the agencies, visibility is essential and it is a serious argument of their concerns, in general, and for innovation, in particular, the website becomes the first place where anyone interested in innovation may document him/herself.

Using the SNI database through "Statistic research about innovation" (INOV), based on the European questionnaire "Community Innovation Survey" (CIS) and used in all the member countries of the EU, overall, the North of our country is the most active. However, during 2008 – 2010, the development regions with most innovative enterprises were not only in the North: the North-East Region (42,6%), the South-East Region (36,9%) and the South Muntenia (33%) (www.business24.ro).

2.1. The North-East RDAs (www.adrnordest.ro)

Regionally, the North-East RDAs sustains the innovative environment by implementing projects dedicated to the increase of the innovation capacity in the region. The agency has a newsroom in the field, daily informing on the domain of innovation.

The projects which ranked it on top of the innovativeness are as follows:

INOLINK – The interconnection of the territories through an innovation network whose overall objective is improving the reach of the regional innovation policies, through a better connection of actors within the regional innovation system, especially of those located in the most peripheral and remoted areas and a more balanced development of economic and technological sectors all over the European Union.

In order to achieve this objective, the *INOLINK* project proposes the exchange of experiences in the setting up and the functioning of the public structures and networks, which support innovation and the participation of the actors from the remoted areas in the cooperation in the research domain – development and knowledge transfer within the regional innovation system.

In partnership with organizations from eight European countries, DRAs North – East has participated in the *ASVILOC PLUS* project – “Agencies supporting the value of innovation systems in local and regional economies”, funded by the South East Europe Transnational Cooperation Programme. The scope was to define the functional paths and approaches for the promotion of the innovating and entrepreneurship networks in the partner regions. The global objective was aiming at contributing to the construction of a “transnational innovation system” starting with the exercise of putting into light of the results from the previous *ASVILOC* project and ending with the best practices of the Regional Innovation Strategies taking actions upon the institutional framework and related human resources. Therefore, the project will bring its contribution to an increased role of regional development agencies in developing the regional innovation system as interface for the promotion of innovation by involving the relevant actors in the field and making them work in a large and homogenous environment based on a long-term regional innovation Strategy.

Another project, *INNO-DEAL* – Analysis, Diagnosis, Evaluation, Pilot Actions and Learning processes for Joint Innovation Programmes, under the Sixth Framework Programme, implemented in co-operation with partners from 11 European countries, had as objective the building of the conditions for promoting a systematic exchange of information and good practices on the existing programmes fostering innovation and supporting the SMEs development with a special focus on creating new companies and developing spin-off business.

The RDAs is a partner in the project “*Advanced Medical Imaging, interdisciplinary and integrated by creating a Regional Clusters Network and Development Strategies*”

at the European level” (AMI 4 Europe), funded by the European Commission through the Framework Programme 7 – Regions of Knowledge.

Another project is “Development of an Innovative Strategy Continuously Oriented to Valorization of the Economic Resources in the North-East Romania – *DISCOVER N-E ROMANIA*”, financed by the European Commission in the Sixth Framework Programme, Specific Support Actions (SSA), Regional Innovation Strategy projects (RIS) in the Associated States.

Innov@, a Leonardo Da Vinci mobilities programme, financed under the Lifelong Learning Programme, targeted the stimulation of the regional competitiveness by developing the support system and entrepreneurial culture, the awareness on importance of the regional innovation and increasing the innovative capacity of beneficiaries of the Structural Funds. With four partners from Spain and Italy, it was organized a transnational internship of practice for a group of 20 young experts in the management of the projects from RDAs in the following fields of specialization: the elaboration and the implementation of the regional innovation strategies; the management and accessing of the financing programmes on innovation; the transfer of technology between university-enterprise; innovative projects and the analysis of innovative capacity of companies.

Enterprise Europe Network is a project of the EU which aims at supporting the small and medium enterprises to develop their innovative and business potential. It is a network made of 600 organizations from over 40 countries. In Romania, the European network is made of four consortium organizations, one for each macro region. The ERBSN consortium covers macro-region 2 of Romania, namely 12 counties: Suceava, Botoșani, Neamț, Bacău, Iași, Vaslui, Vrancea, Galați, Buzău, Brăila, Tulcea, Constanța.

2.2. The South Muntenia RDAs (www.adrmuntenia.ro)

Its strategic vision was adopted through *RIS/InnSoM (Innovation Regional Strategy, “Innovating South Muntenia”)*, financed by the European Commission in the Sixth Framework Programme, Specific Support Actions (SSA), Regional Innovation Strategy projects (RIS) in the Associated States.

The purpose of the project, conducted in partnership, was the development and implementation of the regional innovation strategy to support its sustainable development.

Through *PRO SME BISNET*, a project developed in partnership with DRAs București-Ilfov, these regions are connected at the pan-European network to

support the enterprises Enterprise Europe Network, managed by the European Commission. The network includes about 600 contact points in 45 countries and offers information and assisted services on European themes, intended to help the enterprises to develop their business at an European level and to increase their competitiveness, to know the European programs and policies.

2.3. The South-West Oltenia RDAs (www.adroltenia.ro)

Its main declared activity is to attract resources from outside of the region and increase the use of the local resources in order to improve the life quality and social cohesion of the local communities in Oltenia and to increase, in general, the competitiveness of the regional economy.

Not as active in the projects for innovation and other RDAs, South-Oltenia has initiated the creation of two poles of competitiveness, namely the Automotive SV Oltenia, and tourism Pole Oltenia – Innovation and tradition in Tourism – TurOlt INTT. Particular focus is on the second one since we know that the advantages of the region focus on tourism potential.

Speaking about innovation it is worth mentioning in the 7th Framework Programme Initiative – the project proposals – *DOROTHY* – a regional cluster development and implementation of urban logistics ecological research.

2.4. The West RDAs (www.adrvest.ro)

The West Region reached the second exercise of the Regional Innovation Strategy. The main objectives of this project are related to: the regional awareness of the importance of introducing the concepts of innovation and technology transfer as a permanent framework for the economic development of the West Region; the development of a regional consensus on priorities for investment in research, technological development and innovation; the increase in the level of innovation in the West Region by strengthening the SMEs target sectors; the increase of the innovative potential in terms of human resources, especially through management techniques innovation; the development of the organizational structure and coordination framework, the intermediation and promotion of innovation in the West Region.

This agency is an adept of partnerships and funding by INTERREG IVC. As an example: The “*Managing Industrial Territories in the Knowledge Era*” (MITKE), which was implemented by a consortium of 11 organizations from

seven EU member states led by SPRILUR (Sociedad para la Promoción y Construcciones Industriales of Suelo) of the Basque Country, Spain. The fundamental objective was to build a transnational and inter-regional platform for the transfer of knowledge and best practices about promoting and good management support structures for business and industrial parks. In addition, using relevant experience gained at an international level, each participating region has developed an Improvement Plan for the Management Practices of the Industrial Territories.

Another project funded from the same source was *FRESH* – “Forwarding Regional Environmental Hierarchies”. Created in partnership with organizations from five European countries, it had as strategic objective the promotion of an economic development model based on sustainable structures used to create an added value. Particular emphasis was placed on issues such as eco-innovation, eco-design and green construction.

The third project is “*Producer Services for European Sustainability and Competitiveness*” (*PROSESC*). The partnership, made of organisations from six countries, aimed to promote sustainable transport systems in the participating regions.

2.5. The North-West RDAs (www.nord-vest.ro)

The North-West RDAs pursues, by its projects, to create a support system for innovation at a regional level and to promote an innovation culture, to stimulate increasing attractiveness and competitiveness of the region. Some analyses performed with regional partners, identified the issues of the research, development and innovation sector, which have been translated into goals and projects aiming to support the innovation and valorization of research, development and innovative activities, in order to transform their business.

The first step was the establishment of the Regional Institute for Research, Education and Technology Transfer – *IRECTT*, which aims to capitalize activities from the field of Education – Research – Development – Innovation, by engaging competent human resources in the “knowledge triangle”, based on the concept of the knowledge economy.

The North-West RDAs also made the North-West Region Innovation Strategy – *REGIS-NW*. With the official launch in Europe of this generation of RIS projects in June 2005, North-West Region becomes a member of the association IRE “Innovating Regions in Europe”, joining this network totaling over 200 “innovative” regions.

After the experience gained by North-West RDAs, other four agencies started in 2005 RIS projects for their regions, fact which stands our country second in Europe after Poland, as the number of RIS projects from the last generation, won by the Sixth Framework Programme – Research and Development.

2.6. The Center RDAs (www.adrcentru.ro)

The agency have known from the beginning how important is the wood industry for the socio-economic regional development and that is the reason why it participates in partnership with other stakeholders from 11 countries to implement the project: *ID:WOOD – “Clustering knowledge, Innovation and Design in the SEE WOOD sector”* – funded by Transnational Cooperation in South East Europe Programme, Priority Ax – Facilitating and Innovating entrepreneurship. The main objective is to promote and support the competitiveness of the SMEs in wood processing sector in the South-East Europe, including clusters and technology centers of wood.

Recently the project “*GRISI PLUS – Geomatics and Information Solutions for Rural Areas*” has been launched, which has been done in partnership with 11 other countries and funded by the European Commission under the INTERREG IVC. It is about seeing the regional development process from a new perspective, exploiting geographical information processed using specific computer systems and applications to improve the economic attractiveness of rural areas in Europe. The decision makers at the local and regional level will use this information to develop plans and strategies to attract new residents and economic initiatives in rural areas with important issues and risks of depopulation. Geomatics instruments can also be used to promote the local products and to improve tourist attractiveness of rural areas.

Funded by Competitiveness and Innovation Framework Programme of the European Commission, CIP 2007-2013, EIP, is *BISNet Transylvania* project. Thanks to the results achieved and in order to ensure continuity of activities that contribute to competitiveness and ability to innovate in Europe, DRAs also implemented the second application of *BISNet Transylvania* project.

2.7. Bucharest – Ilfov RDAs (www.adrbi.ro)

Remarkable is the initiative to create the *Romanian Innovation Union – UIR-BI*, based on “Cluj Declaration”, as an answer to globalization challenges, in the knowledge society and driven by innovation economy.

The project named “*EU Regional Cooperation for SMEs access to Public Procurement – EuroPROC*”, in partnership with 10 countries, concerns the issue of public procurement for SMEs. EuroPROC is an innovative project which aims to consolidate the role and the place of the public procurement it can have in SMEs development strategies.

TRES was created to mobilize regional innovation capacity and the potential to a smart growth of the region. It is a political intelligence node for the knowledge exchange and cooperation in the EU. Built on a strong multidisciplinary partnership, with 10 partners, it represents different realities and innovation ecosystems.

Last but not least, *EuroScreen* is another project, funded by INTERREG IVC which aims to capitalize major economic and cultural opportunities promoted through film production. This project intends to improve and streamline the policies that govern the relations between the film production and tourism in the participating regions and to develop a pilot system for measuring the impact caused by tourism in the region resulted through film production promotion. We appreciate as very innovative the mission of the project, which use the film industry as a catalyst for the tourism development.

3. The South-East RDAs Experience (www.adrse.ro)

The South-East RDAs has assumed the role of the regional engine because innovation is the driving force of competitiveness, growth, profitability and sustainable values (Fisk, 2008, p. 203). In addition, it understood the necessity of transposition the theory into practice, as soon as possible.

ARISE – A Regional Innovation Strategy for the South-East Region of Romania. Funded by the European Commission in Sixth Framework Programme, Specific Support Actions (SSA), in partnership with The Government of Tuscany and Etruria Innovazione, aimed to achieve a consensus among key stakeholders on the role of regional innovation and to implement a comprehensive analysis about the innovation stage in the region, based on which there was developed the *Regional Innovation Strategy for the period 2008 to 2015*. As any strategy, as any programmatic document, we will see at the end of 2015 if it was applied. In order *ARISE* to be as possible high efficiency, stakeholders in Southeast Region were involved in other projects from which to gain experience and skills required.

ERIK ACTION – Improving the Innovation Capacity of Existing Firms, with the same financing source and with 11 partners, aimed improvement of the innovation

and knowledge economy regional development policies effectiveness, based on a regional action plan regarding the transfer of best practices between regions.

BORDWIIS+ – “Stimulation of the Regional Development by Implementation of an Innovation and Information and Communications Technology Strategy” is a type of “Regional initiative” project, financed by INTERREG IV C, first priority “Innovation and knowledge economy”, intervention area “Innovation, research and technological development ” with the main purpose to ensure European regions the necessary knowledge to initiate and cross a specialized process in the most relevant innovation areas, based on information and communications technology and on transfer of best practices between the partner regions

BORDWIIS+ will contribute to achieving the program Interreg IV C, which is to improve the effectiveness of the regional development policies and instruments, increase competitiveness and economic development in Europe, through exchange of information and experiences, collecting, applying, evaluating and developing a new methodology between partner regions to create, implement and monitor the innovation in ICT clever policies.

IN-EUR – “Measuring the level of innovation within European subregions” is financed the same as BORDWIIS+. That addresses to the need for local strategies to ensure innovation level and knowledge economy efficiency increased in the European Union. The project supports public stakeholders at sub-regional level to define and focus on innovation their policies and investment. The project object is capitalization of interregional cooperation in order to increase the efficiency of innovation policies at local level, through distribution, integration and transfer of methodologies for measuring the innovation degree. Specifically, it is intended that after identifying existing methodologies and indicators to measure innovation at the local level and after sharing best practices in innovation at the local level management between the partners, to develop and to experiment an advanced model for measuring innovation at the local level, created in the project frame and, to implement a plan of this model – named BLIA.

BLIA – radiography of innovation

The construction of this model has as the starting point the question: “Which are the main factors that determine innovation in an area?” The answer is complex, which includes among others: technological processes used for, industrial production system, attracting foreign investments and their level, existence of local enterprises, investment in research and development, existence and quality of research and development as production support services, education and initial

and continuous professional training opportunities, quality of local and central government, existence and spread of innovation culture in that territory etc. essential and different proportionate elements. The model difficulty is not to identify thereof, but to identify their impact on the territory competitiveness and to establish “the formula” to properly mix them all and the unit.

Such an instrument (common set of variables) is very useful to compare the results of different territories, with a diverse issue. What is very important for a territory to another may not have the same importance, each having a different geography and different constitutional contexts. That’s why the methodology is open and experimental, based a lot on debates between those responsible, on successful experiences but also on failures. BLIA included both quantitative and qualitative indicators, in a bottom-up approach, suggesting appealing to socio-economic stakeholders as providers of information.

Conclusions

Innovation has become the driving force of global competitiveness. It is assumed that without innovation there is no success in history and vulnerability to globalization and crisis (resources, population etc.) increases. Some voices even say that, without innovation, a country risks losing its identity and be integrated by being absorbed by others.

Therefore, innovation is the responsibility of all governments whose countries aspire to global competitiveness, implicitly of the EU and of Romania. Because Europe is at a time of global transformation that leads to a number of concerns for his own future, the focus is on the strategic role and joint effort of the regions to overcome the crisis and structural weaknesses in a convincing way, to contribute to the turning of the EU economy into a smart, sustainable and inclusive one, to build a structure based on knowledge, protected environment and cooperation between peoples.

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Pros and cons of using derivatives

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Abstract. *The global financial crises that affected the world economy starting with 2008 have at least three factors of great influence. However, the general opinion and the conclusions of researches conducted are that one of the most significant factors that is the increase dealing with more complex financial instruments, such as derivatives.*

The purpose of my research is to show the advantages given by using derivatives, being aware of the costs and risks associated.

Keywords: financial instruments; derivatives; risk management; credit risk; market risk.

JEL Classification: G11, G15, G24.

REL Classification: 11B, 11D.

1. Introduction

The international financial system has undergone many significant structural changes in recent years: major financial institutions have merged; many companies have globally expanded, thus considerably intensifying competition. The trend followed by banks and corporations was amplified by long-term changes occurred into the structure of the industry.

This expansion led to the emergence of new risks, both credit and operational. Into the last 30 years many corporations have found that is more advantageous to get funding from public by issuing bonds rather than borrow directly from banks. Banking institutions found themselves competing with increasingly fierce, reducing margins and giving loans with higher maturities to doubtful clients. On the other hand, customers request increasingly sophisticated and complicated ways to finance their activity, to protect themselves against risks and to invest their liquid assets. In this context, derivatives had a spectacular evolution. If previously were used only by financial institutions, demand has grown today covering all industries. An ISDA⁽¹⁾ recent study reports that 94% of top 500 corporations are currently using derivatives in order to manage macroeconomic risks. But global derivatives industry is in a continuous consolidation. Each year adds new types of instruments, while others were not traded. Corporations use mainly derivatives with underlying exchange rate and interest rate. Conversely, financial companies (banks, insurers, etc.) are involved in trading of all kinds of derivatives.

To better understand the advantages and disadvantages that such instruments offer, let's first see their definition. A derivative can be broadly defined as a private contract whose value derives from the price of an underlying asset, reference rate (such as stocks, bonds, currency or commodity) or index. In addition the contract must specify a notional amount that is defined in terms of foreign currency, shares, bushels, or other unit. Unlike financial securities such as stocks and bonds, which are issued to bring an increase of capital, derivatives are private agreements between two parties. As a concept, these tools are not an invention of the XXI century. They have been known for over 200 years⁽²⁾. But exactly the instability of financial systems, globalization and legal uncertainty led in recent years the investors to lavish their attention to them. Controversial as they are well known but only to a small number of specialists, they are the most avant-garde instruments can be found in the portfolio of an investor. Most people regard them with suspicion and focus exclusively on their role of tools used for speculation. In reality they are veritable tools of risk management.

2. Derivatives and crash periods

The very fact that are little known and not always used in a responsible way made these instruments to be associated with most major events that affected global financial markets: the collapse of Barings⁽³⁾, the collapse of Thai baht⁽⁴⁾, fall of Enron⁽⁵⁾, and more recently the sovereign credit crisis that began in mid-2007.

Consequently OTC market organization has been subject to particular debates. But we must not overlook the fact that the Credit Default Swap, the tools that have been accused of systemic risk inflammation represents only ten percent of all OTC derivatives, while other products such as interest rate swaps or currency swaps, more relevant as volume, have been shown to be unaffected by the crisis. It can be said that although derivatives were not the triggering cause of the crisis, the complex and opaque nature of the derivatives markets did not allow to authorities and participants to have a clear picture of risk exposure, prompting some participants to build excessively risky positions. The international financial crisis has highlighted the existing shortcomings into the supervision of financial markets. In this context, during 2009, the European institutions have intensified their activity by starting a long process of adoption of new Community regulation or revising the existing ones. Based on recommendations Larosiére Report, the European Commission concluded that the architecture of the financial institutions responsible for supervision should be effective reshape. Efforts to improve the stability of the global financial sector covers a number of issues: first, the efficiency of risk management practices and processes accomplish by the banks, macro-prudential supervision and monitoring of systemic risk, reform capital requirements, review of regulations that cover liquidity requirements, better market infrastructure, and especially supervisors to monitor the activity and to be able to react in time of onset risk emerging threat.

The crisis has brought into light many weaknesses of OTC derivatives market as the lack of transparency, counterparty risk or the danger of contagion. All these led into recent years to common actions of regulation. In the report of July 2011, the representatives of ISDA assert support for the existence of a single IMF standard for a better global regulation. This standard must interact and be in total agreement with the other legislative initiatives, including Basel III. It is vital that these rules should be developed in cooperation with both other regulators, shareholders and representatives of various industries. Given the global nature of OTC markets, such coordination is essential in setting risk management standards, avoiding arbitrage in terms of both legislation and minimizes systemic risk and contagion between countries. Primarily the development of regulation in cooperation with other regulatory authorities will lead to lower implementation

costs. Secondly, it is important that minimum capital requirements required does not suggest that a simple quantitative standard substitute prudent risk management. An excessive focus on value may lead to inappropriate management standards. Standardization of contracts is a necessity in order to increase transparency and trading through electronic platforms. Very important is management of counterparty and collateralization.

But must not be overlooked the reverse of all these regulations, namely that they can threaten the viability and innovative power of these tools. They have been born from the necessity to obtain additional return than the one provided by traditional financial instruments, better liquidity and risk management and avoiding some of the regulations considered to be too restrictive by investors. This paper will not dwell on derivatives as a means of speculation, but focus on the more significantly advantages that they bring to their users.

