## Business Administration and Business Economics

# Competition on the Global Shipbuilding Market under the Global Crisis Impact

**Romeo Ionescu**[1]

**Abstract:** The paper deals with the analysis of the shipbuilding activity under the new conditions of the global crisis. The method of research is the comparative analysis used on two levels: global and European. The research is important and actual because Romania became one of the most important players in the European shipbuilding indystry. Even if the analysis is focused on the economic performance, it describes the social impact of the crisis by using the evolution of the employees' number, the output trend in connection with wages and total revenues, etc. The main conclusion of the paper is that Europe losted its main position on the world shipbuilding market and presents a comparative disadvantage related to its Asian competitors. The whole analysis is supported by pertinent statistical tables and diagrams and uses the latest official statistic databasis.

**Keywords:** worldwide shipbuilding market; shipyards' facilities; order book; new orders; delivered orders.

**JEL Clasification:** L60; L61; L64; L69.

## 1. Introduction

Still 2008, the ESDC stated perception that "the European shipbuilding is a powerful and dynamic industry" started to collapse. The dramatic decrease of the demand for the container ships followed by the global downturn of the demand hit the demand for the ship building industry vessels in all countries. Despite the implemented rationalization and consolidation strategies, the European shipyards have severe difficulties in terms of their business plan and use their equipment to undercapacity. (Mills, 2010)

A lot of sites (mainly small and medium) had to apply for insolvency. This is largely the result of the global financial crisis and its effects on trade and industry. Meanwhile, the naval procurements serve as a stabilizing factor. The individual

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country studies allow presenting the main drivers of the European landscape in the shipping industry.

There is a fierce competition between the European companies to export more ships (DNCS / TKMS, DCNS / Navantia, etc). The export and the inputs diversification represent the main elements of the shipbuilding industry development, because the national budgets are lower as a result of the crisis.

Most major shipbuilding projects are already under contract for the next five years. As a result, just a few projects will be implemented before 2015, as a new aircraft carrier in France, in 2012. On the other hand, the marine systems are interested in increasing the technologically complexity. The naval military missions are changing, as well. They need more interoperability, technological warfare, multipurpose vessels, which means more effort on the information, detection, and communications. This is why the number of active vessels decreased.

Nowadays, the governments increase buying more "comprehensive packages" (armed ships and for maintenance, crew training, simulator, including the export financing and compensatory measures). The civilian shipbuilding industry is suffering greatly from the crisis. This is directly related to the shipyards short-term actions and the raw materials industry supply in several countries.

All these above trends are connected to the global crisis impact. As a result, the economic decline was felt across the world and soon affected all areas of activity. In exchange the European Union states, where there are former socialist states, by comparison we can say that they were most affected (Turtureanu, 2011).

## 2. Researches in this Topic Area

There are a lot of important researches connected to the shipbuilding industry. One of them describes the evolution of this industry in the USA before and after the Cold War. Since 1985, Japan and Europe have supplied the dwindling number of commercial ships built for U.S. owners. Finally, after 1990, with the end of the Cold War, U.S. shipbuilders lost significant military work, as well as a large part of their work force. From any perspective, then, the U.S. shipbuilding industry confronts enormous challenges (Committee on National Needs in Maritime Technology, 1996).

Another research area was focused on this industry dynamics. With an extensive data coverage spanning from the year 2000 till July, 2008 and outlook on the industry up to the year 2010, the book is a piece of delight not only for the shipbuilding companies looking out for action in the global shipbuilding arena but also as a guide to financial institutions/banks, investment agencies, regulators and policy framers, research and academic institutions and other national and

international agencies. The countries covered by this analysis are: South Korea, China, Japan, Europe, Vietnam and India (The Shipbuilding Industry, 2009).

An interesting forecast of the shipbuilding industry was published in China in 2009. By analysing past and future aspects of the market, it highlights the potential growth areas, and evaluates emerging trends in the industry. The forecast also studies the Chinese shipbuilding industry in relation with the global industry and gives an idea about China's proportion in the global shipbuilding industry. The book also covers the industry forecast and analysis, which is based on various macro and microeconomic factors, sector and industry specific databases, and statistical and analytical model. This model takes into account the past and current trends in an economy, and more specifically in an industry, to bring out an objective market analysis (China Shipbuilding Industry Forecast, 2009).