3. Utility of derivatives in risk management

The explosive growth of the financial services industry over the last 20 years has been cataloged by Alfred Steinherr as one of the largest economic development since the Industrial Revolution, facilitating industrial restructuring through mergers and acquisitions, providing innovative solutions to privatization programs, increasing the importance of investment funding, expanding the sources and types of funding to support the emergence of new industries and facilitating the strengthening of economic development in emerging and transition economies around the world. Also, the expansion of financial instruments and techniques have increased participation in international financial markets, forcing the government policies to evolve, thereby contributing significantly to the creation of a global financial environment.

Perhaps the most important benefit of the derivatives is the ability to become an efficient means of risk management. The increase in volume of derivative products have fundamentally transformed the risk management system of financial institutions and their customers were now able to lower the cost of financing and the structure of assumed risk according to their own wishes.

Because, as we also stated in the first part of the paper, financial and banking institutions are involved in trading of several types of derivatives, we will show in the following lines benefits that derivatives bring to these institutions within management of the risks they face.

3.1. Market risk management and derivative securities

Measurement of market risk implies quantification of risk of loss that may occur in the trading price due to adverse market evolution: interest rates, foreign exchange, equities and commodities. Positions may include cash or derivatives.

After identifying and measuring risk the next investor concern is to find the most appropriate way of risk management. We mean suitable aspects concerning the usefulness and cost-effectiveness of these methods. The classical method used to protect against adverse market developments is to maintain capital, the amount being calculated based on the results of risk measurement and prediction. But this method is a rigid and simplistic. Furthermore it does not reflect the risk assumed by the institution. The new Basel regulations are more flexible in this regard. The new standards are generally based on VaR method. Market risk of the portfolio is composed of interest rate risk, currency risk or adverse evolution of the shares. The main disadvantage of conservative vision is that simply by providing a level of capital for each identified risk, diversification principle is ignored. It is assumed that the greatest loss will "hit" all managed portfolios in the same time and does not reward prudent diversification.

What role derivative securities are playing? Two aspects should be highlighted: first, held into the portfolio of an institution are subject to market risk and their development should be closely monitored. Secondly we must not forget their main feature, namely that allow for hedging. Developed precisely in order to facilitate risk management, derivatives are a means of protection against adverse market developments. And the method by which they are used for this purpose is called hedging. The process consists in taking a position that reduces portfolio risk. The objective is to find the optimal position to minimize the variance of a contract concluded. You can clearly distinguish two types of hedging:

- *Static (linear) hedging* consists in making/exit from a position in a specific time horizon. Is related to the price of the underlying. This case the protection of a short position is done by a long on the base since profits will be generated by an increase in the difference between spot and futures. The risk of spread is minimal for two reasons: cash and futures price match and the remaining maturity is low. There is still uncertainty of spread evolution during hedging. Cash-futures spread may increase or decrease. Hedging is effective only if the cash market developments dominate the spread. For most traded commodities, the risk of spread (basic risk) is inevitable. Organized markets create enough liquidity for investors to create the strategies they need to protect themselves against risk. But there is a strong connection between basic risk and liquidity risk. This risk is higher for cross-hedging (which involves using a futures contract that has a

different underlying than the cash position used). For example, an exporter that will receive into the near future a NOK amount can protect by using a futures contract underlying the USD/EUR. In contrast, the risk is lower when cash and future position is using the same underlying. In this case, the risk will be generated by different maturities. Despite the fact that hedging with futures is very effective, it can generate another risk-liquidity risk. Futures contracts are daily marked on market. They involve large available volumes, both inflows and outflows. Cash outflows, in particular, may cause liquidity problems, especially when it does not have correspondent in capital inflows generated by the position taken by the underlying asset.

- *Dynamic hedging* consists of continuous modeling portfolio into a given horizon of time. This type of hedging can create profiles similar to those positions taken in options contracts. Most often losses occur as the exposure profile is similar to a short position in options. Important is that the exposure is controlled by the portfolio manager. The challenge is to develop measures to provide a detailed understanding of the risk profile. Black & Scholes formula teach us how to assess options. But more important is that it shows that owning a call option equals with holding a fraction of the underlying, a fraction whose value dynamically changes over time. Long position into a call is replicated by a partial position of the underlying asset. For an "at-the-money" option the initial delta is 0.5. As the share price increases delta increases. In conclusion option can be replicated by a higher position on the underlying asset. When the stock price drops, the size of position is reduced. The investor will buy more of the underlying asset when the price is growing and sell when it drops.

But the model assumes implications investor should know:

- Dynamic replication of a long position in option is related to the loss of money, as the asset is purchased after the price went up. Every transaction is losing a small amount of money, amount that will be add to the option's premium.
- Observations have shown that automated trading system has some destabilizing effect on the market. The explanation is as follows: selling an asset when its price is decreasing contributes to a more pronounced decrease in its price. There are views, still debated, which states that the sale of portfolios at a large scale while the market is in a downtrend, led to the 1985 financial crisis. But there are specialists who argue that the situation was exacerbated by uncertainties related to unstable markets faced with large volumes of trading.
- Finally it should be noted that the strategy will not be successful if the asset price developments have large fluctuations.

In conclusion we state that hedging generally reduce basic risk, risk that can be measured. Basis risk arises when changes in income payments do not perfectly overlap over changes in the evolution of the underlying asset value. Obviously hedging will reduce the risk, but also return. The purpose of hedging is to reduce and manage risk, not to obtain profit. Therefore, the manager must analyze the risk-return opportunity.

Regarding the type of products used for this purpose, the choice belongs exclusively to the portfolio manager who may choose from a wide range of products traded both on regulated and OTC markets. Among them we are mentioning the most popular: Forwards, Forward Rate Agreements (FRA's), Futures, Swaps, Options (in this case can be used Caps, Floors or Collars). They can be selected according to different scenarios and of course according to the liquidity that the particular market segment is offering.

3.2. Credit risk management and derivative securities

Credit risk means the risk that the counterparty will not fulfill its contractual obligations. Its effects are measured by the cost of replacing the cash flow. For most institutions, market risk is less important than the credit. And indeed, the amount of capital reserves hold by a bank to cover credit risk is much higher than that to cover market risk. The history shows that most bank failures were due to credit risk.

Exposure at default (EAD) is the amount of risk at the time it manifests. It may be due to both traditional financial instruments such as shares, bonds, guarantees, commitments, but also derivatives. The financial industry has developed a number of models to limit exposure at default. Among these may be mentioned:

- Marking at the market – Daily marking-to-market reduce exposure to credit risk at zero. There is however a potential exposure as the value of the contract may change before the next marking. Potential exposure comes from (1) the interval between markings, (2) the time required for the liquidation of the contract in case of insolvency of the counterparty.
- Margin – the potential exposure is covered by margin requirements.
- Collateral – OTC markets may allow collateral instead of cash. It protects against current and potential exposure. Typically collateral value is higher than the funds held. This difference is function of market and credit risk.
- Net basis agreements.

Credit derivatives are among the latest innovations in credit portfolio management. Derivative contracts having as support a loan are contracts (OTC traded) that enable transmission of credit risk from one party to another. They allow the release of credits and bonds of credit risk and placing it on a different market. Their performance is based on the credit spread, credit rating or default status. Like other derivatives can be traded independently or be integrated into other instruments, such as credit-linked securities. Das defines them in 2004 as a class of financial instruments whose value is derived from the market value due to credit risk of private or governmental entities other than the counterparties involved in the transaction with credit risk derivatives. The main feature of these tools is the separation and isolation of credit risk for replication, transfer or hedging. The occurrence of certain credit event leads to a payment by the buyer to the seller. Contracts specify whether delivery will be made will be physically or cash compensation. Credit event is clearly defined into the contract and determined by negotiations between the parties. Market standards generally specify the existence of public information confirming the credit-event occurrence. The legal documentation between the parties, can mention the following credit events: worsening rating below a predetermined minimum level, restructuring (financial or debt), bankruptcy, failure to pay the coupon/interest at maturity, spread changes over a certain maximum level predetermined.

The market of credit derivatives has rapidly developed as these tools offer an effective credit risk management. Although modern banking system is based on the notion that a portfolio of loans is less risky than one single credit, banks still tend to focus on geographical or industrial sectors. This is because the comparative advantage lies in dealing with customers that the bank knows best. Until now, it was difficult to depart credit exposure given that there is a limited market for second-class credits. In addition, borrowers do not like the banks to sell loans to another, even for the sake of diversification. In fact, credit derivatives are not entirely new. Bond insurance is a contract between a bond issuer and the guarantor (bank or insurer) stating that it would provide an additional payment if the issuer fails to pay in full and in time. A letter of credit is a guarantee provided by the banks in which it is obliged to pay a third party if the original loan is not closed under the conditions preset. Call feature of a bond issued by a corporation involves an option with underlying risk-free rate and credit spread. But it is not considered a derivative. What's these credit derivatives bring new is transparency and trading on organized markets. Value of Eurodollars Futures is given short-term rates plus a credit spread. So a Treasury Eurodollar spread (TED) is exposed only to credit risk. Risk component can be isolated by buying a certain type of futures contract and selling another.

Formally credit risk derivatives are bilateral financial contracts that isolate specific aspects of credit risk of an underlying instrument and facilitate its transfer between two parties. Thus credit derivatives separate credit risk management and proprietary rights of other quantitative and qualitative aspects resulting from holding a financial instrument. Accordingly, credit derivatives share a key feature of successful derivatives consisting of the opportunity to obtain efficiency gains through process of completing the market. Efficiency gains resulting from disaggregating of risk can best be illustrated by describing a tender process where are sell a number of risks, each at the highest price offered, compared to selling a lot of risks to the large percentage offered to the whole package. In most cases, separate auctions will result in a higher yield than selling a single package. By separating the credit risk of the other risks, credit derivatives allow even to the most illiquid credit exposures to be transferred out of their portfolios even when the underlying asset itself is not transferred.

What is the significance of credit derivatives? We can still not make the claim that credit risk is entirely manageable. Indeed, even in the largest banks, credit risk management process requires a little more than establishing and adhering to the notional exposure limits and pursuing opportunities for portfolio diversification. In recent years, fierce competition between borrowers led some of the banks to the tendency to treat lending policy as a cost of losing leadership and has appeared a benign process of combining spreads to determine the drop of pressure. At the same time, the lack of liquidity of the secondary market and the financial cost has made active portfolio management to become both impossible and unattractive. Consequently the vast majority of loans retain their owner till maturity. Today we look at the birth of the credit derivatives market as a remarkable development of risk management practices. Simply consider that credit derivatives change how banks assess, manage, deal and distribute credit risk. Still definition that we made it to the credit derivatives, in essence, captures many credit instruments that are commonly used for some years, including secured loans, letters of credit and participation in loans. Then why so much importance is awarded to this new group of products? Essentially it is the accuracy with which credit derivatives can isolate and transfer certain aspects of credit risk, rather than their economic substance which distinguishes them from other credit instruments. There are several distinct arguments that belong uniquely to credit derivatives, but which combine to make out of these instruments a good reason as banks and other institutions that typically face credit risk to increase their use. First, the reference entity whose credit risk is transferred shall neither be part nor be aware of the transaction. Such privacy allows banks and corporations to manage credit risk discretely without interfering with customers. This contrast between the

assignment of a loan in the secondary market so that involves notifying the lender and a discrete participating that assume that participating banks equally bears credit risk in relation to the bank and to the lender sells itself. The absence of a reference entity to the negotiating table means that the terms of the credit derivative transaction (tenor, seniority, compensation structure) can be customized to meet the requirements of the buyers and sellers of risk rather than liquidity or borrower needs. Moreover, since these credit derivatives isolates credit risk in relation to other aspects of ownership of assets, they introduce and discipline assessment decisions. These tools provide a benchmark of market assessment consisting of the actual cost of a transaction. As the liquidity increases and evaluation technologies are improved, credit risk derivatives define future credit spreads curves and volatility in a manner that less liquid instruments may not do so. Availability and transparent assessment market discipline allow institutions to evaluate more objectively in relation to business decisions. Secondly, credit derivatives are the first mechanism by which short sale credit instruments can be made with reasonable liquidity and without the risk of a decrease in volume. It's more or less impossible to sell a bank loan, but a synthetic short position can be obtained by getting protection through a credit derivative. This tool allows the user to reverse the profile with asymmetric distribution of credit risk (when it won a small premium for the risk of a great loss) and instead of paying a small premium for the possibility of a big payoff in case of deterioration of the credit status. Consistently, portfolio managers may sell certain loans or credit index, rather than to protect existing exposure, or simply take advantage of the negative image of a loan. Similarly, short sales can open a number of arbitrage opportunities. Global credit markets show today discrepancies in evaluating the same credit risk of different classes of assets, maturity, ratings, global zones, currencies, etc. These disparities persist due to the fact that arbitrageurs could not acquire cheap obligations in exchange for expensive sales for profit. As the liquidity of credit derivatives improves, banks, lenders and other players will exploit such opportunities as the beginning, as interest rate derivatives have developed arbitrage activity on interest has increased in the 80s. Natural consequence of this evolution will of course be the gradual disappearance of discrepancies of credit rating as the market becomes more efficient. Third, credit derivatives, excluding structured notes, are off-balance sheet instruments. Thus, they provide considerable flexibility in terms of leverage. In fact, the user can define the desired degree of leverage in an investment loan. Method of distribution of off-balance sheet exposures will differ from one institution to another: the more expensive the balance sheet is the more necessary will be the need for an off-balance sheet alternative. To highlight this fact, bank loans do not traditionally

belong to a class of assets of a hedge fund for at least two reasons: first, administrative reasons due to the award and administration of credits, and secondly because of the absence repo market. Without the possibility of financing investments in loans on a firm basis through a repo market, return on equity offered by banks loans was unattractive to institutions that do not like investing in unsecured assets. However, by accepting credit exposures to a bank by using a credit derivative, as a Total Return Swap, a hedge fund can simultaneously and synthetic to fund its position and to avoid administrative costs of asset direct owner, which is due to swap counterparty. The leverage obtained through the use of a total return swap will depend on the amount before colateralization, if any, required for payment of the total return swap counterparty. Credit derivatives are those tools that open new distribution lines of credit risk arising from bank loans and many other instruments trade on capital markets. Of the types of such contracts we can mention: Credit Default Swaps, Total Return Swaps, Credit Spread Forward and Options, Credit Linked Notes.

4. Pros and cons derivative securities

Given the above, in this part of the paper we summarize the main advantages and disadvantages of trading derivatives, following the individual to choose them or not depending on the opportunities that the market of these tools offers in terms of profitability of allocated capital and liquidity, the specificity of work and risk profile.

We saw that derivatives are evaluated by building a cloned portfolio. This suggests that derivatives are redundant assets. Then why object? It is a simple assumption that financial markets are frictionless. The reason for this assumption makes sense is that firms with many operations can often trade long enough and cheap so as to succeed to clone very well a derivatives portfolio with support in highly liquid markets. These companies can also build derivatives markets so that matched buyers and sellers. If succeed, do not need hedging any more. But for companies and individuals non derivatives are almost never redundant active. Here are three reasons: face higher transaction costs, portfolio replicating go just approximately due to the fact that the transaction should be done as soon as the underlying price changes and not least identifying replication strategy is often a problem. This is why individuals and non-financial firms prefer to pay a specialist company to do this, which involves new costs.

The main benefit of derivatives is that it allows individuals and companies to earn an income that would not otherwise be able to acquire, or only at a very high cost.

Of their versatility, synthetic positions can be created to meet all investment needs (speculation, hedging, and arbitrage) that can be applied to any type of market (increasing, decreasing, or neutral).

A second important benefit of derivatives is that make underlying assets market more efficiently. For example, derivatives markets produce information. In a number of countries the only reliable information about long-term interest rates is obtained from swaps because swap market is more liquid and more attractive than the bond market. In addition, derivatives allow investors to trade on the basis of information that otherwise would have been extremely expensive.

Returning to the credit derivatives, they allow users to reduce exposure to credit risk without removing physical assets in their balance sheet. Sale or assignment without running a credit derivative contract normally requires notification and/or client consent. By contrast, a credit derivative does represent a confidential transaction in which the client should neither be part nor have knowledge, thus separating the relational management decisions of risk management decisions. Similarly, accounting and taxation positions of an entity may create a significant deterrent of sale an otherwise liquid position. Recently credit default swaps have been used to avoid the adverse consequences of accounting or taxation. More often the lack of liquidity is a result of external factors. Credit secondary market is not well developed and in some cases some types of insurance contracts may not exist at all.

When an investor owns a risky asset in the portfolio, the profitability resulted by assuming the risk is only the net spread earned after deducting the cost paid by the investor for funding. Thus it is difficult to understand why a A rated bank financed at flat LIBOR borrows a AAA entity that borrows from LIBID. Besides funding costs A rated bank assumes the risk. Consequently, entities with a high level of funding choose to buy risky assets to generate income from the spread. As long as there is not a principal in advance necessary to protection seller in taking in a credit default swap positions, it provides an opportunity to take on the exposure to off-balance sheet credit risk positions that do not require funding. Therefore credit swaps are an important source of investment and portfolio diversification for banks, insurance companies and other institutional investors who would otherwise continue to accumulate concentration of dubious quality assets because of their higher funding costs. On the other hand, institutions with low financing costs can capitalize this advantage by financing the balance sheet assets and acquisition of protection against the risk of default of those assets. The premium for buying protection against default risk for such assets may be less than the net spread earned over funding costs. Then a low-cost investor can cover

the risk of the underlying and still remain with a positive net income. Of course, if details counterparty risk must be covered out of this residual income. However, the underlying lending quality combined with the protection purchased, even for poor quality counterparty, can often be very high since the two default risk (reference entity and the protection seller) may occur before the losses to be recorded.

The rapid growth of credit derivatives markets is the best proof of their effectiveness. These tools are superior to risk management tools, allowing the transfer of risk to those who can it best bear. Many of those who have observed the phenomenon, including banking regulators, concluded that the diversification of credit risk by using derivatives helped the banks to pass without major problems the 2001 recession and the increased number of insolvencies. In the USA for example, in a turbulent period of financial markets shaken by major bankruptcies (Enron and WorldCom) and sovereign risk (the case of Argentina), losses were largely dispersed. Credit derivatives have another useful function, ie price estimation. By creating/expanding credit risk market, it gives observers a better measure of the cost of credit risk.

These tools are also effective in the trade as the costs involved are low. Counterparties may also take advantage of disparities in stocks and bonds valuation, both markets becoming more efficient.

As side effects we can emphasize the fact that this market may be illiquid because unlike interest rate swaps there is no standard for the reference credit. By definition, the credit risk is specific. Also, the market is still using the most varied evaluation methods. This is due to lack of information on key parameters such as the probability of default and recovery rates. As a result, there is little agreement on the fair value of credit derivatives compared to other types of derivatives. These derivative instruments are also bringing a new element of risk, legal risk. Indeed parts can sometimes argue over the definition of a credit event. This explains the care with which banking system regulators regard the increasing of this market. The question arising is whether these contracts will be fully effective in the event of widespread bankruptcy. This is the main reason why this market has evolved from legal arbitration, which lies in trying to defend the pecuniary capital requirements mandated by bank regulators. Commercial banks have systematically tried to decrease capital requirements by eliminating credit risk using derivatives. This can be advantageous if exposure to credit risk is equivalent to lower capital requirements. If it is a benefit or a setback depends on perspective.

Although derivatives can create more efficient underlying markets, observers have long been concerned that they also undermine these markets because they allow an easier construction of speculative positions.

Another concern for investors lies in the ease with which a derivative may be undervalued, and that due to assumptions that evaluation formulas are making, assumptions that are significantly different from the real state of the market.

In addition, by their very construction derivatives benefit from an amplifying effect of gains and losses (leverage). Also, because of leverage effect, which allows through a small amount of money to support access to assets worthing several times more, the amounts lost are potentially unlimited and can exceed the initial deposit. In January 2004 the Austrian National Bank has reported a loss of 280 million USD in currency options attributed to risk management mistakes, including bad assessments.

What would happen if a major derivatives dealer would go bankrupt? Bankruptcy law contains a provision called "automatic stay" which prevents creditors from receiving immediate payment and make possible as creditors demands to be resolved in an orderly manner. Interest rate swaps and other derivatives are exempt from this. Instead, the parties involved in a swap are using a master agreement that specifies how payments will be completed in the event of default of either party. Without this automatic exclusion from the natural state, the parties should wait years for their demands can be met, leaving the majority of the remaining risks uncovered.

But perhaps the greatest of the dangers that derivatives possess are that interconnects the financial markets, causing an uncontrolled event to lead to a major financial crisis.

5. Conclusions

Derivatives are the most vanguard tools that can be found in an investor's portfolio. By their own nature, these contracts meet the more specialized needs that arise in the current context of global financial system. They allow companies and individuals to protect themselves against risks and accept risks in an effective manner. They can also create firm-wide risk, especially if the firm uses derivatives episodically and has no experience. For the economic environment in general, the collapse of a large derivatives dealer may create systemic risk. In balance, derivatives help creating a more efficient economy.

However, companies must ensure that derivatives are used right. That means hedging positions on derivatives must be measured and understood. Also, the company must have a clearly defined policy on the use of derivatives.

The whole world gains from derivatives markets. How one regards these tools is ultimately a question of optics.

Notes

- (1) International Swaps and Derivatives Association.
- (2) Some of the first derivative markets were markets for options on tulip bulbs in seventeenth century Holland and rice futures market in Japan in the same century.
- (3) Barings Bank (1762 – 1995) was the oldest commercial bank in London until its collapse in 1995, when one of the bank's employees, Nick Leeson, lost 827 million (\$ 1.4 billion) speculating on the futures market.
- (4) Thailand currency.
- (5) Energy company headquartered in Houston, Texas (2001).

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Harmonization process in defining small and medium-sized enterprises. Arguments for a quantitative definition versus a qualitative one

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Abstract. *Harmonization process of the definition and financial reporting of small and medium-sized enterprises is still a challenge for European and international organizations and institutions. Analysing the definitions of SMEs issued by European Commission, World Bank, OECD, the definitions used within a couple of countries and other studies regarding this aspect, it concluded that is not yet a consensus regarding the definition of the small and medium-sized enterprises. The various criteria used to classify the enterprises in the category of SMEs, different thresholds, the economic activity and economic context of each country are the main factors which interfere with the existence of one international available quantitative definition for small and medium-sized enterprises.*

Keywords: small and medium-sized enterprise (SME); quantitative criteria; qualitative criteria, harmonization process, financial reporting.

JEL Classification: M40, L20.

REL Classification: 14A, 14I, 17A.

Introduction

Small and medium-sized enterprises represent more than three thirds of all the companies from the world. These companies are considered to be “real economic engines” which contribute in a great extent to the economic growth of their country (European Commission).

In the European Union there are almost 21 million of small and medium-sized enterprises, which represents more than 98 per cent of all the European companies. For the year 2012 it was estimated that share of the total staff within the SMES was around 67 per cent (more than 87 millions of employees) (ECORYS, 2012). Considering that SMES are the main source of creating and providing workforce, providing revenues to the budget and other economic reasons, it is obviously that SMES has an essential role in economic growth and development of the European Union.

In Romania, until the year of 2008, there was observed an accession of the number of SMES, when due to the effects of the economic crises their number started to diminish. In 2011, according with the estimations of CNIPMMR⁽¹⁾, there was a number of almost 467,883 active SMES. The total share of staff was 65.8% (the media of the European Union being of about 66.9%) and the contribution to the GDP was 50.2% (the media of the European Union being of about 58.4%), values which were closed to the European media, in conclusions, SMES being the main source which create added value (CNIPMMR, 2012).

Table 1. *Number of active Romanian SME and share of total staff*

	2006	2007	2008	2009	2010	2011
Number of active SMES	459972	498014	532688	517870	468561	467883
Large enterprises	1840	1843	1837	1571	1519	1519
Total	461812	499857	534525	519441	470080	469402
Share of SMEs total staff	63.20%	64.90%	65.80%	66.30%	65.90%	65.80%
Share of large enterprises staff	36.80%	35.10%	34.20%	33.70%	34.10%	34.20%
Total	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

Source: National Council of Private Small and Medium Sized enterprises from Romania, <http://www.cnipmmr.ro/CNIPMMRDespre-Noi/STRATEGIE-CNIPMMR-2012-2016.pdf>, the available figures for 2011 are estimation of CNIPMMR, page 39 and www.insse.ro.

Even that European Commission, World Bank, the Organizations for Economic Co-operation and Development (OECD) and other institutions and organizations have made efforts to favour the process of harmonization in defining the SMES, at the moment there is not a general consensus regarding their definition. Hence, a

delay in harmonization of financial reporting of SMES is the non-existence of one single general definition for defining the small and medium-sized enterprises. Naturally, there is not a general consensus about definition and classification of a SME, due to the fact that the definition is influenced by the economy and the type of economic sector of the enterprise.

Considering the main definitions of SMES, the principal criteria according to which are classified SMES are: number of employees, turnover and total balance sheet, so it is difficult to suppose that will be a general quantitative SME definition which could satisfy all the characteristics of SME, regarding the different degree of development of economies around the world. Rather is preferable to use a qualitative definition which could better create the premises for harmonization and comparability of financial reporting of SMES (of course, even though there will be used quantitative criteria for statistical purposes, for access to different funds, classification in different programmes and other advantages).

General aspects regarding the SME definition at the international level

Regarding the definition of SMES, at the middle of '70s, there were over 50 different definitions of SMEs (Auciello et al., 1975). At the moment, on the whole, SMEs are considered companies whose characteristics respects certain criteria and do not exceed certain quantitative limits.

Diversity and richness of the characteristics of SMEs, political strategies and economic conditions are factors which hinder the existence of a common and general accepted definition of SMEs (OECD, 2004). Therefore, whereas in some countries a company is considered to be of a medium sized, in others, the same company is considerate to be large, and thus it would not be included in the category of SMES.

Nevertheless the existence of the definitions provided by European Commission, World Bank, OECD or other organizations, with the purpose to be adequate to more economies, sought to facilitate comparability and the internationalization in defining SMES, and moreover to create new opportunities like: access to the SMES to niche market, to technologies, know-how, access to capital, workforce, new market and products (OECD, 2005).

Table 2. *Examples of SME definitions suggested by CE, WB and OECD*

	Micro-entities	Small enterprises	Medium-sized enterprises
European Commission	a. Average number of employees < 10; b. Annual turnover < 2 millions Euros or c. Total balance sheet < 2 millions Euros;	a. Average number of employees < 50; b. Annual turnover < 10 millions Euros; or c. Total balance sheet < 10 millions Euros;	a. Average number of employees < 250; b. Annual turnover < 50 millions Euros or c. Total balance sheet < 43 millions Euros;
World Bank	a. Less than 10 employees; b. Annual turnover < 100.000 dollars c. Total balance sheet < 100.000 dollars	a. Less than 50 employees; b. Annual turnover < 3 millions dollars c. Total balance sheet < 3 millions dollars	a. Less than 300 employees; b. Annual turnover < 15 millions dollars c. Total balance sheet < 15 millions dollars
OECD	1. Between 1 - 4 employees (small micro) 2. Between 5 - 19 employees (micro-entities)	Between 20 - 99 employees	Between 100 – 500 employees

Source: Recommendation no. 2003/361/CE, World Bank definition, Organization for Economic Co-operation and Development (OECD) definition, Fitch (2006).

However, even inside one country could be more institutions and associations which differently define and classify SMEs like: statistical institutions, banks, governmental agencies and others (Kushnir, 2010). Therefore, in the study carried on by Kushnir (2010), from 120 analysed economies, in 26 economies there were more than one available definition to classify SMEs.

The existence of various definitions is a consequence of the fact that there are a multitude of criteria which could be considered when defines a SME, like: turnover, number of employees, capital, ownership independence, profit, assets, total value of imports and exports etc. Nonetheless, as it could be observed from the above table, there are some criteria which were used more often and considerate to be more adequate, so they were used preponderantly in definition of SMES, such as: number of employees, turnover and total balance sheet. But in some economies are set upper limits of assigning value to SMEs compared to other economies, even if the classifying criteria are the same.

Quantitative criteria in defining the SMEs

Overall, SMEs could be defined and classified taking into consideration: quantitative, qualitative, and both quantitative and qualitative aspects.

Quantitative criteria are more often used in defining SMEs, because these criteria allow a clear delimitation between different categories of SMEs, such as: micro-entities, small and medium-sized entities. The most common used quantitative criteria according to which the SMES are classified into categories are: number of employees, turnover, total balance sheet or a combination of the last two. There are other criteria like: net assets, initial capital, return, invested capital, industrial

classification combined with number of employees, total produced quantity and their value, added value etc., but there are seldom used (Filion, 1990).

Indeed, number of employees is the most frequent criterion used when classifying an entity as a SME. Why is the number of employees most common? Because, predominantly, number of employees is one of the criterion which enterprises discloses easily, and not at least is very easy to control it (Filion, 1990). Likewise, number of employees does not vary with consideration to inflation rate compared to other criteria like sales (Ganguly, 1985). There are opposite opinion which consider that number of employees do not reflect the real picture of a small enterprises (Osteryoung, Newman, 1993) and could incorrectly suggest the fact that if an entity is bigger it would need more employees, and for developing it has to employ more people, which could mislead to the idea of inefficiency of the SME (Gibson, van der Vaart, 2008).

Turnover is considered to be the more realistic and significant criterion in defining the SMEs due to the fact that generally it is available and it could be easily to extrapolate it (Gibson, van der Vaart, 2008).

Anyway, turnover together with the number of employees are not sufficient criteria to define small and medium-sized enterprises, and could not provide an equitable comparability because turnover varies considerable with the economic sector where the enterprise activates (d'Amboise, 1991), so beside these criteria when defining SMES it should be taken into consideration the type of economic activity as a separate criterion (Hauser, 2005).

To compensate the lack of specification of the activity sector where enterprises activate, European Commission, according to Recommendation No. 2003/361/CE, besides mandatory compliance regarding the threshold of the number of employees, allows the option of choosing between the turnover or total balance sheet threshold. So European Commission classify a SME as an entity which hire less than 250 employees and has a net turnover less than 50 millions Euro and/or has a total balance sheet of less than 43 millions Euro. Through this definition, European Commission want to treat and classify equitable all the SMEs, no matter the type of the economic sector of the entity (European Commission, 2005).

Total balance sheet criterion is most criticised (Hauser, 2005, Gibson, van der Vaart, 2008). One of the main arguments for this is considered to be the fact that despite that in the total assets is included: fixed assets, intangible assets and accrued expenses, not in all the economies all these components are taken into considerations.

Examples of quantitative definitions of SMEs

In some countries like United States, Canada and Japan, the type of activity represent a clear criterion when defining and classifying SMEs, together with other quantitative criteria.

Table 3. Example of criteria used when define and classify SMES in country like: USA, Canada and Japan

SUA	Canada	Japan
a. Type of activity: manufacture, wholesale, mining, constructions, agriculture etc. b. Number of employees (maximum 500 employees) depending on the type of economic activity; c. Value of sales;	a. Type of activity: manufacturing or services; and b. Number of employees (maximum 500 employees) depending on the type of economic activity	a. Type of activity: manufacture, constructions, transportation, wholesale, retail sales, services; b. Number of employees (maximum 300) depending on the type of economic activity; c. Capital Value

In United States, the definition is regulated by the US Small Business Administration's Office of Size Standards (SBA). The limits provided by SBA are according with the type of economic activity: manufacture (maximum 500 employees), commerce (maximum 100 employees), mining (overall less than 500 employees) and other specific activities and number of employees. For the other domains, definition is based on revenues, for example: constructions (less than 31 million dollars), retail trade (less than 6.5 millions dollars), architecture, engineering (less than 4.5 million dollars), agriculture (less than 750,000 dollars) and others⁽²⁾.

As it could be observed, because of the variety of specific activities developed by SMEs, in the USA there is not a standard common dimension model for a SME.

In Canada SMES are considered to be those entities which have less than 500 employees. Small entities are the one which has less than 100 employees (for manufacture) or less than 50 employees (for services). Medium-sized enterprises are the one which exceed the maximum threshold of small entities, but do not exceed the maximum limits of 500 employees. In the category of micro-entities are included the entities which their employees number are less than five.

Moreover, definition and classification of SMEs differ according with the source⁽³⁾:

- The Canadian Council of Ministers of the Environment⁽⁴⁾ classify the enterprises considering the number of employees, according to the above definition;
- Canadian Industry Profiles⁽⁵⁾ classify a small enterprise as an entity of whose revenues are between 30,000 dollars and 5 million dollars. A medium-sized

enterprise is an entity of whose revenues are between 5 million dollars and 25 million dollars;

- Canadian Institute of Statistics classify SMES according to the number of employees and value of revenues, so the number of employees must not exceed 500 employees and the annual revenues be less than 50 millions dollars.

Thus, in also Canada there is not a standardized definition of small and medium-sized enterprises (Yunke et al., 2008).

In Japan⁽⁶⁾ definition and classification of SMES is according with the capital value, number of employees, and type of activity. For an entity to classify as SMEs must:

- for: manufacture, construction and transportation, the value of the capital be less than 300 millions Japanese yens and number of employees < 300;
- for whole sales, the value of the capital be less than 100 millions Japanese yens and number of employees < 100;
- for services sector, the value of the capital be less than 50 millions Japanese yens and number of employees < 100;
- for retail trade, the value of the capital be less than 50 millions Japanese yens and number of employees < 50.

Overall, regarding the definition of the three country is was observed a more complex definition comparing with the one provided by the European Commission, considering that the first criteria of classification is the type of activity of the enterprises.

Considering a manufacture enterprise, for example, with a number of 299 employees. The enterprise will fall into the next categories, considering the specific SME definition used within the country:

- In European Union it will be classified as a large enterprise, no matter the type of the its activity;
- In USA and Canada, the enterprise will be included into SME category;
- In Japan, the enterprise will be included into SME category with the condition that its capital value be less than 100 millions Japanese yens.

From the definitions above, it is observed that there are significant differences of classification of SMEs by sector and number of employees between the three countries.

That is why the IASB in developing IFRS for SMEs proposed a reliance on qualitative criteria in the definition of SMEs in the hope that these qualitative criteria would create premises for harmonization and comparability of financial reporting for SMEs, even though nationwide could be used quantitative criteria for classification of SMEs at least in statistical terms.

Qualitative criteria in defining the SMEs

Best known qualitative criterion in defining a SME is the independent ownership. Other qualitative criteria such as the relative size of the enterprise compared to other enterprises or non-dominant market share are considered ineligible criteria because it is not considered the fact that many SMEs are specialized in certain market niches and often dominate their market segment or their specific unique industry (Recklies, 2001).

Osteryoung and Newman (1993) suggested that small and medium-sized enterprises should be defined as entities which are not publicly traded and entities in which the owners must personally guarantee any existing funding.

Another example of qualitative definition is the definition used by United States Congress, which suggested the following definition for a SME: “small entity whose capital is independent and does not occupy a dominant market position” (Recklies, 2001).

Latest qualitative categorizing of SME is supported by the special standard IFRS for SME, issued by IASBB. Under this standard, the IASB defines an SME as “an entity that does not have public accountability and publish general purpose financial statements for external users”, therefore, by a qualitative definition. Thus, in terms of IASB there is a classification of enterprises by nature, not the size criteria, as SMEs are classified in accordance with Recommendation No. 2003/361/CE.

A classification of enterprise as SME based on qualitative criteria may represent an alternative that would facilitate the harmonization of SMEs but the EU preference for financial reporting of SMEs is still in favour of the accounting directives, and implicitly for quantitative criteria.

Comparability of the classification criteria for SMEs and financial reporting criteria at European level

Even if in EU there is already the definition formulated by the European Commission and recommended to be used for classifying SMEs, it is not used for accounting purposes framing in all the states. Therefore there are discrepancies between the definitions of an SME according to criteria provided in Recommendation No. 2003/361/EC and the screening criteria of accounting terms in the Member States regarding the value limits of quantitative criteria used.

At EU level, there are official definitions adopted in accounting for financial reporting purposes only in some countries (European Commission, Cna Interpreta, 2011)⁽⁷⁾. Official definitions of entities classified in the category of medium-sized

enterprise for accounting purposes only exists in Austria (c), Denmark (c), Germany (c), the Netherlands (b), Slovenia (a), United Kingdom (a) and the category of the small businesses in Austria (c), Belgium (a), Denmark (c), Germany (c), the Netherlands (b), Slovenia (a), United Kingdom (a), Spain and Sweden. In the other EU countries is not a specified classification of small and medium enterprises in accounting law, as is the case in Romania, but the entities takes into account the European accounting directives for financial reporting.

Table 4. *Quantitative criteria for classification of SME in the European Union for accounting purposes*

Quantitative criteria for classification of SME in the European Union for accounting purposes		
	Medium-sized enterprises	Small enterprises
a.	Enterprises which at the end of the year do not exceed two of the three criteria: net turnover < 29,200,000 Euros; total balance sheet < 14,600,000 Euros; number of employees < 250	Enterprises which at the end of the year do not exceed two of the three criteria: net turnover < 7,300,000 Euro; total balance sheet < 3,650,000 Euro; number of employees < 50
b.	Enterprises which at the end of the year do not exceed two of the three criteria: net turnover < 35,000,000 Euros; total balance sheet < 17,500,000 Euros; number of employees < 250	Enterprises which at the end of the year do not exceed two of the three criteria: net turnover < 8,800,000 Euros; Total balance sheet < 4,400,000 Euros; number of employees < 50
c.	Enterprises which at the end of the year do not exceed two of the three criteria: net turnover < 38,500,000 Euros; total balance sheet < 19,250,000 Euros; number of employees < 250	Enterprises which at the end of the year do not exceed two of the three criteria: net turnover < 9,680,000 Euros; total balance sheet < 4,840,000 Euros; number of employees < 50

Source: European Commission, Final Report submitted by Cna Interpreta, (2011).

Absence of a definition of classification in terms of SME accounting of national law of certain countries do not necessarily have a significant negative impact (European Commission, 2011) because anyway the implementation of the European Accounting Directives accounting legislation took into account the size criteria from European directives for preparing the set of simplified financial statements or completed, as applicable, or the obligation to draw up financial audit.

Although using the same classification criteria for SMEs (number of employees, turnover and/or total value of assets) in the European Union, threshold values used for accounting classification are lower than those specified in Recommendation No. 2003/361/EC (exemplified in Table 2, First line).

For example, in Romania, entities reports financial statements in accordance with OMPF No. 3055/2009 for approving the Accounting Regulations in accordance

with European directives where are prescribed aspects of the format, content and general provisions of the annual financial statements, users, qualitative characteristics of financial statements, general accounting principles, valuation rules, etc.

According to OMPF No. 3055/2009, legal entities which at balance sheet date do not exceed two of the following three criteria: total assets: 3,650,000 Euros, net turnover: EUR 7,300,000, the average number of employees: 50, prepare are simplified annual financial statements which comprise: abridged balance sheets, profit and loss account, simplified notes to the annual financial statements. Other companies prepare complete set of financial statements and are required to carry out statutory audits.

So, consider a company with a total of 50 employees and a turnover of 8,8 million Euros. Even if the company is categorized as small according to Recommendation No. 2003/361/EC, from an accounting perspective it is not classified in any category. According to the Romanian national rules, in terms of annual accounts do not benefit from any facility, having to prepare the complete set of financial statements and to carry out statutory audit and although the costs of preparing financial statements and the audit are not significant for small and medium businesses, these costs may have different impact on enterprises.

It is considered however that the quantitative limits of existing micro enterprises according to Recommendation No. 2003/361/EC are too high, not consistent with accounting reporting requirements. Thus, by proposing a new directive, the European Commission (2009) suggested that for the framing of the micro accounting terms it is preferable to shrink the quantitative limits (average number of employees <10, turnover < 1,000,000 Euros, the total balance sheets < 500,000 Euros) in order to minimize the burden of financial reporting because most of the times the micro financial reporting requirements are not proportionate to their specific accounting needs.