A different approach of the shipbuilding industry is connected to India. The report elucidates facts about the global shipbuilding industry, supplemented by latest statistical data and comprehensive analysis. The report comprising five sections provides an in-depth view of the global shipbuilding industry and market trends, the ship repair industry and the major Indian players operating in the industry (Bharat Book Bureau, 2010).

The lobal competition in the shipbuilding industry, which is continuously intensifying due to the entry of the developing countries into the shipbuilding market, leads to decreasing margins and enormous cost pressure in this industry. Many shipyards have already gone bankrupt through the inability to keep to their original budget that the offer was based on. In the naval sector it is not unusual to double the originally estimated costs when building the vessel (Fischer & Holbach, 2011).

## 3. The Impact of the Global Crisis on the Shipbuilding Industry

The European shipyards have still a relevant worldwide market share. These shipyards produce about 20% of the global turnover of the worldwide shipyards. Their outputs cover warships, commercial vessels, mega yachts, niche products and offshore products. The worldwide shipbuilding market is dominated by mass production of commercial vessels.

During the last two decades, was a rapidly growing market for cruise ships and other types of specialized ships. The demand for warships was relatively small, as well. In the past decade, the number of high technology marine products included only 75 units, mainly frigates, corvettes and OPVs, excepting the "closed markets" of China, Russia and USA during 1999-2009 (European Commission, 2010).

Between 2004 and 2008, the world fleet increased annually by more than 8%. Nowadays, the shipbuilding industry faces to a lower naval trade and a higher trade vessels supply. As a result, the shipyards' facilities are underutilised. This led to a dramatic decline in orders for commercial vessels, cancellations, delays of ships already in the process of construction and prices' decline.

But the shipyards with more pre-ordering are less or not at all affected (BAE Systems in UK, DCNS in France and HDW-TKMS in Germany). UK shipping industry was less affected, because it was focused almost entirely on military vessels for a long time.

As a result, we can conclude that the impact of global crisis on the ship building activities is directly proportional with the sites' involving in civil vessels. The employees from the warshipbuilding industry vary from a Member State to another (see Figure 1).