However, even if in the EU it is not a general definition that would satisfy both economic and accounting SME classification, it is clear that there is a consensus about the use of the same criteria of classification: number of employees, turnover the total value of assets, and a barrier limits represented by different thresholds promoted by Recommendation No. 2003/361/EC and Directive IV of the European Union.

Conclusions

Given that SMEs are considered true economic engine (European Commission) which contribute to the cultural enrichment and industrial development of all countries, there are understandable the efforts undertaken by international and

European bodies aimed to harmonizing the definition of SMEs. Based on a unique definition or definitions that include at least the same criteria of classification of SMEs we can speak of comparability between SMEs in different economies and so SMEs, can benefit from certain international opportunities and advantages (easier access to international markets, to finance, labour force, etc.)

Quantitative limits and values are often influenced by characteristic factors (economic, social, cultural, and political) of each economy separately. Although there are several quantitative definitions of classification of SMEs provided in order to be tailored to several economies, the thresholds must be adjusted according to the sector and the specific economy, which are impediments in existence of a universal definition of SMEs. Hence, the existence of a universal definition of SMEs in global accounting and financial reporting for SMEs could involve only a qualitative definition because as stated Paul Pacter, director IASB IFRS for SMEs "is virtually impossible to have a global quantitative definition".

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Management strategies of the financial-economical crisis in the hotel's domain

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Abstract. *During the crises period, the advertising budgets in the hotel's domain are considerable reducing. If, in the beginning, the hotels offer important sums to promote the brand's image, with the aim of going public, during the crises period they focus on tactical and advertising campaigns.*

Realizing the place and the role of the hotels's industry like a part of the tourist activity, this paper wants to tap the responsible management problem of the financial-economical crises which affects the demand's size for the tourist services, generally, and for the hotels's ones, specially.

Keywords: hotels's industry; crises; anti-crises strategies.

JEL Classification: D78, L83, M30, M31.

REL Classification: 14F, 14G.

1. Introduction

The tourism is confronting with major challenges which represent, in the same time, chances that mustn't be missed. On one hand, the industry must adapt to the society evolutions, which will influence the tourism's sector demand, and, on the other hand, it must face the constraints imposed by the actual sector's structure, of his specific context and his social and economic condition.

The financial and economic crisis, that beginning with 2008 affects all the economies, had significant effects on tourist services's demand, generally, and on the hotel's one, specially. Even if they continued to travel, the tourists adapted their behaviours to the circumstances, specially choosing some hotels with a lower comfort grade, reducing the period of the holiday or the expenses during the holiday.

The managers of the hotels can confront with several challenges in a continuous changing environment, but they always must to keep the position of the hotel at the standard that achieve the clients's expectations. The management of the crises can be considered as an exam for the manager to lead a successful business or to keep at a normal level his position in business, when the business's environment is not favourable (Ribarić 2010, p. 573).

According to this target, it is necessarily to clarify and to define what actually means a crisis, respectively: any situation which have the potential to affect on a long period the trust in an organisation or in a product, or which can intersect with his capacity of continuing to function in a normal mode (Malhotra, Venkatesh, 2009, p. 67).

The management of the crisis's situations is defined by Pearson and Clair (1998, p. 61) like a organisation's systematic try to control or prevent the crises that appear, so that the interested parts (the clients and the organisation) to have more that sufficient results.

Nowadays, the management of the crisis became an essential part in the hospitality's industry, being an efficient control instrument, for anticipating and knowing what type of threats are in a business with hotels to know how to control its deterioration (Barton, 2008, p. 8).

The tourism is very vulnerable at the economic uncertainties and at the transparency of the market because of the travellers's majority that involves discretionary spendings. During the economic difficulties, people keep their money for life's necessities: food, house, family's necessities (Weatherford, 1998, pp. 79-80). However, this doesn't mean that tourism is slowing. The tendency that is observed in the last crises, even if we talk about the global economic crises or the crises from the tourism, for example the one resulted by the events of 11 september, is

that people continue to travel, but they travel different in comparison with the periods of economic abundance. The tourism business that will know how to adapt next months will survive because from every economic crisis it will always result winners and losers.

Mankiw emphasizes that the new constraint in the financial crises period, for going on holidays, is an economic one, substituting the old one "I can't miss from work" (Mankiw, 2011, p. 104). Before this period, among americans, for example, used the overquell of money to go on holidays, among other things. Now, when the credits are hardly to contract, people will go on fewer holidays, shorter holidays that will be closer to their homes. It is expected that tourists will spend fewer money on souvenirs and shopping, food, hotel room and entertainment.

These tendencies are reflected in the necessity of the touristic destinations to be promoted to the potential clients closer to their location. People are looking for holidays that include activities which can be undertaken in the neighbourhood.

The global economic crises has a powerfull effect over the hotels's industry. The hotels's managers will need to adapt the business plans for leting the biggest possible efficiency, and for convincing the worried and septical costumers to travel and, implicitly, to consume hotels's services.

Unlike previous crises as that one of September 11, 2001, the SARS (Severe Acute Respiratory Syndrome) and H1N1 (avian influenza), this economic turn doesn't affect the wish to travel. The major issue is if a person affords to travel or wants to spend money on travellings or to travel, given the uncertain economic situation. Until now, tourism has withstood the crisis better than other sectors of the economy such as construction, real estate and automotive industry. Hoteliers, as in past crises, need to take into account the general trends specific to a period of economic crisis (OECD, 2010, pp. 14-16):

- The travellings closer to home will be preferred instead the ones on long distance;
- Decrease in the number of days of sojourn as well as the costs will be more pronounced than the decrease in arrivals;
- The destinations that offer "value of money" and favourable rates of change have an advantage the price become a key problem;
- The companies must concentrate on prices stability for keeping their competitive part. It is more necesarely like never before the colaboration in the conception process of tourist products packages, for example, the hotel managers with the transport touroperators, with societies which organise events or with leisure bidders.

The financial crises strike very much in the hotel managers who bet on big profits without offering packages of competitive services. When the global crises's effects become more visible, the tourists begin to manage very carefully the allocated budget for satisfying this type of needs. Those who will offer quality at a reasonable price and will try to come with attractive offers for clients will have to win, and, in the end, this thing will be beneficial for the quality of the tourism in that destination.

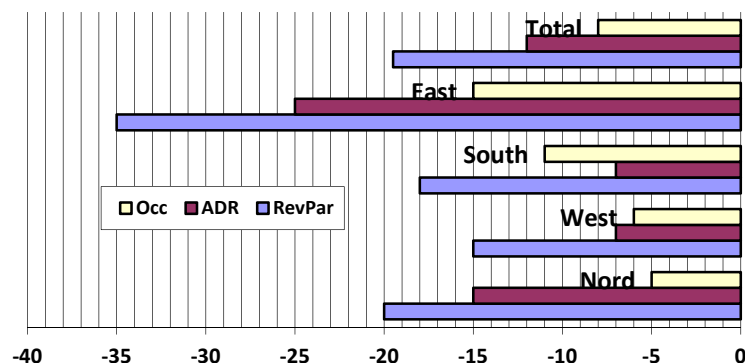
2. Current state of the hotel industry and efforts to mitigate the crisis

According to the international report of market research company Euromonitor International, World Travel Market Global Trends 2009, global trends in tourism varies depending on geographic areas, or economic and political changes.

Thus, in North America are wearing "funemployment", which means that the unemployed use their free time they have available to find cheap travel options, and in UK hotels of "pop-up" type appeared, a sort of temporary hotel which offers special prices. In the Middle East began the offers of accommodation only beds for women, although in some Muslim countries it is considered inappropriate for a woman traveling alone, and Africa is revived with the arrival of Barack Obama to the White House, whose origins are drawn from the this continent. Asians are still very attracted to golf and Latin America increasingly invests more in infrastructure, trying to attract high-income customers.

And last but not least, Europe travel concierge services currently attract high-income travelers, offering holidays "key", according to personal tastes. Most tourists in their turn require more personalized services and being used to find several options online and opening up a new market, wide. Consequently, according to Euromonitor study, tourism offers of the future will contain personalized services for every pocket and concierge travel type offers destined to the middle-income market will allow industry players to differentiate their products through lower prices.

Hospitality consulting company Trend Hospitality Consulting and Management realized, recently, a study that exposed performances of hotels in Europe this year. According to this, the recession has severely affected both occupancy, and average occupancy rate (ADR) and revenue per available room (revPAR) of hotels across Europe, the most affected being but Eastern Europe.



Source: Trend Hospitality Consulting&Management.

Figure 1. Hotels's performance in Europe

Also, with few exceptions (like Turkey for example), the economic crisis led to a decline in arrivals and accommodation, Romania and Bulgaria being among the most affected countries in this respect.

Regarding the capitals of Europe, the hotel occupancy fell almost without exception, but not the same can be said about the average occupancy rate (ADR). Bucharest, for example, recorded a moderate decline in occupancy and a large decrease of average employment rate (ADR).

If we refer to the crisis in tourism business, we know that one of the most budget categories “attacked” in the cost reduction is “travelers” budget (Hartmann, 2011, pp. 9-13). Companies reduce the number of trips for business, reduce time spent on mission, reduce travel distances, reduce class (the plane) and the stars (the hotel).

Given the new psychology of the buyer and the cut of travel budget, some international hotel chains have made some changes in marketing strategy (Table 1).

Table 1. Adaptation strategies of the hotel sector in buyer behavior during the crisis

The change in buyer psychology	Hotel's sector reaction
Values its work and defend their interests	Changed the scoring system of Loyalty Card and now offers these points both to the person and the company works. The company may convert points into accommodation's nights.
It is extremely cautious in spending money (personal and the company)	Before, the price was set by contract at the beginning of the year. Now, the price will vary depending on supply and demand, the client receiving a daily quotation of price and special offers.
Thinking about the future and the consequences of his actions	Before, the contract established the Loyalty Card was valid for one year. Both were automatically extended indefinitely.
Searchs as many informations as possible	From scratch custom communication in the past to monthly Newsletter, a daily quotation of price and offers, plus advice for management of holiday costs.
Actively expands the circle of acquaintances	From scratch with the client relationship in the past, monthly visits from a Key Account and organization of Focus groups.

The change in buyer psychology	Hotel's sector reaction
He has a low degree of confidence and a great aversion to risk	In the past, the canceling of the reservation with five days before substituted the client financial penalty with the equivalent of a accommodation night. The new politic of canceling the reservation doesn't provide penalties if the canceling is made 24 hours before.
Avoids exposure to aggressive messages, preferring to be he seeking the information	Changing a portion of the advertising budget in the budget for market studies and the publication of scientific articles intended for clients.
It has a selfrespect level more reduced than usual	Adaptation: change the names of certain classes of Service Economy in Smart.

Source: proper estimations.

Improving personal relationships with consumers could be done in several ways (Johnston, Clark, 2001):

- Provide a level of customer expectations of service quality across various forms such as: transparency using the services, trained personnel available, consulting services, etc.
- Contacts with clients - such as frequent communication with users via email or telephone, effective communication with clients, meeting with customers, effective feedback of information;
- Development of business relationship with the customer base, such that seminars for clients and banchmarketing support network, organizing study visits.
- Development of social relationships through special invitations, birthday gifts, anniversary greeting cards etc.

Table 2. *Benefits generated by the permanent development of the relationships with consumers*

Benefits for the costumers	Benefits for the hotels's managers
<i>Bigger added value</i>	<i>Sales increase</i>
The value is for the costumer the result of what he gives and what it receives back from the hotel keeper (cost versus quality, satisfaction, specific benefits).	Sales analysis shows that, over the years, loyal customers tend to buy more and more services offered by hoteliers who are in a durable relationship .
<i>Benefits of trust</i>	<i>Costs decrease</i>
These benefits accrue, in addition of trust company, reduced feelings of anxiety and high comfort in knowing what to expect from the hotel manager.	There are many costs associated with attracting new customers (advertising and other promotional costs, operating costs and achieving customer account, and so on). Instead, existing customers over time learn to use the service, which will lead to lower customer service costs.
<i>Social benefits</i>	<i>Free advertising</i>
As time passed, between the client and hotel keeper develops a familiarity and stable social relationships.	Satisfied customers, loyal probably will promote the hotel which they also called.
<i>Benefits resulted from special treatments</i>	<i>Keeping the employees</i>
These special treatments include additional payment terms, obtaining a special offer or a special price.	This is an indirectly advantage determined by retaining customers. It is easier for the company to keep employees when it has satisfied customers. People like to work for companies whose clients are satisfied and loyal.

Source: Iordache C. (2012).

Hotelier company should be selective in developing relationships identifying consumers of key importance and to try to satisfy their needs in a more efficient way than competitors (TE Caruso, Kotler, 1992).

Developing and maintaining relationships between customers and hotelier through relationship marketing could be analyzed also in the life cycle of these relationships (Zeithaml, Bitner, 2000). At various stages in the life cycle of customer relationships it might be claimed that relationship marketing can be applied: before (promising to establish a relationship), during (delivery promises by building relationships) and after (offering new promises after previous delivery). If satisfied clients recommend the hotel to family and friends, they could become active consumers in the future. In this way the original client could become promoter and communication tool with potential customers.

To improve the quality of the hotel benefits from certain tourist destinations requires cooperation between various forms of strategic alliances. To provide conditions for effective communication with customers, hotel companies and tourist destinations should do the following:

1. To attract potential tourists and to convince them to choose services and destinations promoted by overall communication efforts.
2. For making positive final decision it should be focused on all the benefits and privileges offered. Trust should be created through marketing efforts focused on promoting irresistible offers, well planned, guaranteed by real potential of companies in correlation to that of the destination. Sometimes, if they can not meet the expectations of tourists to the destination (without adequate infrastructure) it is preferable to plan moderate promotional efforts.
3. Creating and implementing of marketing strategy to promote opportunities and find the best way to meet the needs and expectations of potential consumers.
4. Finding the most creative way to motivate tourist, to visit new destinations and to recommend them to others. Customer impressions and experience regarding the quality of service are important elements in developing the image of tourist destinations and of companies involved in satisfying consumer needs.

Customer loyalty has a positive effect on reducing business travel costs. On this line there are recorded: reducing costs related to running customers relationship by focusing actions mainly on loyal customers; reduce costs “non-quality” by involving customers in improving product/tourism services; trading costs cut through new communication solutions (eg by making electronic orders, Internet). A systematic management of consumer loyalty travel has also a positive influence on the amount of benefits achieved and therefore the turnover of the travel company.

3. Anti-crisis strategies adopted by the hospitality sector

1. Personalized marketing

In times of crisis, many hotels have chosen a more balanced marketing strategy. These hotels have resumed their ancient tactics to create more personal connections, placing a greater effort to develop a lasting business relationship. This strategy should be applied especially because in recent years the development of the Internet has led to a depersonalization of hoteliers' relationships with customers. Most hotels are focused on prioritizing policies time, so as to become more productive business. Internet and other electronic forms of marketing just will supplement and improve sales department efforts and will not serve to replace. Internet might have a significant impact in terms of sales, but not the only way to do marketing.

2. Additional responsibilities versus specialization

During the economic crisis, many hotels have had to eliminate or simply not to replace certain key positions so that the remaining employees have taken on additional responsibilities, multitasking becoming the norm. Along with improving the business climate, a new trend that emerged was to be looking for experts to create new contacts and increase sales room. A very important role have web designers, who assume full responsibility for the marketing and sales department. Web design specialists will have to focus on what is selling on the site and not necessarily to focus on making the site attractive. A new term to be adopted and web designers is search engine marketing. This includes: destination marketing, so vital online search, create packages and promotions, using social sites, blogs and all other elements of a successful sale of the hotel site.

3. The management oriented on profitable sales

During the economic crisis sales management hoteliers experienced a return of interest for this department. Reduce sales forced hoteliers to sell "smarter", not just harder. Management revenue management was created to increase net income while maximizing occupancy. Many of the hotels have drastically reduced prices during the recession will be faced with difficulties when they try to bring prices to a profitable level. Unfortunately, reduction of tariffs was a decision taken by many hoteliers simply because they did not know what else to do. In the future, the trend to be considered is that more and more hotels turn to manage earnings management.

4. Creativity in making the promotions

In addition to discounts offered to loyal customers, of them the hotels have begun to emulate and promotions which in recent years rarely happens. Most frequently

consist of discounts between 10 and 30%, provided to be about more than two to three nights. There are many free promotions such as 2 +1, 3 +1 free etc. Most hotels make promotions by the same concept and will come to no longer differentiate unless they come up with new ideas.

Very few promotions have creative concepts. For example, IBIS carried class „EuroAnii Ibis” where you pay an amount equivalent to that of age. 1 year = 1 € only if you are between 18 and 25 years and living with someone. For two people of 20 and 22, the room is 42 Euro. If you are alone, just pay your age + 9 €!

There are practiced more increasingly cross-promotions with various partner companies. For example, Golden Tulip offers discounts for members of car clubs or American Express card holders.

Promotion campaigns refers not only to accommodation services, but also to those offered by restaurants, health clubs, conference rooms and meeting sites. A new campaign to Crowne Plaza is to introduce a concept Bavarian „Beer Garden”. Here, emphasis was placed on a campaign to promote the rooms, most of which were recently upgraded. Room rate was slightly reduced, focusing on the use of this service in conjunction with Health Club, Restaurant, and the relaxation or excess of oxygen in the beautiful gardens of the hotel.

Hotel Pullman Bucharest World Trade Center (formerly Sofitel), in order to address business customers, started a campaign to promote media such as magazines choosing flight (for business people who travel often) and addressing business magazines so people Romanian businessmen and foreign investors.

5. Partnerships with event organizers

Another crisis strategy in the hotel industry focuses on hosting events. Many of them are heavily promoted and hoteliers can benefit from the advertising campaign that always indicates the location. Plus hotel guests which brings them to the hotel such an event.

The most practice partnerships with event organizers, seminars, workshops, companies can make regular hotel guests. This approach is beneficial for identifying new market segments and thus better targeting. Hotel Caro, for example, has rates and special offers during major concerts in Bucharest. The hotel also has partnerships with companies such as British Council for those who come from different language exams and tests and, more recently, special offers for kindergarten - celebrations.

Rin Grand Hotel is already being promoted as the main sponsor of the European Championship Snooker, JW Marriott Bucharest Grand Hotel associate their brand with Viennese Ball, a charity event that brings more consistent picture.

6. Adopting the concept of corporate social responsibility (CSR)

Corporate social responsibility and environmental certifications are the trend in the hotel industry. Hotel Vega in Mamaia is the first eco-hotel in Romania certified by TUV Rheinland. The hotel is equipped with water management or energy consumption, to avoid possible pollution. This is certainly an important consideration especially for foreign customers. And Crowne Plaza Romania affiliated with Romania Green Building Council organization (Romanian Green Building Council - RoGBC). The fact that only three national specialized units, respectively Crowne Plaza, Hotel Vega in Mamaia seaside resort and hotel in the village of the same name Saturn from the Black Sea used in their work a high reduced pollution technology which claims appreciation on the slow change of attitude towards the environment.

InterContinental hotel chain has won the National Business Travel Association (NBTA) for corporate responsibility. This award was made in recognition of the efforts made to promote the idea of “green hotel”. The same hotel is a partner of charitable organizations such as House Ioana, for the homeless, Margarita and others.

7. Implementing loyalty programs and develop exclusive clubs

Howard Johnson Grand Plaza is part of Wyndham International and, therefore, promotes and uses Wyndham Rewards program of customers’ loyalty. It is aimed at those who use accommodation services to affiliated units in the chain (brands like Ramada, Days Inn, Travelog etc.) and rewards loyal members with free nights and discounts on certain airlines. Howard Johnson has launched a loyalty program locally, which consists of discount vouchers for various services and hotel outlets as well as at partner restaurants. Given the overall context in which it was launched, the program was called: “When everyone is giving less, we give more”.

Continental Hotels provides customer loyalty program VOILÀ. The main advantage of this is that it does not limit members to one brand. VOILÀ members can travel to many destinations, can stay at any participating hotel VOILÀ and thus earn points. Members benefits include priority check-in and reservations, modernization room type of assistance and special amenities.

Rin Grand Hotel has addressed all the points loyalty program “Grand Client”. There is a scoring scheme that can be realized in different services or gift vouchers.

In the InterContinental Hotels Group chain of hotels all guests can participate in the same Priority Club Rewards loyalty program, voted in the last three years as the best program of its kind in the world. Thus, guests can earn points by staying

in any of the nearly 4,000 IHG hotels worldwide portfolio, accumulated points never expire, and guests are guaranteed accommodation whenever require, regardless of occupancy. Beside them – depending on the level reached by the guest in the program from Club Member, Ambassador and Royal Ambassador to Members – there are various additional benefits.

5 star hotels advertise their loyalty cards evidencing membership in exclusive clubs. Exclusive Marriott members receive discounts of 20% on rates at Marriott hotels in several cities in the world and 50% of rental spaces for events.

The members are part of Hilton Diamond Card discounts at partner hotels across the country, personalized care for booking, invitations to exclusive events etc. Gold-Points card holders can get discounts at RADISSON SAS Rezidor hotels worldwide group and those of Priority Card Intercontinental collect points you may change even with free accommodation, flight miles, minutes, phone calls etc.

Spanish chain Sol Melia (the third largest hotel chain in Europe and the thirteenth in the world) is characterized by frequent flyer program called Mas Rewards: each client receives free Mas Rewards card, which then serves to accumulate bonus points for each stay at hotels Gran Melia, Melia, ME, Inside, Tryp, Sol and Paradisus. For every dollar spent in chain Sol Melia client is given 10 points Mas Rewards. Accumulated points can then be used to: free accommodation in over 300 hotels, worldwide free flights on various routes, or rent a car.

Ana Hotels Group hotels offer Ana Hotels loyalty card through a loyalty program that tourists receive bonuses of up to 8% on purchases of hotel services. The card is obtained at the hotels receptions if the invoice value is at least 300 Lei in conjunction with a minimum stay of two nights and guest signs the accession of Ana Hotels loyalty card.

4. Conclusions

The advertising of the premium brands is made with efforts that are connected with the image; the promotions aren't well seen by market's men for this category of hotels. But, in the same time with the crises, the objectives of reducing the costs become primary, even for those with big incomes, who were attracted before especially by a promotion.

The majority of the hotels approach marketing strategies where PR components and promotions have the biggest share. It puts emphasis on loyalty programs because it is much cheaper keeping customers than bringing new ones.

During the crisis, the economy hotel industry takes an unexpected turn, trying to keep afloat, hotels must consider all operational and marketing techniques known.

And not to seek the special and unique tactic that could bring back everything to normal, because it does not exist.

Experiments are always expensive in terms of time and human resources. It is known that base tactics known in the sales and marketing departments in a hotel are still operating. But, in the last years, many hoteliers have been removed from this base for new technologies and many unrealistic promises of social coverage, not related necessarily with travellings. This type of socialization had no impact over individual hotels.

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Mathematics in economics. A perspective on necessity and sufficiency

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Abstract. *The age of maturity in any science is marked by epistemological debates. This paper focuses on the controversy surrounding the use of mathematics in economics. The role of language, tools and appropriateness of methods is discussed within the borders set by empirical and rational approaches. An odyssey through schools of thought unveils creative oppositions, from naive neo-classical assumptions to literate praxeology and unexpected Bioeconomics. The main debate drifts away from the discussion on the necessity of mathematics in economics and concentrates more on the degree in which this abstract science should infiltrate on the highly empirical field of social sciences, in particular, economics. The dissertation includes opinions on the intrusion of yet another discipline in economics, namely computer science and the consequences thereof, especially related to possible imbalances. In conclusion, economics is a melting pot of other domains and it requires the craftsmanship of the highly literate.*

Keywords: mathematics; economics; neo-classics; epistemology; crisis.

JEL Classification: B23, B31, B41.

REL Classification: 5C, 10J.

1. Titanomachia

Economics has led an ideological struggle to achieve a respectable status among other sciences and, for a long time, it was considered to belong to an inferior level of purity amid ideas. In fact, economics needs to be rediscovered, reconsidered from an interdisciplinary perspective and handled with the tools of a Renaissance inspired Homo Universalis, because, in reality, it simultaneously incorporates politics, mathematics, psychology, law, philosophy, art and religion.

Illustrious figures, representing both economists and mathematicians, entered in the debate over the role of mathematics in economics, their views ranging from fierce Puritanism to unprecedented fusion.

The advocates of mathematics in economics are mainly neo-classics, the pioneer of which is Auguste Cournot (1801-1877), who, in 1838, with simplistic mathematical tools, opened a new path for understanding the economy. The same course is followed by Leon Walras (1834-1910), Francis Y. Edgeworth (1845-1926), William S. Jevons (1835-1882) and Vilfredo Pareto (1848-1923). The logical paradigm and mathematical construction used by them are further developed by Alfred Marshall, J.M. Keynes, and numerous Nobel Prize winners such as P. Samuelson, G. Debreu and K. Arrow. Note that the latter had a mathematical culture, a deep understanding of the mathematical concepts, but, sometimes, fascinated by the aesthetic beauty of the results, ceased to question the models' accuracy in terms of economic significance.

From the neo-classical school a new thinking and philosophy branch emerged, which vehemently fought against the mathematical approach to economics, claiming the dominance of the verb over the symbol, the word over the equation. They called themselves the Austrian School and were introduced by Carl Menger (1840-1921), a fierce critic of the marginal theory, which had a significant influence on the other followers of this school of thought, such as: Ludwig von Mises, Friedrich Hayek, both practitioners of praxeology. Their echo stretches from the classical John Stuart Mill to the contemporary Kenneth Galbraith, who both regard the mathematical tools as means that lead to a departure from the truth.

More opinions are expressed in strictly epistemological works, dedicated specifically to these issues, of which we note those of Imre Lakatos(1980), Roy Weintraub(2002) and the work of Ludwig von Mises (1978).

2. Empirical and rational

The relationship between mathematics and economics is enclosed in the epistemology of both sciences; thus it should not be regarded as an antagonism, but as a permanent exchange of information, methods and results.

In order to understand the fusion between these two disciplines, we begin by capturing opinions about the fundamental characteristics of the two sciences, namely rationalism and empiricism. Our goal is to refute the common concept that each of these is an inherent characteristic of mathematics, respectively economics.

In order to talk about empiricism in mathematics it is useful to invoke the historical roots of this science and to observe that mathematics was born out of practical need, as the result of certain tangible experiences. Even the very abstract theories such as the infinitesimal and differential calculus are rooted in practical physics problems, thus, in experiment. Yet, the definition and learning of some basic concepts of mathematics, such as Riemann's integral, arise from approximations. However, many mathematicians show a real aversion to the idea that mathematics be among the empirical sciences, arguing that such restrictions would lead to the very degradation of its scientific status; this inclusion would contradict the perfection of the axiomatic systems on which it is based. Perhaps it was such a judgment of value that was the starting point of the reasoning that has denigrated economics, which is essentially empirical, dealing with experiments on a macro scale, with the observed reality. We mention in this context von Neumann's view expressed in "The Mathematician" (Neumann, p. 177) according to which the criterion of success of a mathematical theory also has an aesthetic component, based on the "beauty" and "elegance" of the final formula, a factor most often missing to the empirical approach.

Further, we establish that the logical-deductive and axiomatic systems in mathematics denote an age of maturity of this science, a culmination of her progress, while its living segment, where new theories are born, stands on empiric grounds, pending a further distillation to purely abstract notions.

Among denigrating ideas it is worth mentioning the status of rationalism in economics. The emergence of the neoclassical inspired Homo Oeconomicus is the materialization of rationalism in economics, which was met with tremendous enthusiasm by the followers of Ricardo and great retention by the members of the Austrian School (Ludwig von Mises, Frederick Hayek).

The intrusion of mathematics was revealed by the appearance of various models built on simplifying assumptions, up to the loss of essence. The desire to introduce axiomatic systems of economics similar to those from mathematics was overwhelming. The almost forced mathematical characterization of the economic

market's equilibrium (general equilibrium, dynamic equilibrium, etc.), the characterization of the consumer and the producer, the preferences expressed by inequalities, the development of countries' economies as functional relations, all draw-up an image of unrealistic, scholastic, utopia. Inside this abyss, becoming denser and more populated with equations, it is only natural for members of socio-political or humanistic currents to lose their ability to distinguish the reason that leads man to perform economic action, as Mises notices.

The critique of mathematical tools in economics is not unfounded, especially concerning the application of these tools. Many mathematical models are built under some strict assumptions about the variables (ex. Cox-Ross-Rubinstein model to assess the financial derivatives), any relaxation of either of the assumptions must be also operated in the content of the model, which otherwise loses all validity. Blind application of models without prior authentication of the underlying assumptions leads to false conclusions, which in economic context translates into financial losses. Thus, advocates of rationalism in economics must also borrow the mathematical rigor specific to work with hypotheses, not just state the results; otherwise it all comes to a problem of form without substance.

Also, due to the nature of the economy as a rapidly transforming reality, it is almost impossible to define an imperturbable structure, of an axiomatic type, that, implemented in a logical-deductive system, produces a set of economic "theorems". Each science must make use of their own methods and should only borrow tools and techniques specific to other areas of research, useful for discovering results, the tight fit into a pattern is not desirable.

The need for mathematics in economics can be justified by its usefulness in order not to be accused of verbosity, though, according to Paul Samuelson (Samuelson, p. 52), "*Mathematics is a language*" and any mathematical text can be expressed with sufficient explanations in natural language. So, one can understand the use of mathematics in economics as an evidence of culture and concision but not as a tool to provide a scientific garment to an otherwise empty speech. Therefore, when one decides to use this special and specialized language, one must fully commit to its rules, i.e. to determine the exact assumptions under which one works, to ensure that the terms used are well defined mathematically (for instance, exclude division by zero). In short, the use of mathematics in economics is similar to the use of quotations from foreign languages; one must ensure that they are context appropriate and that the "grammar" is correct.

About sufficiency, discussions are much more nuanced, starting with the idea that almost any economic concept can be expressed in natural language. Erudition in many fields is necessary in order to be able to select those aspects that deserve illustrated using mathematical concepts, from others, which can be better

explained by appealing perhaps to politics, to doctrines, to philosophy or to culture.

Experience has previously shown that the limitation to simple arithmetic is not desirable but, simultaneously, the use of extremely abstract concepts such as functional analysis can lead to artificial results, elegant, but subject to paradoxes (in reality the preference relationship may not be transitive: $A > B$, $B > C$ does not necessarily imply $A > C$).

Of course, any radical position such that of Cairnes (Samuelson, p. 60), which states that "economic truths are not discoverable through the instrumentality of mathematics", is not desirable, since such an approach to mathematics' sufficiency becomes more hilarious with each new discovery. History has shown that mathematics is a useful tool in solving economic strategy dilemma (game theory, von Neumann, Morgenstern, Nash Jr.), computational problems (Dantzig-simplex algorithm), etc.

The debate over the usefulness of mathematics in economics should be regarded as a matter of degree and the appropriateness of the instrument for the intended use.

3. The waltz of knowledge

Economics is primarily a philosophical topic, and is only secondarily a tangible matter, thus an essentially practical approach, without a prior understanding of its subtle mechanisms encourages the use of templates, without the possibility of development, thus submerging the economic science in the ordinary or causing stagnation.

Therefore, an understanding of the ideas that were floated around economy in the past centuries is necessary in order to navigate to new horizons.

In terms of mathematics' intrusion into economics, beyond simple arithmetic calculations required for accounting purposes, that accompanied the economics since the birth of trade, even before the advent of money, Schumpeter (Schumpeter, Schumpeter, p. 202) indicates the German author Gottfried Achenwall (1719-1772) as a pioneer in the use of mathematical tools in economics (which he called "statistics"), followed by the Englishman Sir William Petty.

Classical school, represented by David Ricardo, makes use of logic in the exposure of free trade theory and employs numerical examples, but one may not speak of a mathematical model in the current meaning of the term. Note the

position of John Stuart Mill, who advocates against the use of long strings of logical deductions, arguing the dissipation of truth behind this approach.

The first economic models resembling the modern ones are that of Thomas Malthus on demography and that of von Tuhnen, developed in 1826, using marginal analysis to calculate land rent.

During the nineteenth century, economics is greatly influenced by the mathematical modeling method inspired by natural sciences, particularly physics, adopted by the neo-classical school. It sought that economics became an exact science based on laws of Newtonian origin, clear, unruffled and providing easily quantifiable and replicable results.

This idea was followed by the introduction of the concept of equilibrium in economics; the pioneer in this field is Cournot, who, in its very simple model of duopoly, attempted a characterization of the equilibrium of an oligopolistic economy. His successors were Walras, who believed in a general static equilibrium, Jevons, a supporter of the marginal utility and Edgeworth, which uses infinitesimal calculus and introduces the idea of indifference curves. Reactions to this new trend did not fail to appear, backed by the founder of the Austrian School, Carl Menger, which, although had some contributions to the utility theory, addressed another point of view, one which puts the individual at the center, the subjective preference of the man, thus militating for a more human entity.

The transformation of economics towards a science deeply based on mathematical reasoning is made by Alfred Marshall, a mathematician at the core, which sets the limits to the use of mathematics as a tool for argument compression, necessarily followed by explanations and examples, the lack of which would be synonymous to the destruction of the whole edifice.

In the interwar period and subsequently, in the '50s comes into attention the question over the purity of sciences, their clear definition of instruments and their limitations.

Thus, a disciple of Marshall, John Maynard Keynes, although familiar with statistical terms, with game probabilities, is reserved about the application of econometric methods, as he thoughts necessary a prior discussion about the adequacy of those to their goals.

On the other hand, theorists of pure mathematics, such as the French group organized under the pseudonym Nicholas Bourbaki, develop during this period a growing revulsion for applied mathematics in various fields, being outspoken about the need of purity in this science and condemning its use in other areas (Bourbaki, p. 221).

In these circumstances flourishes a new approach to economics, which extensively makes use of mathematical tools and will eventually even develop new ones.

This is the emergence point of game theory, introduced by von Neuman and Morgenstern(1944) and developed by Nash Jr. Also, the idea of equilibrium is not abandoned: Paul Samuelson used differential calculus, John von Neumann employed fixed point theorem while Arrow and Debreu introduced functional analysis theorems in order to achieve a characterization of this notion.

Optimization problems are discussed by means of linear programming, studies for which the Nobel Prize was offered to Leonid Kantorovich and Tjalling Koopmans.

Among the economists previously mentioned, some of them felt the need to justify the proximity of economics and mathematics in essays, as is the case of von Neumann, and Samuelson.

A history of the ideas from that time, and new disputes can be found in Weintraub's(2002) dissertation.

Criticism of this new trend also comes out of the Austrian School, by Hayek's speech on the irrelevance of mathematical models especially due to their assumptions, both on the micro and the macro economy and through the work of von Mises and his disciple, Rothbard. Anchored in praxeology, they bring three major accusations to the use of mathematics in economics.

The first critique refers to the fact that statistics is suited to recall economic history and not to make predictions, given that the "ceteris paribus" hypothesis may not always be true. The following charge relates to the tacit acceptance of the use of money in any economic relationship, as the sole expression of value. The last, and perhaps the most important charge, relates to the desire of the neo-classical and neo-Keynesian inspired economists to develop a scientific approach to economy similar to that of physics, which is deemed impossible because economics studies human beings, which are, in essence, unique with a non-replicable behavior.

A new paradigm about the role of mathematics in economics is introduced by Nicholas Georgescu-Roengen, as Bioeconomics (Georgescu-Roengen, *Legea entropiei și procesul economic*, 1970). Inspired by the neo-classics, a mathematician, he managed to overcome the simple equation modeling of economic phenomena and advanced the idea that the economic system is a whole, in a permanent exchange of information with the surrounding environment, in constant evolution towards equilibrium. He borrows from both the Neoclassical

School and the Austrian School, merging, under the physical Law of Entropy, the mathematical instruments with the interest for the individual's motivation.

Thus, knowledge is emerging as a waltz in three steps: modeling economic processes using the resemblance to physics, denial of this vision by the Austrian School's rejection towards mathematical models and the idea of reconsidering concepts that originated in physics to describe the transitions of the economic processes.

4. Use and abuse

Discussion about the use of mathematics in economics gave birth to controversy, has set up schools of thought and has animated researchers to debate the necessity of such a step, more than for any other science. This ensemble even gets grotesque accents because, caught in the verve of arguments in favor and especially against these practices, proponents of a camp or the other tend to forget that this war goes on the sacred ground of philosophy of science, where invectives do not stand for persuasion.

A first methodological issue to be taken into consideration is related to the definition of "mathematics". It is important to emphasize what one understands in this paper through the use of this word. This term refers to any logical-deductive reasoning based on a set of axioms, any model built using existing mathematical operations and out of which are excluded the trivial arithmetic operations used by economic practice for accounting purposes. We also include in this category any relationships (equation/inequality) whose terms are defined as symbolic expressions of economic concepts.

Following broadly the exposure from the work of Beed and Kane (2007, p. 583), we enunciate and analyze the most important criticism to be made against the use of mathematics in economics, while, in parallel, we go through Morgenstern's argument on the limitations thereof (Morgenstern, 1963, pp. 8-11).

The first and most frequently used accusation against mathematics in economics is the fact that it employs implausible assumptions, inconsistent with the reality which the economic model derived from these assumptions attempts to capture.

Heads of accusation relate, in particular, to Friedman's instrumentalism, which is described as *theories are neither true nor false, but rather prediction tools*. The exponent of the Chicago School has taken on neo-classical ideas used to construct mathematical models for over half a century. Relying on simplifying assumptions, these often distorted completely the phenomenon under study.

The neo-classical models have offered an extraordinary broad topic for attack by the followers of the Austrian School who rightly considered that such an approach lacked the essential component, namely the subject: the individual. Neo-classical Homo Oeconomicus is a simplification to the essence, and even beyond that, it is schematic to dissolution.

Furthermore, the mathematics thought appropriate for the study of economic phenomena is, in turn, a simplification of techniques available, a simplification of the working assumptions, in order to obtain an easy handling tool, devoid of economic meaning, and sometimes, even of the mathematical one. One recalls in this context, the opinion of Morgenstern (1963, p. 10), that, in the works of Walras and Pareto it is not discussed neither the uniqueness, nor the stability of the proposed solutions, which shows a complete lack of approximations, the mere existence is not considered sufficient not even in the austere mathematical circumstances.

Moreover, marginal analysis makes use of differential calculus, which assumes a perfect divisibility of the quantities involved, a utopia to say the least.

Beyond the clumsiness of these assumptions, one should not forget about another hypothesis for which the neo-classical models are often blamed, namely the economic rationality.

The economic rationality is invalidated by marketing – a branch of economics that appeals to the irrational side of the consumer, but one admits that this perspective was not predicted in the nineteenth century.

The former idea introduces the second accusation of the economic science, namely that only a part of economics is quantitative and thus suitable to mathematical approach. Contrary to Samuelson's belief that *the economy is naturally quantitative*, there are certain branches of economy that are free from the need of quantification. This statement, which, probably, according to the author, referred solely to some quantifiable branches of economics, by generalization, loses its scientific value and becomes obsolete. Economic policies are not quantifiable; doctrines are beyond the barrier of number. One may not put into figures the aspirations of liberalism, not even the socialist plans are fully characterized by number, nor equation. In addition, ignoring economic policies is synonymous to ignorance.

On the other hand, the discussion about the role of mathematics in economics includes a sub-theme related to language. Even if, according to Gibbs, quoted by Samuleson (1952, p. 56) "*Mathematics is a language*", and any array of mathematical symbols can be expressed in natural language, mutual conversion does not always have a satisfactory result. Furthermore, it is neither necessary, nor

desirable. There are many mathematical models of economic phenomena which abuse the symbolic language of mathematics, often distorting their meaning completely, emptying them of their mathematical substance.

Economics is a discipline that belongs to social sciences, thus is concerned with events that appeal to cultural, social, historical and psychological influences, called, according to Georgescu-Roegen, "*dialectical terms*", opposed to "*aritmomorphic models*". Mathematical symbolism does not intend, nor have the tools to illustrate these influences that often prove crucial for understanding the cause-effect relationships. It is therefore necessary that, whenever a mathematical tool is used in economic exposure, to use the natural language, to employ explanations, or interpretations of the numerical results deduced from the equations, whereas mathematical language is highly specialized and based on logical inference, therefore conclusions are not always clearly expressed and one may not appeal to the reader's comprehension to recreate exactly the thinking thread of the author.