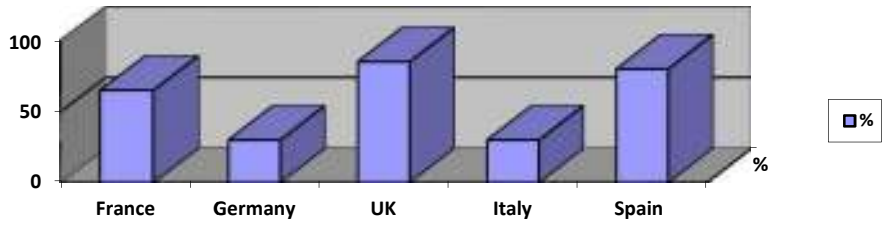


**Figure 1. Employees from the warshipbuilding industry as % from whole shipbuilding industry employment**

*Source: personal contribution using ENTR/06/054 databasis*

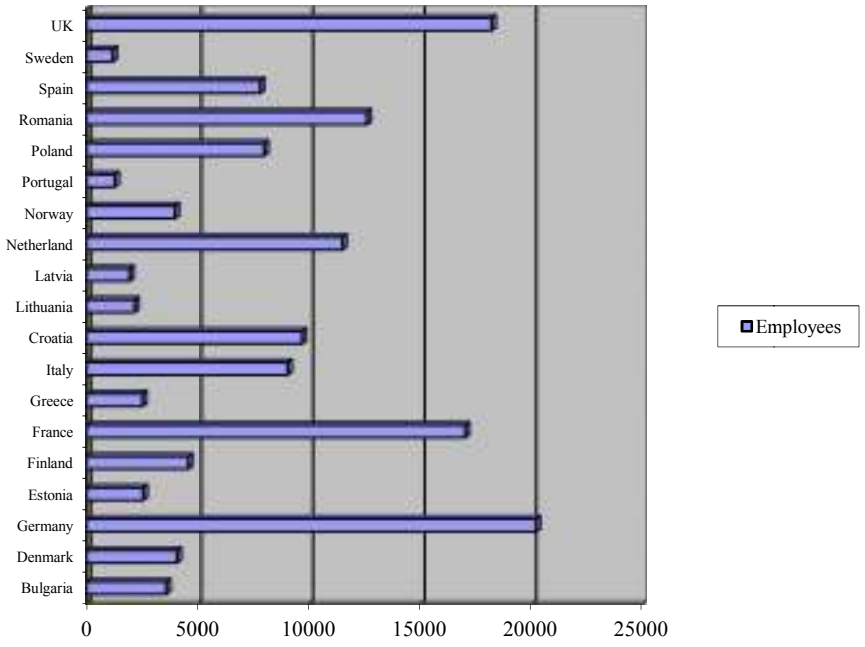


**Figure 2. Employees in the European shipbuilding industry in 2010**

*Source: personal contribution using ENTR/06/054 databasis*

The European shipbuilding experienced dramatic job losses in the recent decades. The situation stabilized in most countries during 2002-2008. Nowadays, the global crisis supports the layoffs decrease of 10-15% still 2015. In 2010, more than 141,000 employees worked in the European shipbuilding industry (see Figure 2).

In 2010, the total employees' number which worked in the European shipbuilding industries decreased. The main cause for this evolution was the decrease of the order book of the main European shipbuilding countries (Thorsten & Smets & Tholen, 2009).

South Korea is the world leader in shipbuilding. Its order book increased from 9.6 billion CGT in 1998, to 64.4 billion CGT in 2008. The Korean order book for tankers covered 46% from the world demand, the ships for gas transport LNG 59% and the ships for gas transport LPG 77% (see Figure 3).

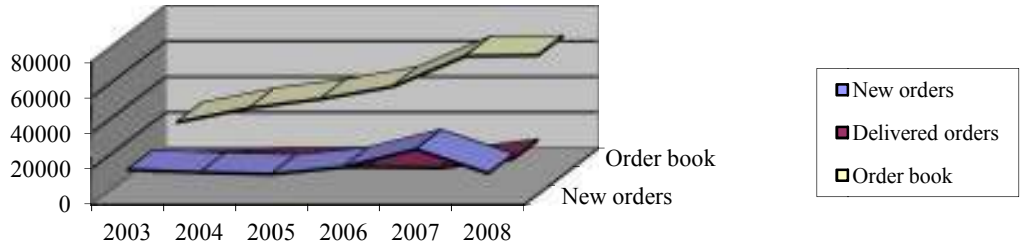


**Figure 3. Korean shipyards activity during 2003-2008**

*Source: personal contribution using ENTR/06/054 databasis*

Hyundai Heavy Industries (HHI) is the world leader in terms of its order book, which covers 10% of the world order book. The company has a broad portfolio of products: tanks, bulk carriers and container ships. Its main site is located in Ulsan. With nine HI docks and four Mipo docks, this is the largest area in the world with the largest shipbuilding capacity. The company has other sites in Samho and Gunsan and owns a supply chain. Other components come mainly from Hyundai Heavy Material Service, a Hyundai affiliate production site. The company has a yard (Vinashin) in Vietnam for repairs and a special business unit for the offshore market.

Daewoo Shipbuilding & Marine Engineering (DSME) is the second largest shipbuilder in the world, with almost 6% of the total world order book. The biggest Daewoo yard, DSME shipyard, is located in Okpo and is focused mainly on producing transport ships. DSME covers a third of the world production in this segment. Daewoo Company is the world leader of the tank and container ships production. Since 2006, DSME opened branches in Europe (eg., DEAWOO Mangalia Heavy Industries - DMHI). DMHI offers a great variety of products and after sales service (First marine international limited, 2009). During 2012-2015, DSME will open a repair shipyard in Asia.

Samsung Heavy Industries (SHI) has the third largest world order book and the third site in the world rankings (DWT). The largest Samsung site is in Geoje, South Korea. The company mainly produces crude oil tankers, container ships and offshore vessels. Samsung has not abroad shipyards.

STX Shipbuilding is the fourth ship builder group in the world. STX Shipbuilding is part of the great conglomerate STX Corporation and has two sites in South Korea (Jinhae and Dalian) focused on oil ships and container ships production.