It is also important to clearly understand the limitations of mathematical language, because it has not been created and is not used to express emotional states, desires of consumers and producers, briefly, a whole range of feelings that govern economic decision.

In this context, one can provide an example of mathematics' limitations by discussing the theory of utility. According to this, consumers can assign any quantity of a given good a certain score. In order to achieve a classification of preferences, it is necessary for a consumer (group of consumers) to be able to compare any two quantities of any two goods and, moreover, the relationship needs to be transitive. These requirements imply that the utility function thus created to be continuous (any quantity of goods may be requested). It was previously demonstrated that there exist preference relations which arise in economic practice and do not meet these requirements, such as lexicographic preference (Ingersoll, 1987).

According to Morgenstern, although this utility theory bundles in artificiality, it is still taught and used. He follows that the assumption of a "cardinal" utility, known a priori and able to be subjected to arithmetic operations is at least naive. Even an ordinal classification, leading to indifference curves, has no greater chance of proving to be a significant scientific achievement. Morgenstern's conclusion is that economists who wish to use mathematical tools must first reach a deep understanding of the phenomenon treated, otherwise a poorly defined problem, garnished with mathematical means, results in nonsense and it is always easier to accuse the method and not the thinker.

Neo-classical theory brings to the fore Homo Oeconomicus, a figment located at the intersection of many economists' imagination, a prototype of the alleged excessive rationality of either the producer or consumer. This individual is described as extremely rational, totally selfish and holder of a special ability to solve optimization problems.

Born from the use of mathematics in economics area, the existence of Homo Oeconomicus is threatened by the appearance of just another branch of mathematics, also developed alongside its application in economics: game theory.

Game theory is perhaps the first branch of economic mathematics developed by mathematicians, among which the most important to date are John von Neumann, Oskar Morgenstern and John Forbes Nash Jr. They studied the classical and neo-classical literature and managed to transpose, in a coherent mathematical language, an action, if not a specifically human trait, which, until then, was excluded from the economic models: cooperation.

Another important merit of game theory is that it can eliminate, to some extent, unrealistic assumptions from economic models. Thus, the hypothesis of total information available to the entity, a typical case of neo-classic utopia, is reinterpreted as a non-cooperative game with a participant who embodies the nature, the unknown. This was the turning point when mathematics took an important step towards acceptance of economic reality, whereas on the real market, agents never have complete information available and market conditions are not static. The idea of strategy, reflected by successive movements of the entity that depend on the move of the opponent, brought the model of the market much closer to reality. Moreover, neo-classical theory does not explain growth of firms, whereas the equilibrium provides only marginal subsistence, a state that, in real economic world, is not the ultimate goal.

Let us descend for a moment from the sphere of ideas and plunge into the ordinary, inside the micro-economy dictated by the consumer to the producer. At this simple level, without being a mathematician, the producer expresses goals in precise numerical terms, wanting to minimize/maximize the percentage of cost/profit.

This is exactly the counter-argument to the charge of extreme abstraction of mathematics, resulting in a break from reality. Without the help of mathematics, the use of data, the manufacturer will have no clue about the consumer's desires, about the volume of production; he would have no tool on which to base his daily decisions. And, finally, as seductive as the discussion about economics might be at a purely intellectual level, one must not forget that economy is a vivid organism that lives by its billions of cells: producers and consumers.

In the real world of the voracious market, separated from discussions of epistemological nature, mathematics is used in economy especially through input-output analysis and linear programming that provide numerical answers to everyday problems, as required by various industries. Economy, from this perspective, is mainly quantitative, at both micro and macro level. Decisions (even qualitative) are taken using figures and the figures result from algorithms and mathematical models. Their adequacy to reality and the possible disastrous consequences of the lack thereof generated the idea that mathematics is a subject that should not leave the abstract area.

Recently, mathematical models have been accused by Krugman to be the source of the economic crisis that begun in 2007 in the United States of America, but nobody accused the chaotic use, nor the lack of adjustment of the model to match reality. In practice, valuation models of financial derivatives which are called responsible for the economic crisis have been developed based on options and forward contracts on certain real property. When one applies the same models to derivatives, it obtains derivative contracts on derivatives, and sometimes even repeats this process several times. This is a severe violation of the model's assumptions, and the result is only a formal calculation, a mental exercise, which, unfortunately, translated into reality led to financial disaster. It is not enough to apply the algorithm, to introduce data into the computer and press the button to get results. It is necessary to understand that model's assumptions are the cornerstone of the foundation, without which the whole assembly has zero resistance.

Just as the mathematical model does not fully dictate the action of the trader, but man, in the same way, not the mathematical model caused the financial crisis, but man, who has used it chaotically, thus breaking the first hypothesis: rationality.

Another charge made to the use of mathematics in economics is that it leads to formalization, to the introduction of symbols sometimes vaguely understood that, instead of having to clarify the role of exposure, have the opposite effect. This criticism may be allowed under certain circumstances: either the transmitter or the receiver of the message are to blame and the condition relates to the impossibility of establishing a common code of communication, due probably to poor training in the field of at least one of them.

The use of mathematics in economics does not automatically ensure a privileged status for the author of those ideas, because, as the phrase in natural language can be either virtuous or babbled, similarly, in the symbolic expression of mathematics, there may be crystal clear exposures or trivial attempts.

What is noteworthy is that although the introduction of equations in economic discourse can facilitate acceptance of ideas by the scientific community,

mathematics is an "ornament" difficult to match and should only be flown by connoisseurs, otherwise, the thinker may be blamed of arrogance by both mathematicians and economists.

To those who support the eradication of mathematics in economics, we further propose a mental experiment, which aims to demonstrate, at least partially, the need of mathematics in economics. To be consistent with the theme, we use the method of reduction to absurdity, specific to mathematical demonstration.

We intend to "remove" economists who have made use of mathematics in their writings. Suppose (by reduction to absurdity) that they have not existed, have not published and, therefore, have not influenced other generations of thinkers.

Thus we begin by erasing Walras, Jevons, Edgeworth, also Pareto and Marshall will disappear automatically. Thus the worthless theories of utility and equilibrium are gone, which may seem a gain. Economics would be free to build on other foundations, to be closer to human nature, to the empirical approach, lacking the bodice of equations.

However, through this step one has just canceled Keynes, Schumpeter and Georgescu-Roengen. Moreover, by this movement one may have even cancel the Austrian School because, by abolishing the neo-classical thinking, the Austrians would have no ideas to oppose their own, without the stimulation produced by the crude neo-classical models, the Austrians would not find the motivation to conceive elegant counter-arguments.

One continues the decimation with the exponents of game theory and dissolves their influence on political economy, on behavioral economics, and on all discussions about equilibrium.

Looking now towards economics devoid of mathematics, one has a bleak picture, the erasure has succeeded the regression of economics at the stage of plain trade from the Middle Ages, before the demon of mathematics became interested in the soul of this discipline, which, now, during the XXI century, seems to have completely captured.

5. Quod erat demonstrandum

The previous experiment has demonstrated the necessity of mathematics in economics. Just as physics, chemistry, biology have known for centuries how to use mathematical tools without fearing a comparison with the "Queen of sciences", in the same way, economy can take advantage of mathematics, without feeling that this intrusion has a denigrating role.

Mathematics, used correctly in economy, is a tool of thought; it is a way of quickly reaching the goal, without becoming mandatory to be itself a goal of economic science. It is necessary, as long as it brings services to the thinker; yet, if one chooses this weapon from his arsenal of methods, one should be a master in handling assumptions, formulas and especially consistent interpretation of data obtained. Otherwise, it is preferable for one only to watch the exciting game of others in the realm of symbols, in order to protect himself and his readers from the false and ridiculous.

The Austrian School had denied the benefits of mathematics in economics, however, Mises believes that these sciences share a common method: "*Mill places logic, mathematics, and the «moral sciences» in the category of disciplines for which the appropriate method is the «method a priori»*" (Mises, 1978, p. 21). In the same paper (p. 127) the author states that only great thinkers of economics have not used mathematics to arrive at their findings and only afterwards did they try to translate them into a mathematical form. Mises even invites, even if on a slightly ironic note, to make use of mathematics in economics, if a better tool is not known.

Samuelson, although he was a fervent user of mathematics in economic approach, concludes (Samuelson, 1952, p. 65) that "*mathematics is neither a necessary nor a sufficient for a fruitful career in economic theory*", but this statement should be seen strictly in context, i.e. referring to the orientation of a young man who wants such a career, to give him choices.

Talking about the sufficiency of mathematics in economics is a more delicate matter, since such a discussion, not substantially argued, could lead to utopia: that one can draw a clear border.

Taking back to Morgenstern's admonition in this regard (Morgenstern, 1963, p. 2): "*let the point (if it exists) be discovered by evolution, the point from whereon there is no further room for mathematics in economics*".

Sufficiency in this context is synonymous with choking; a sign of this is the lack of transparency of the economic message under the guise of equations. This is the moment when the thinker must appeal to other sciences to polish his speech, since mathematics can prove sometimes too abrasive.

One may regard the notion of sufficiency from another point of view, namely as the panacea to economy's problems. This approach, born from the desire to find in economics a resemblance with the natural sciences poses a threat. It threatens the freedom of thought, the development of economics in a multidisciplinary framework and even the confidence enjoyed by the mathematical instruments in other sciences. This approach may be compared to an operation on which only the

scalpel is used, arguing that this is the most important instrument, forgetting the need for others.

The discussion on the dangers or benefits of mathematics in economics had gone on for decades, but since the mid twentieth century, and especially during the twenty-first century, a new discipline makes its presence felt: computer science.

Decision-making, also in economy is transferred ever more frequently to high-power computing devices. Statistical analysis of large volumes of data that are available today is left to machines. Computer software built on mathematical models is increasingly used, especially by novices in economics.

The real danger comes not from mathematics, or, even less, from the mathematicians. The difficulty of this discipline, if properly understood, ensures enough logical thinking as not to be used chaotically.

In today's society, the danger comes from computing power, unimaginable a few years ago, which now develops at an exponential pace, is widely available and extremely low cost, and may be freely used by the uninitiated. We live in a society where everyone, regardless of training, has access to trading on financial markets, we dispense of accountants' services and trust in the computing machine, without questioning its capabilities and limitations.

We have not discarded Homo Oeconomicus amongst us, we have only gave him a heart and soul of CPU and hosted him in the virtual environment, daily entrusting him with our savings, our hopes, only to be desperate and helpless when the machine "does what it is told to do, not what you would like it to do" (Weizenbaum J.).

Faced with this new threat, the use of mathematics in economics seems a nineteenth century parlor game, a game of mind among intelligent people, a pleasant past time, which is not meant to blunt the honor of any of the participants, while using a software without knowing what lies behind it is a degenerate game, a poker in the darkness that no one can win.

The need of mathematics in economics is a personal choice, which occurs as a result of in-depth insight into a certain branch of economics.

For this decision to be an appropriate one, it is necessary for the economist, the researcher, to know the mathematical tools that he can use and the alternatives from other areas of spiritual cultivation, such as sociology, philosophy, law. Also, he must sustain his preference of a certain method with solid arguments.

This choice comes as a result of culture; it emerges from reading classical works in economics, knowing the trends that have influenced economic thinking, recognizing the mistakes that were made in the economic approach.

The economist who chooses to use mathematics in his speech assumes the responsibility of proper use, including the terms thereof, the retention of rigor during demonstrations, hoping for a clear exposure, aiming at a beneficial simplification of explanations and hoping to achieve a significant step towards abstraction. It is fundamentally necessary to know exactly the meaning of terms, to have a sense of measure concerning the mathematical techniques introduced, in order to correctly outline the studied economic phenomena.

It is tempting for those who have access to mathematical tools to make use thereof, hoping that their thoughts will have an aura of science. It is also known that many prestigious journals choose papers rich in mathematics, even the Nobel Memorial Prize in economics has been awarded repeatedly to those who use mathematics extensively. Again, it requires a discussion about the extent and sufficiency. Mathematics is welcome if it brings logical value to the approach, if the proposed models are fully harmonized with the explanations given in natural language.

Personally, I admire the fact that those researchers who could, by their academic background, to act as advocates of mathematics in economics, are retained in statements, campaigning for moderation, even support the idea that mathematics is not a scientific panacea, but just another tool that can be used.

Georgescu-Roegen, Morgenstern, von Neumann, people who have changed paradigms in universal thinking, are reserved, precisely because they are fine connoisseurs of the limitations of mathematics in economics.

It is obvious that not all economists should be required to be simultaneously talented mathematicians, but this condition is mandatory for those venturing into the realm of symbols.

Moreover, in the twenty-first century, I believe one has to pay attention to the use of software in economics, since these are all built based on mathematical tools. The difference lies in the fact that the mathematics is hidden, is not directly accessible to user, who often forgets the substrate of such software and makes use of it without fully understanding the results produced or ignoring the possible problems raised by the mathematical model behind the program.

I believe in the utility of mathematics in economics, in the power of statistical analysis, and in the mathematical models' ability to explain economic mechanisms, up to a certain level of trust.

Also I argue that these abstract tools must be supported by economic theories, should be subject to the test of reality and should be placed in a feedback system to be continually rethought according to market dynamics.

Economics lives, it may not be reduced to universal equations, those who wish to do so can be likened to collectors, who admire their entomological, arguing that within is contained all the grandeur of nature.

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Financial stability between liberalization and regulation

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Abstract. *The economic crisis that began in 2008 raised the problem of bringing into discussion some very important economic issues, including financial instability, which is perhaps the most serious and important one. Thus, given that economic policies seek not only to solve and to present alternatives, but also to be a part of a broader vision that includes longer temporal considerations, the financial instability approach also involves ideological reviews, policy reviews and so on. Thus, the central idea of this paper is that there is liberalization versus regulation dilemma, especially in the banking sector. The paper aims to analyze the effects of the benefits and costs of both options on financial stability, taking into account the link between the financial economy and the real economy. The paper also offers some solutions and future prospects.*

Keywords: financial stability, financial liberalization, financial regulation, banking sector, economic policies.

JEL Classification: E22, E32, E44, E51, E61.

REL Classification: 8J, 8M.

1. Financial liberalization and instability

Financial liberalization aims to eliminate inefficiencies through: 1) the banking activities liberalization, by eliminating the interest rate threshold and ceiling on bank deposits and loans, removing the interest contingents, removing the preferential interest rates, reducing the obligatory reserve requirements; 2) relaxation of restrictions on non-banking financial intermediation activities, in order to increase competition; 3) the creation of new markets; 4) the progressive privatization of the state banks and using a policy that favours foreign bank penetration.

There are several liberalisation proxies that have been used in the economic literature. But there are two main problems regarding them: a) their behaviour indicates that liberalisation reversed significantly; b) these are endogenous measures of liberalisation, which are affected by factors other than liberalisation. Some of the liberalization proxies are: the ratio of stock of personal sector consumer credit to gross domestic product; interest differential between deposit and borrowing rates; loan-to-value and loan-to-income ratios and mortgage equity withdrawal (Corugedo and Price, 2002)

2. Financial liberalization, instability and banking regulations

Financial liberalization influence the banking stability and therefore the financial stability through several channels of transmission.

First, interest rate deregulation is correlated with an increase in the level of interest rates. But due to maturity mismatch, which is linked to the maturity transformation of banking

intermediaries, the performance of banking intermediaries may decrease when deregulation increases the cost of banking resources, while interest rates on assets do not react very rapidly due to their longer term.

Second, financial liberalization involves the opening of the financial system. Financial liberalization may lead to the creation of regional financial centres. For the banking sectors, the opening of the financial system offers the possibility of raising funds in foreign stock markets; this is the currency mismatch situation, where the granted credits are secured with short term currency commitments; in the case of capital outflows, this is a weakening factor. These imbalances might explain some of the previous banking crises.

Third, the bank loans deregulation increases the number of granted commercial bank loans to the private sector. There are two indicators that illustrate the credit availability easing.

The first indicator is the comparison of real domestic credit growth rates in the private sector and gross domestic product, which emphasize that the countries where the credit increases faster than gross domestic product on long-run are followed by a monetary crisis.

The second indicator is the evolution of the ratio of domestic credit to gross domestic product, which evaluates the lending boom. Every lending boom was prior the financial liberalization. The expansion of domestic credit is correlated with monetary crises, implying a higher risk of swings in investors' confidence. The lending boom involves a growth in credit risk beard by commercial banks, which increases the probability of banking balance sheets erosion.

The lending boom implies an "over borrowing syndrome" (the transition's result from a repressed economy to a liberalized economy). This syndrome raises questions regarding the solidity and efficiency of the banking system. So, the government's guarantee on banking deposits has a counter-productive effect on financial stability; thus, "institutional failures" are a part of the mechanism of moral hazard.

The expansion of liberalization is affecting the real sector through two main channels: 1) easy monetary policy, which stimulates activity through an increase in permanent income; 2) access to credit allows firms to exploit technologies, leading to productivity gains (which has a direct effect on real activity).

Regarding the role of institutional factors in the banking crisis (which may lead to financial instability episodes), it can be noticed that: i) the deposit insurance increases the probability of a banking crisis (moral hazard is higher than the stabilizing effect of insurance); ii) the weakness of the legal system is an important factor in banking crises; iii) contractual arrangements of the creditors' rights over borrowers have a less significant impact.

The institutional logic rests on three pillars: 1) the first-best situation (prudent financial supervision is completely efficient); 2) the second-best situation (the necessity to supervise the composition of expansion in banking lending and its aggregate level, in order to monitory the inadequacies from the supervisory system; it is a question of a policy of negative directed credit programs that aims to ensure and maintain financial stability); 3) the third-best situation (the measures

are followed by controls that aim to restrict the entry of capital, in the case of a moral hazard problem in the financial system).

There are five requirements in order to achieve a successful liberalization: (i) adequate supervision and prudential regulation for commercial banks; (ii) a reasonable degree of price stability; (iii) budgetary discipline, which limits the negative effects of inflation tax; (iv) commercial bank behaviour aimed at maximizing profits; (v) a fiscal system, which is neutral in regards to intermediation activity (Allegrret and Dulbecco, 2003).

The emerging economies have weaker regulation systems than the developed countries. So, they are very vulnerable to shocks after a financial opening, which requires the public intervention in the financial sector. Therefore, the increase of banking crises in the emerging markets may be a result of excessive financial liberalization, followed by an inadequate institutional infrastructure.

3. Financial instability and financial liberalization

Regarding the financial liberalization' effects on the macroeconomic stability, for the economies with an intermediate level of financial development, the full financial liberalization, by opening the domestic markets to foreign capital flows, is destabilizing, leading to periods of growth and capital inflows which are followed by collapse and capital run. But foreign direct investment does not have destabilizing effects, because foreign direct investors use their own credit. The economies at intermediate stages of financial development must analyze the manner they will choose to liberalize the capital account. One viable approach is to allow foreign direct investment and to impose initial restrictions regarding the portfolio investment.

Higher investment generate higher output and higher profits, which improve creditworthiness and increase borrowing which also leads to higher investment. So, the capital inflows finance the boom, which increases the demand for country-specific factors and the price relative to the output good. This increase of the input prices reduces the profits, the creditworthiness, the borrowing, the investment and the aggregate output. After the investment fall, all these processes are reversed and they create the conditions for another boom. This endogenous instability is causing shocks that have persistent effects.

At very high levels of financial development, investment do not face cash flows constrains; thus, cash flows shocks are quite irrelevant. At very low levels of financial development, firms have to manage borrow constraints, being unable to

response to cash-flow shocks. Thus, the disappearance of shocks will not cause any significant turmoil. But the intermediate levels of financial development involve cash flow shocks that lead to significant effects, which may represent sources of instability.

Therefore, opening an economy to foreign capital may be destabilizing: the response of an economy that has a closed capital market, in the case of a cash flow shock, will be limited depending on the available capital to entrepreneurs. Additional funding sources in the case of an open economy will increase the response to a shock or to a high probability / dimension of volatility.

4. Liberalizing foreign lending

It is considered an economy that has low domestic savings; first, the economy is not open to foreign borrowing and lending. At each date, the current wealth of domestic lenders W^L is important (domestic investment being constrained by domestic savings $W^B + W^L$). If it is supposed that the initial levels of entrepreneurs' wealth and the initial levels of domestic lenders' wealth (W^B, W^L) are very small, so initially $p_0 = 0$, domestic entrepreneurs are unable to drain the supply of country-specific inputs. At date 0, domestic savings ($W^B + W^L$) are smaller than the investment capacity $((1 + \mu)W_0^B$, where μ ($\mu > 0$) is the credit multiplier, reflecting the level of a domestic economy' financial development. When $\mu = 0$, the credit market collapse and the investors can use only their own credit. When $\mu W^B < W^L$, opening an economy to foreign lending has no relevant significance, due to the fact that the investment capacity of the domestic entrepreneurs is unable to absorb the domestic savings, so there is no need for borrowing. When $\mu > 1$, there is an excessive investment capacity (as long as $p_t = 0$, where p_t is the price of the country specific factor). Therefore, the domestic interest rate r_t , in a closed economy, is influenced by W^L and μW_t^B , where t is the period and μW^B is the maximum quantity of available lending to entrepreneurs; thus, entrepreneurs makes no distinction between borrowing and lending ($r_t = 1/a$). If $p_0 = 0$ and $W_t^L < \mu W_t^B$, then:

$$W_{t+1}^B = (1 - \alpha)[e + \frac{1}{a} W_t^B]$$

$$W_{t+1}^L = (1 - \alpha)[e + \frac{1}{a}W_t^L]$$

where $1 - \alpha$ is the fixed percentage of the agents' savings in the aggregate wealth; α is the consumed percentage; e is the exogenous income in terms of output, $\frac{1}{a}$ is the productivity proxy.

There are many conditions under which $p_t = 0$ and $r_t = 1/a$ for any t , where the wealth of the entrepreneurs will increase as the rate $(1 - \alpha)/\alpha$ decreases, due to the fact that it is constrained by the reduced level of domestic savings; also, $W_{t+1}^B(W_t^B)$ will intersect the 45 degree line at the point where $p_t = 0$, meaning that there are no persistent fluctuations.

In the case of a fully opened economy to foreign borrowing and lending, the interest rate will be established at the international level r . This might stabilize a closed economy, that otherwise would temporarily fluctuate in order to react to the interest rate movements. But the opening of a closed economy to foreign lending also involves net capital inflows, so the investors acquire the excess of funds demand from the international capital markets. The rise in borrowing increases the bid price of the country-specific factor, which leads to permanent fluctuations of p , W^B and aggregate output.

Figure 1 illustrates the liberalization case. The wealth schedule increases after the liberalization. W_B is the stable steady-state level of wealth of the borrowers before the opening of the economy to foreign borrowing and lending. After the liberalization, W_B is increasing progressively as capital inflows induce the investors' increase of borrowing, investments and profits. During the first two periods of liberalization, the demand for the country-specific factor is low so that $p = 0$. In period 3 (W_3^B) p starts to increase, but there is still economic growth. In period 4 (W_4^B) the price effect of the liberalization will strongly reduce the investors' net worth, leading to a recession. Aggregate lending drops, capital flows run out the country and the real exchange depreciates (p is significantly reducing). But the gain in competitiveness may rebuild the firms' net worth, so growth can eventually continue.

But the illustration from the figure 1 is available only for intermediate levels of financial development. If μ is large enough, there is no volatility in the open economy (as presented by the third segment of the curve that intersects the 45 degree line). When $\mu = 0$, financial opening will not support investment and there will be no capital inflow, so there is no upward pressure regarding the price of the

country-specific input. Therefore, a country that wishes to increase μ , will have to develop the domestic financial sector before fully opening to foreign lending.

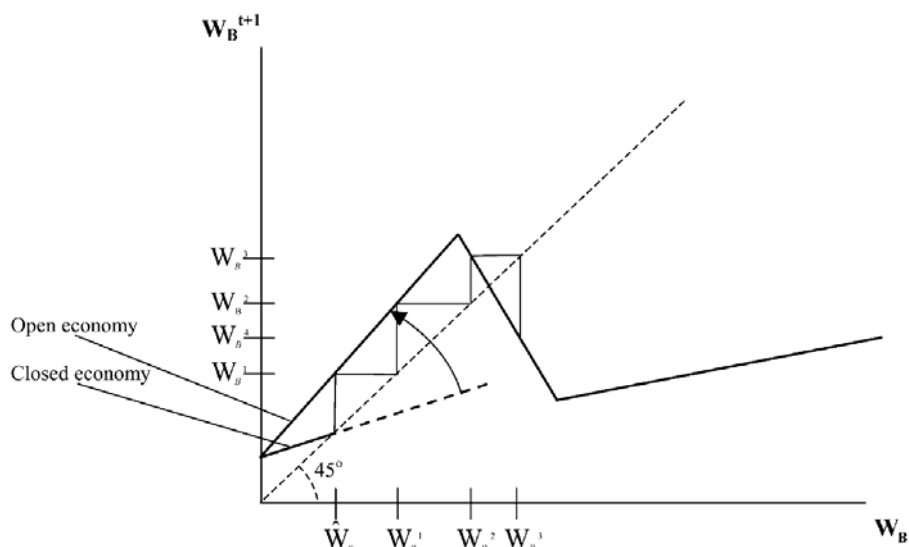


Figure 1. *Liberalizing foreign lending*

4.1. Foreign direct investment

While a full liberalization may have destabilizing effects, in the case of intermediate levels of financial development, the economies will not face volatility only due to the opening to foreign direct investment. Foreign direct investment is different from other financial flows: these are part of the equity of the firms, and investors have full information regarding the situation of the firms.

If the domestic cash flows are small, so that domestic investment are unable to fully absorb the supply of country-specific factors, foreign direct investors are stimulated to enter the economy in order to take advantage from the low price of the country-specific factors. This will increase and even fluctuate as a result of foreign direct investment. The price fluctuations will affect the distribution of profits between domestic and foreign investors, but they will not affect the aggregate output. The aggregate output will be stabilized at the level of the supply of factor resources Z , where there is a probability that the economy will be destabilized in the situation of a fully opening to foreign portfolio investment.

If the closed economy opens only to foreign direct investment, and if W^L is large enough, and firms can borrow the desired amount from the domestic market, the

foreign direct investment will flow into the economy as long as the investment's rate of return is higher than $r + \delta$. So, if F is the net inflow of direct investment, the equilibrium condition of free-entry is as following:

$$F > 0 \Rightarrow R = r + \delta,$$

where $R = (y - r_{int}L)/(W^B + F)$ is the net rate of return on foreign direct investment and r_{int} is the domestic interest rate. If domestic savings are smaller than the domestic entrepreneurs' investment capacity ($W^L < \mu W^B$), then: $r_{int} = 1/a$. But when domestic savings are exceeding the domestic entrepreneurs' investment capacity, then: $r_{int} = \sigma$, where σ is the return of an alternative and inefficient technology. In the case of a closed economy, lenders will invest in this technology. Even in the case where foreign direct investment leads to a increase in price, it does not generate a price and/or output volatility.

If the economy is opened to foreign borrowing and lending at rate r (only to foreign portfolio flows), it becomes volatile (Figure 4). But the opening to foreign direct investment will stabilize the price of the country-specific factor to p^* . Therefore:

$$(r + \delta)(W^B + F) = Z - r\mu(W^B + F)$$

The resulting effects will be the elimination of investment and output volatility. If the foreign direct investment inflows and outflows are not limited, the price of the country-specific factor and the aggregate domestic gross domestic product will be constant at equilibrium.

Foreign direct investment act as a stabilizing force because unlike foreign lending it is not depending on the creditworthiness of the domestic firms, and because during recessions or unfavourable economic periods foreign direct investors will enter the economy in order to take advantage from the low price of the country-specific factor.

When foreign direct investment and domestic direct investment are complementary, there are several possible situations: a) there may exist legal restrictions, so the total amount of foreign direct investment cannot be higher than a fixed percentage x of domestic investors' wealth W^B ; b) there may be a need for local investors to impose dividend payments or to exert control. Therefore, complementary foreign direct investments ($F \leq xW^B$) may de-stabilize an emerging market economy. But different from the situation of unrestricted foreign direct investment, such direct investments will finally decrease during periods of economic and financial difficulties, when investors' wealth W_{t+1}^B is facing problems. Recessions will be deeper than the recessions where foreign direct

investment is absent, due to the fact that the increase in p_t during the boom period increases the production costs and accentuates the firms' credit-crunch. Therefore, while the unrestricted foreign direct investment has stabilizing effects on an open emerging market economy, opening the economy to restricted foreign direct investment will have de-stabilizing effects.

4.2. Effect of shocks

Although the permanent volatility and permanent cycles are important, it is also essential to analyze the effects of shocks on a fully opened to foreign borrowing and lending economy where firms faces credit constraints.

Figure 2 illustrates the wealth schedule shift after a downward productivity shock. It is taken under consideration the case where the wealth schedule intersects the 45 degrees line on the downward sloping part (which corresponds to intermediate values of μ), with a slope smaller than one, so that the steady-state equilibrium X is an attractor in the absence of a shock on σ . The steady-state equilibrium X' a permanent shock $\sigma \rightarrow \sigma'$ is still an attractor; finally, the economy will be stabilizing in the long-run. But starting from the steady-state point X , the initial effect of a negative shock on σ will determine a severe fall in wealth W_B^t below the new steady-state level X' . Recovery will occur and the economy will converge to the new steady-state X' . Therefore, the shock $\sigma \rightarrow \sigma'$ is initially amplified by an economy with an intermediate level of financial development and which has been fully open to foreign borrowing and lending (Aghion et.al., 1999).

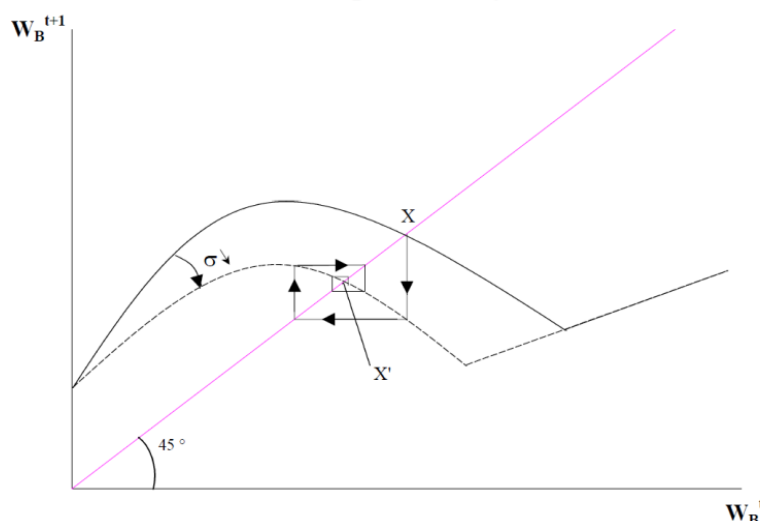


Figure 2. *Permanent productivity shock*

A *temporary* productivity shock $\sigma \rightarrow \sigma'$ (one downward shift in the wealth schedule), will induce a severe fall in output than is warranted by the shock itself (an amplified effect), due to the fact that immediately after the shock the price of the non-traded good is too high relative to the price on the steady-state level. Figure 3 illustrates the dynamic response of output.

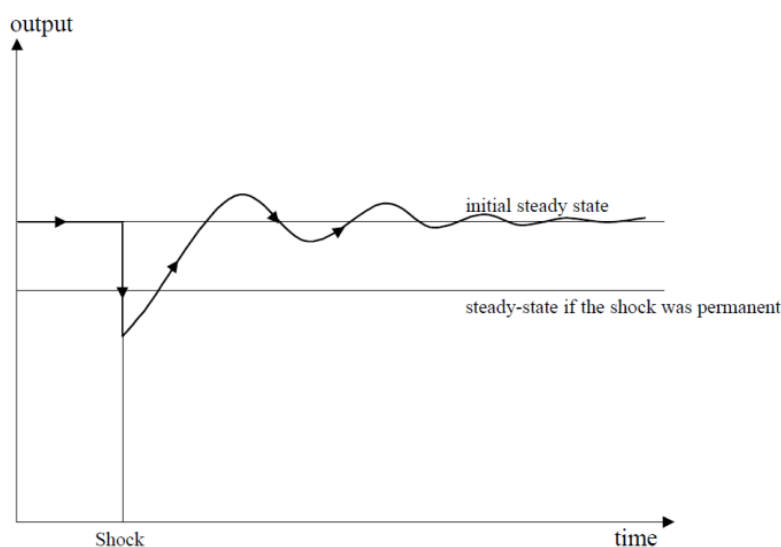


Figure 3. *Temporary productivity shock*

There are two aspects that must be underlined. First, one situation was the one where the steady-state is an attractor. A similar, but more complicated analysis, could be undertaken for the case where the economy converges to a cycle; therefore, a negative shock on σ creates an initially lower level of output than the level on steady-state. Second, the amplified and non-monotonic response pattern is contrasting with the slow (and monotonic) response of wealth and output to a negative productivity shock in an economy that has a very low / very high degree of financial development.

Volatility in emergent open economies is reflected in capital flows volatility and current account volatility. Therefore, financial instability is affecting the real economy, as well as it is affecting the financial economy.

5. Financial development and instability: the role of the labour share

Labour share has an important role in creating instability in emergent open economies.

Financial markets are imperfect, entrepreneurs are credit constrained, the credit constraints are tighter for low levels of financial development. Once the degree of financial development starts to increase, output also increases, but instability appears for intermediate levels of financial development. Changes in the labour share play an important role in eroding profitability. So, financial crises are associated with critical movements in the sharing of value added between capital and labour.

5.1. Dynamic behaviour

There are two main possible regimes: a constrained and an unconstrained regime.

5.1.1. Constrained regime:

If $\mu < \mu_u$, then $\varphi(k^*) < k_u$. Therefore, dynamics of the capital stock are as following:

$$k_{t+1} = \begin{cases} \varphi(k_t) & \text{dacă } k_t < k_u \\ k_u & \text{dacă } k_t \geq k_u \end{cases}$$

If the economy has an entrepreneurial wealth above k_u , then the entrepreneurs are able to finance the optimal stock k_u , and the economy will always stay at k_u . In this case, there are multiple possible dynamics paths: a) if $k^\wedge < k^*$, the capital stock converges monotonically to the steady state; b) if $k^\wedge > k^*$, then various scenarios are possible : monotonic convergence, cyclical convergence, permanent cycles or divergence (Orgiazzi, 2007).

Three of these possible cases are illustrated in figures 4, 5 and 6. Figure 4 illustrates the case where the steady state capital stock is situated to the left of the maximum of the $\varphi(k_t)$ schedule ($k^\wedge < k^*$); therefore, the capital stock increases until it reaches the steady state $k^\wedge$. Figure 5 illustrates the case of an economy that converges cyclically. Figure 6 illustrates the case of an economy of a two-period cycle. But it is impossible to obtain analytical conditions that indicate the situations where each of these scenarios would prevail.

5.1.2. Unconstrained regime

When the level of financial liberalization greater than μ_u , $\varphi(k^*) \geq k_u$ leads us to a point where entrepreneurs are not constrained; therefore, they invest as much as

they want. In this case, k_u is the maximum quantity that entrepreneurs want to invest in their own technology. At k_u , the economy remains at this level; the dynamics of capital stock are:

$$k_{t+1} = \begin{cases} \varphi(k_t) & \text{dacă } \varphi(k_t) < k_u \text{ și } k_t < k_u \\ k_u & \text{otherwise} \end{cases}$$

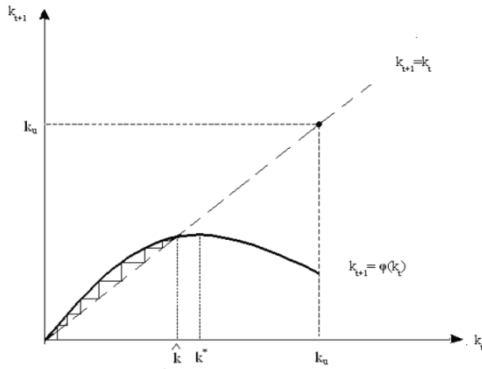


Figure 4. Monotonic convergence to the stable steady state

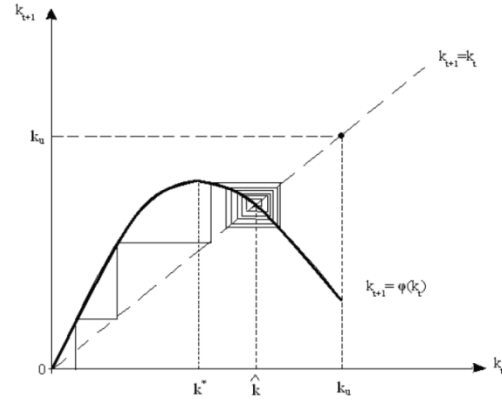


Figure 5. Cyclical convergence to the stable steady state

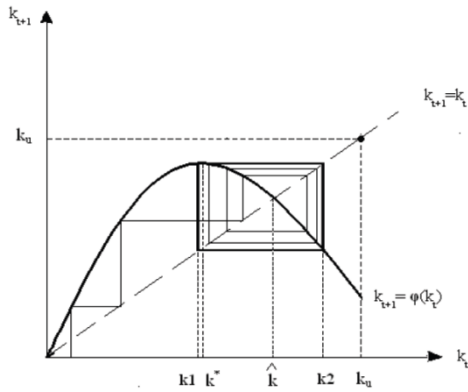


Figure 6. A stable period-2 cycle

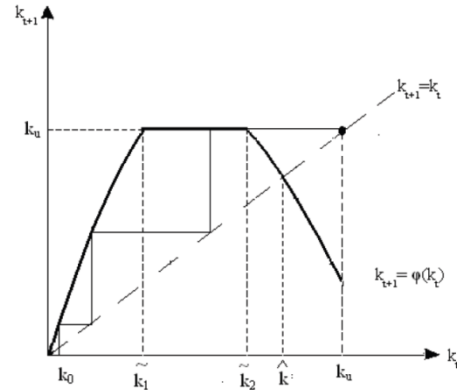


Figure 7. Unconstrained regime

There can be considered the following variables: $k_1^{\sim}$ and $k_2^{\sim}$, so that $\varphi(k_1^{\sim}) = \varphi(k_2^{\sim}) = k_u$ ($k_1^{\sim} < k_2^{\sim}$). Due to the fact that $\varphi(k_t)$ is concave and $\frac{d\varphi(k_t)}{d\mu} > 0$, for any $k_t < k_u$, then $k_1^{\sim}$ decreases with μ , while $k_2^{\sim}$ increases. A higher μ means a greater range of k values that implies that entrepreneurs are not constrained

(Figure 7). The economy will converge to k_u , cyclically or monotonically, depending on the value of $\mu > \mu_u$ and depending on the initial level of capital.

Notations are as follows: k_t is the capital stock; k_u is the desired capital stock, $\varphi(k_t)$ is the equation of capital stock per worker; k^* is the steady state capital; k^* is the stock of capital at which function $\varphi(k_t)$ reaches its peak; μ_u is the lowest level of financial development in order to ensure that at some point entrepreneurs will no longer be constrained.

6. The government, elections, exchange crisis, banking crises and banking reforms

In an emerging market economy that has achieved a positive steady state economic growth rate g^s , financial intermediation takes place through a large banking sector. But banking supervision is still developing bad loans (BL), which increase over time at a rate α :

$$BL(t) = \alpha(t + 1 - t_\alpha) \text{ if } t \geq t_\alpha, BL(t) = 0 \text{ if } t < t_\alpha$$

The accumulation of bad loans is not observed by market participants, but may be observed by the government, which has the responsibility for banking supervision (through the central bank). α follows the function $\alpha = 0$ until t_α , when it jumps to α^s . Market participants know this function and the probability P^α that α may jump in each period of a given length, but do not observe t_α , the moment when the bad loan problem emerges.

The government is not a benevolent optimizer, but will implement the reform of the banking sector if it serves its political purposes (the re-election at the election date t_{elec}). The electorate is concerned only about economic growth, and will re-elect the government if growth is higher than g^s .