The Chinese hipbuilding order book increased from 1.9 billion CGT in 1998, to 62 billion CGT in 2008, almost the same as the Korean one. This increase was mainly due to the strong government support in terms of liberal regulations and huge investment. As a result, the Chinese shipping industry ranks the second place in the world shipbuilding production (China Shipbuilding Economy Research Centre, 2010).

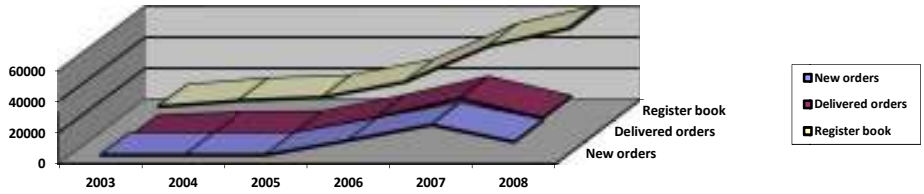


**Figure 4. Chinese shipyards activity during 2003-2008**

*Source: personal contribution using ENTR/06/054 databasis*

China became the world leader in cargo containers segment. This market is strongly oriented to the export. The reduced labour costs and the preferential tax treatment for the exported vessels made China a real competitive force on the international market. Nowadays, about 87% of its total register of orders is intended for the export markets. The Chinese shipyards are divided into two public clusters which domine the market: China Shipbuilding Industry Corporation (CSIC) and China State Shipbuilding Corporation (CSSC). Dalian Shipbuilding Industries (7$^{th}$ world rank) is part of the CSIC, but Jiangnan (8$^{th}$ world rank) and Jaingsu (10$^{th}$ world rank) belong to SCCS.

The Japanese shipping industry was present in the global shipbuilding industry since 1970. The Japanese order book grew during 2000-2007, even that the competition grew higher. As a result, Japan's market share decreased, from 26% in 2000, to 17% in 2007.

The largest Japanese shipyards are Oshima (12$^{th}$ world rank), Tsuneishi (14$^{th}$ world rank) and Imabari (25$^{th}$ world rank). For years, Oshima Shipbuilding was the largest shipbuilder in Japan. Its main activity is the production of Handymax and Panamax bulk carriers.

Tsuneishi is one of the oldest Japanese shipyards. This company established local branches in Cebu, in 1994 and Zhoushan Island, in 2003. Tsuneishi has three shipyards and achieved the 7th world rank.

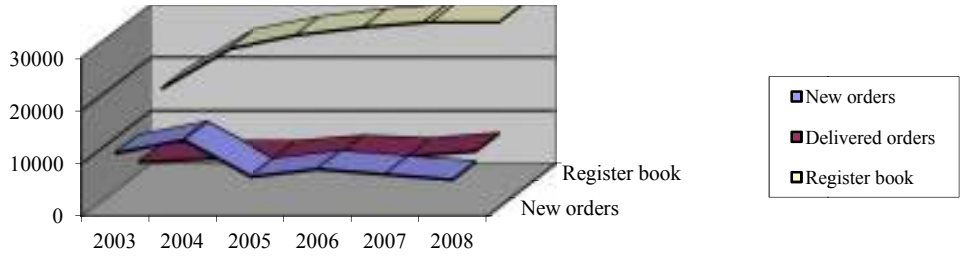


**Figure 5. Japanese shipyards activity during 2003-2008**

*Source: Personal contribution using ENTR/06/054 databasis*

Imabari Shipbuilding Company is the third largest in Japan, focusing mainly on bulk carriers and container ships production. With a total of eight shipyards, Imabari group achieved the 6th world rank according to its total order book.

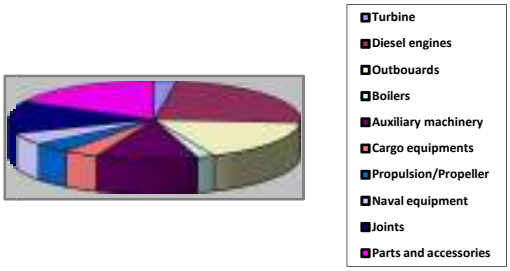


**Figure 6. Japanese industry's naval equipment output**

*Source: personal contribution using ENTR/06/054 databasis*

Even if the impact of the devastating earthquake and tsunami of 11 March 2011 will be felt by the shipping industry and its ancillary services, Japan is able to recover in the short term. After seeing the Japanese managerial skills on various occasions, all specialists are sure that the country could overcome tough challenges facing the disaster (Daily Collection of Maritime Press Clippings, 2010).