The government knows that cleaning up the banking system will reduce growth by reducing available credit. If it is considered that growth is reduced by the amount of bad loans at the moment of clean up (BL_{reform}), it will gradually return to normal, since the restructuring banks must reduce lending immediately and it takes time for the resources reallocation (figure 8):

$$g = g^s - \gamma BL_{reform} + \min(\theta(t - t_{reform}), \gamma BL_{reform}) \text{ for } t_{reform} \leq t$$

Therefore, the occurrence of the reform ($t = t_{reform}$) raise the gaps by γBL_{reform} and recovers over time to steady state growth g^s .

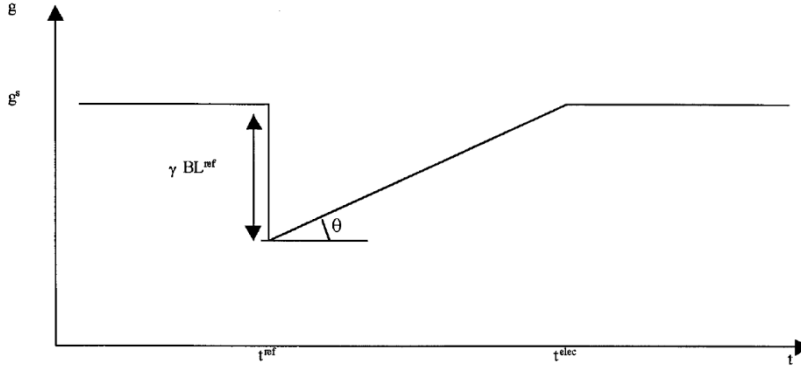


Figure 8. Growth fluctuations after a banking sector revision

This leads to the first result of non transparency or indecision: if elections are relatively far away, the government will implement a banking sector reform after observing the banking sector problems. But a positive α^s implies that there is a specific period of time, before the elections ($t_{nontransparent}$), after which the government will no longer implement any banking reform, in order not to reveal the problems induced by the severe reduction in economic growth, which would not recover in time for the elections. Therefore, the government stops reform when:

$$t_{nontransparent} = t_{elec} - \gamma \alpha^s / \theta$$

The length of the period in which the government undertakes easy banking supervision or is not revealing the problems is $\gamma \alpha^s / \theta$, and varies linearly with the size of the jump in bad loans, α^s , having an impact of the jump on growth, γ , and an inversely impact with the speed at which growth returns to normal, θ .

There are specific conditions under which non-transparency may lead to an external crisis.

It is assumed that the central bank has reserves in order to honor its commitments (related to the exchange rate and to the objective to maintain an adequate banking system). Therefore, the central bank requires a minimum level of reserves (equal to M1 and to the expected size of bad loans in order to avoid an attack on the currency or a run on the banks):

$$RES_{min} = e(M1 + BL_{exp}),$$

where e is the exchange rate, and RES are the foreign currency reserves. A severe fall of reserves below this minimum level will mean that the central bank is

unable to honor its commitments, so the confidence in a stable exchange rate is lost and the capital will fly over the country, leading to a devaluation of the currency to a new level:

$$e_{dev} = RES / (M1 + BL_{reveal})$$

If the credibility problems of the Central Bank are not taken into consideration, it may be assumed that the central bank prevents the capital flight by devaluing, in order to keep away a potential future greater devaluation. Moreover, it may be assumed that the exchange rate appreciates in order to accommodate a better than expected bad loan result and in order to reward investors for maintaining their currency holdings.

There are three main aspects that must be underlined. The first aspect is related to the “warchest” result: if the country has ample reserves, it do not have to manage a severe speculative attack (neither in the elections period or after the elections period, when the bad loans are revealed). If the size of reserves is higher than the maximum size of bad loans, the central bank is prepared for the worst case scenario and will be able to honor its commitments:

$$RES \geq RES_{warchest} = M1 + BL_{max}, BL_{max} = (1 + \frac{\gamma \alpha^s}{\theta}) \alpha^s$$

The “warchest” reserve level is quadratic in the jump in bad loans, α^s , since it affects both the length of period during which the bad loan problem is hidden and the rate at which the problem is accumulated.

The second result is the post-election disappointment or revelation result. There may be a possibility for an exchange crisis occurrence (when the elections are over, the new government is settled, the real state of the economy is revealed, the situation of the bad loan problem is worse than expected). Therefore, the exchange rate may be devalued in order to restore the relation between the exchange rate and the level of reserves. For the case where $RES = RES_{min}$ before the elections, the change in the exchange rate is:

$$1 - \frac{M1 + BL_{exp}}{M1 + BL_{reveal}} \geq 0 \text{ dacă } BL_{reveal} > BL_{exp}$$

This means that the expected exchange rate change is zero, and that the exchange rate devalues upon a negative surprise. If reserves would allow to a preelection crisis not to occur, and if the size of bad loans is higher than the level that would have triggered a crisis before the election, a crisis will eventually take place.

The third result is the election anticipation result: if reserves are small, a currency attack can't be avoided in the elections period. Taking into consideration the non-transparency problem, market participants can compute the trajectory of the maximum size of bad loans, and they can form expectations regarding the actual size of the bad loan problem. The size of the expected bad loans BL_{exp} depends on the probability distribution of α .

In order to avoid a reserve run during the non-election times, the central bank needs to maintain a minimum amount of M1 in reserves. In order to avoid a reserves run during the elections, the central bank needs to have a "warchest". The size of the additional reserves in order to avoid a pre-election crisis depends on the size of the jump in bad loans α^s and on the impact of bad loans on growth and the speed of adjustment. It is improbable that an independent central bank has insufficient reserves in order to cover the expected bad loan problem if it already covers M1, unless it misreads the market's expectations regarding the quality of the banking sector and if the problems are serious. In such situations, the exchange rate crises will occur after the election period. The misreading of market expectations may occur, especially when the problems are sizeable, and when the negative market perception of the bad loan problem manifests in a large scale by withdrawing the interbank credit lines and loans.

7. Why banks are fragile, and need regulation

During financial crises, banks suffer from runs or liquidity problems. The illustration of the bank balance sheets should be edifying in understanding the fragility of banks, and the need for regulation. Figure 9 illustrates the balance sheet of a "traditional" bank. "There are two types of assets (liquid assets and illiquid loans) and two types of liabilities (capital and retail deposits). The main characteristic of banks that leads to fragility is the mismatch in maturity between assets and liabilities. Customers usually require only withdrawal of funds on a random basis, so the bank may survive with low levels of liquid assets (cash and short term government bonds) and may invest other in higher yielding but illiquid long term loans, while providing "liquidity insurance" to deposit clients at all times" (Davis, 2010).

If the depositors believe that the banks are unable to pay them back, the banks may face a deposit run, where all depositors require funds in the same time. This liquidity problem that rapidly finishes the liquid assets, determine the bank to be unable to sell its illiquid assets at full value (due to the asymmetric information

problem) and may become insolvent. A bank may also become insolvent because of the simple losses on assets in excess of capital. In the case where customers believe that there are more banks with similar balance sheet weaknesses and/or counterparty links to the failing bank, bank runs become contagious across the system.

Assets	Liabilities
Liquid assets	Capital
Illiquid loans	Retail deposits

Figure 9. “Traditional” bank

Bank regulation aims to reduce risks. Capital adequacy regulation makes sure that the level of capital is enough to cover expected losses during loan defaults in a downturn. Liquidity regulation aims to ensure sufficient liquidity that can be accessed, in order to cover peak demands for deposit withdrawals. When liquid assets are inadequate, the lender of last resort function of the Central Bank is providing liquidity to the banks. Deposit insurance aims to prevent runs by providing depositors a guarantee of the nominal value of the assets.

But the changes and developments in recent years are different from this framework. First, deregulation removed the limits to competition between banks, and put a higher weight on the prudential regulations. Second, the growth of wholesale financial markets (short term borrowing from other banks; for example, corporate treasurers and money market funds) have offered an alternative to retail deposits for funding the needs of the banks. Third, there has been a great development of securitisation, so the banks needed no more to hold loans on balance sheet, providing incentives to package and sell them to other investors, taking advantage from the great front-end fees from loan origination. Securitisation and wholesale markets have been a result of the development of globalisation of financial markets and information technology.

“On balance sheet”

Assets	Liabilities
Liquid assets	Capital
Illiquid loans	Retail deposits
Illiquid securities	Wholesale deposits

“Off balance sheet”

Loans being securitised	Illiquid securities
Illiquid securities in SIV/conduit	Asset backed commercial paper with bank back up line of credit

Figure 10. “Modern” bank

Figure 10 illustrates the balance sheet of a “modern” bank, which is a response to the developments that seeks to maximise profitability. Therefore, the liquid assets are reduced to the lowest possible level, due to their low return, in comparison with other assets. Capital is maintained at the required level. In order to grow the balance sheet quicker than the situation with rigid retail deposits, the bank has a great volume of wholesale funding (“liability management”); this type of funding, although it is not typically covered by deposit insurance and held by well-informed investors, is much more subject to runs than retail deposits (Davis, 2010). Loan growth can exceed the given capital and deposits by securitisation of loans.

Regulation of the modern bank is more complex. One key issue is the liquidity regulation, which should take into consideration both the risks of wholesale funding and low liquid asset holdings. Capital adequacy also needs to take account of more complex risks involved by this new structure.

8. Regulations on consolidated supervision

The regulations also involve amendments that affect regulations regarding the consolidated supervision of financial groups. Some of these amendments give the possibility that each financial group is supervised and assessed as a single unit. Therefore, the relationships’ network and the risk-taking behavior through the network are more transparent and easier to supervise (Kálmán and Hamecz, 2003). Moreover, the elaboration of decree-level regulations will allow financial intermediaries to provide better information for supervisory authorities.

The importance of group-level regulations is emphasized by both domestic and international busts, which provides signals that the assessment and inspection of a certain institution on its own is inadequate in order to assess the stability or evaluate the financial position of such institution if there have been cosy institutional or personal links between the institutions supervised and other institutions or even natural persons or if they had vested interests, since such links or interests led to dependence (Kálmán and Hamecz, 2003). The supervision of hierarchical groups requires a different supervisory approach than the supervision of individual institutions. Because of their size, this type of groups is the most important and is a dominant agent in the national and international markets, which underlines the importance of regulations.

The risk of contagion in a single institutional framework leads to contagion between multiple and various financial markets (banks, insurance companies, investment services providers); the effective regulations and supervision are essential in maintaining financial stability.

The aim of this regulations and supervision is to treat institutions dependent on each other (seen as one unit that tries to take advantages from risk taking, that tries to exploit the regulatory arbitrage or tries to avoid special restrictions).

8.1. Regulations pertaining to groups including a controlling credit institution

Provisions pertaining to financial groups that comprise a controlling credit institution and/or a financial holding company that owns the credit institution should be implemented to two circles of institutions. The supervisory authority should: a) keep a record of all institutions and individuals which or who may influence the operations of a credit institution; b) keep a record of all enterprises that may be linked to the business operations due to influences from credit institutions (the close link relationship). Therefore, a supervisory authority should only be entitled to record data and request information in order to proper supervise the credit institution (in Figure 11, the widest possible circle).

The second circle includes: a) investment firms and credit institutions with identical prudential requirements; b) financial companies complementing or ancillary undertakings directly supporting banking operations (Kálmán and Hamecz, 2003). Credit institutions and financial holding companies (Figure 12) should improve these aspects in their balance sheets, in their profit and loss accounts and in their records of positions. Therefore, inter-linked transactions and external risk-taking as a whole are included in various accounts, reflecting risk-taking as if they were one single institution.

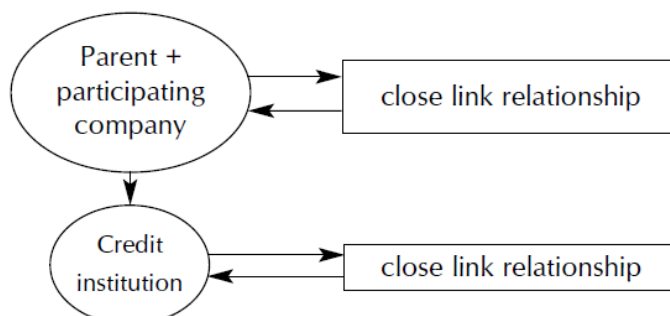


Figure 11. *Record-keeping and provision of information*

8.2. Regulations pertaining to groups including a controlling investment firm

Credit institutions and investment firms are considered as mutual competitors in the investment services market; they have the same limits of risk-taking, assets assessment, capital requirements and rules of consolidation.

The personnel hierarchy affected by consolidated supervision is similar to the one of credit institution groups (Figure 13). Record-keeping and data provision obligations pertain to entities having a close link relationship with investment firms and their respective parent and participating companies (Kálmán and Hamecz, 2003).

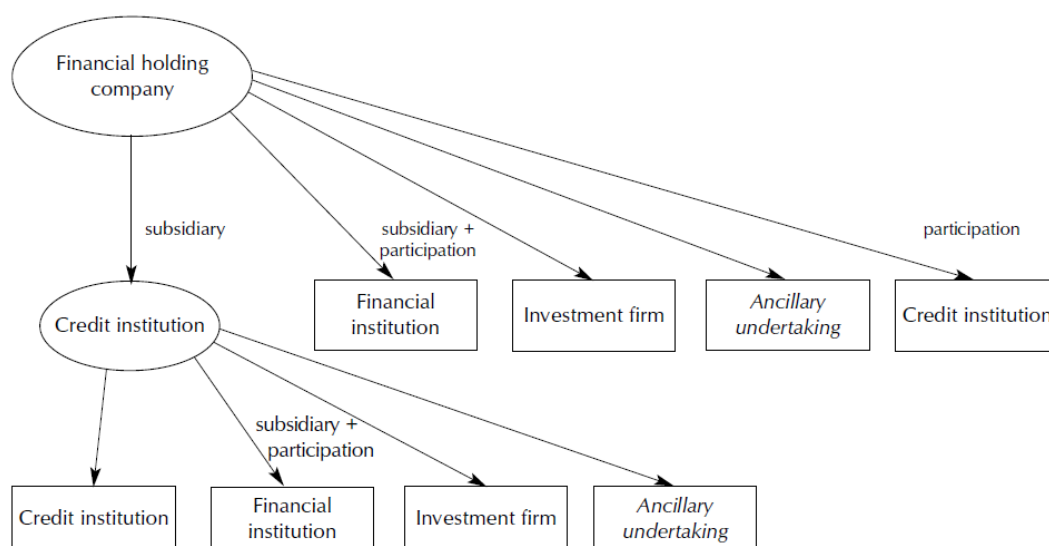


Figure 12. Consolidated requirements

8.3. New organizational obligations of controlling entities

A credit institution or investment firm should be subject to consolidated supervision in the case of a parent company- subsidiary relationship or a participating company relationship (close link relationship) between a institution or firm and a regulated institution. The supervised investment firm or credit institution should inform the supervisory authority of these kind of relationships.

Regarding the business operations of the group, the top management of the controlling entity has the responsibility to meet the consolidation requirements,

due to the fact that the legal regulations should assign responsibility of the supervision of the business operations of subsidiaries to a member of the board of directors.

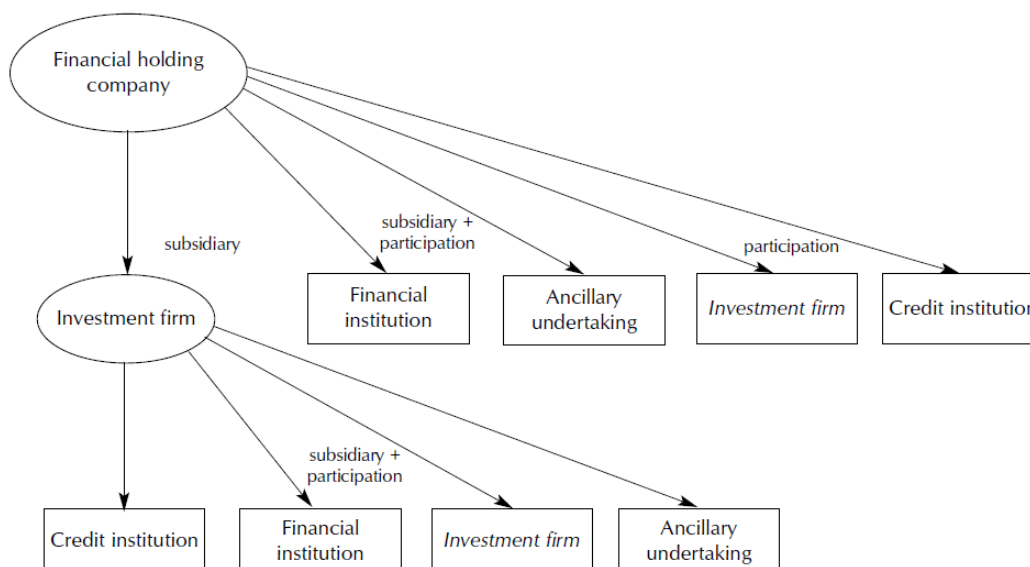


Figure 13. Consolidated requirements

Amendments should not only require supervised companies to comply with the new requirements, but also to facilitate the implementation of the requirements. For example, a controlling entity should request its subsidiaries to meet the group-level requirements, and that the persons that have a close link relationship with the controlling entity should provide to supervisory authorities the needed information regarding the investment firm, financial holding company, controlling credit institution.

For an adequate provision of consolidated data, a controlling entity should have a comprehensive information network that covers the entire group, including an IT system that provides data and a system of internal supervision.

9. Conclusions from a simple cost-benefit analysis of tighter regulation

Changing capital and liquidity ratios leads to changes in probability of financial crises. Thus, it is possible to calculate the expected gross gain from increasing

capital and liquidity, and to compare the gain to the gross costs in terms of output. If it is taken under consideration the net present value of the costs and benefits of a tighter regulation, it would be necessary to take account of the costs of the post crisis recession. This would involve an analysis of the effects of changes in capital and liquidity on bank costs and on the path of consumption and investment over the short-run. The short-run costs of a crisis may be very high, and may outweigh any other costs.

The flow costs of a financial crisis can be computed as a difference between the output

that would have been at time t (yp_t) in the case of no crisis and the output after the crisis (yc_t). If these costs are multiplied by the change in the probability of the crisis that would arise as result of a policy action (tightening capital adequacy) before the crisis, the gross benefit at time t from a tighter regulation of scale j (b_{jt}) may be calculated as following:

$$b_{jt} = dprob_j \times (yp_t - yc_t)$$

These probabilities are seen as high estimates of the probability of preventing the loss of expected output, even if they are adequate estimates of the probability that the improved policy would prevent crises.

Lower value added in the financial services sector also contributes to lower levels of gross domestic product in the future. Capital gains are recorded as a source of income and they are seen as part of gross domestic product, but the losses are not included in income. It is possible that several opportunities for the financial services industry to transform some gains into recorded income, leading to a lower gross domestic product, due to a misclassification of income, and not due to a loss of output, and so not reflecting the lower welfare. These types of losses should not be included in the costs of the crisis.

A complete cost benefit analysis must evaluate the costs of policy actions (c_{jt}). Therefore, the new targets for capital ratios and liquidity requirements should be immediately achieved, either by a rights issue or by an injection of capital by the government.

The cost benefit calculations should take into consideration the net present discounted value of the difference between b_{jt} and c_{jt} using a real discount factor (rr) (Barrell et.al., 2009):

$$NPV_j = \sum_{t=1} (b_{jt} - c_{jt}) / (1 + rr)^t$$

But the tighter capital and liquidity requirements does not necessarily imply the reduction in the probability of a crisis; moreover, tighter regulatory requirements decrease the gain, although it always remains positive.

There are many factors that affect the “optimal” increase in capital and liquidity. For example, policy changes could be less effective in calming the asset price bubbles and in reducing the probability of crisis, so the benefits would be lower (Barrell et.al., 2009), although the estimation of the scale of the reduction in benefits is difficult to compute. Taking into consideration that the benefits increase at a declining rate and that costs increase linearly, any reduction in benefits or costs may lead to different outcomes regarding the policy change that induces the highest expected net benefits.

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