## 4. Conclusions

At the beginning of the 20th century, the shipbuilding was dominated by Europe, which covered about 80% of the world market. In the '50s, this position was gradually taken over by Japan, as a result of the Japanese economy rapid growth and a very well coordinated transport strategy. In the early '70s, Japan and Europe dominated the world market with a combined share of shipbuilding of about 90%. During the same period, South Korea entered on the market, using lower wages and chosing the shipbuilding as strategic industry. South Korea carefully planned an industrial strategy that led to a global market share of 25% in the mid '90s and the occupation of the first place in the field in 2005.

Although China had important shipyards since 1940, it became a dominant player only in the last decade. The country's economic boom, with the opportunity to choose its action strategies for the development of heavy industry activities, led to a strong increase in the world market share.

The role of the maritime equipment manufacturers became more important over time. Initially, most activities were carried out even in the shipbuilding yards. As a result of the R&D, the role of the marine equipment industry grew dramatically. Nowadays, the share of the activities carried out by yards is only 50%-70%, highlighting the strong links between the shipyards, the specialised in naval activities companies and the equipment suppliers.

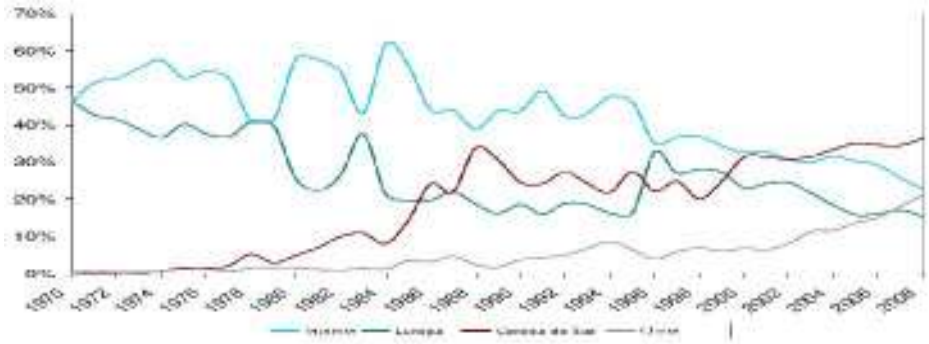


**Figure 7. Market shares of world major shipbuilding**

*Source: personal contribution using ENTR/06/054 databasis*

The shipbuilding industry is dominated by a few large sites, all located in Korea, the top four ranked in the world with a joint market share of about 25%. The first 18 are shipyards in Korea, Japan and China and has a joint share of 50%. The biggest European site ranked 38, according to the number of the produced ships.

The European companies are still prevalent in some specialised market segments such as cruise ships (99% of the market share), ships (43%) and luxury yachts (65%). Also, the warships represent a relevant segment in Europe. These segments

are characterized by highly specialized and high tech qualities, complex production processes, in combination with a limited number of sister ships to be built. The Europe's position can be characterized as a specialized niche player.

In Europe, four countries dominate the shipbuilding: Germany, Italy, Netherlands and Romania. The greatest four European shipyards are: Meyer Werft in Germany (container ships and special purpose ships), Daewoo Mangalia in Romania (container ships), STX Europe (cruise ships, offshore vessels and other ships) and Fincantieri in Italy (cruise ships and ferries). Although these sites are located in Europe, they are world overseas leaders' property. It can be seen a clear trend of globalization (Daniel, 2010).

The subsector sea equipment consists of many relatively small companies. The estimates vary from 5,000 to 9,000 worldwide suppliers. Many of them are also active in other fields, such as cars or aeronautic industry. The European companies provide 36% of the total output. The key areas of Europe are mechanical engineering, including production of engines (26% of the total), electrical engineering/electronics (18%) and steel production (15%). The European marine equipment suppliers depend not only by the European shipyards customers, reaching 46% of their sales for export.

On the other hand, several large companies have allocated licenses for the Asian producers to produce in locations near the shipyards in Asia.

## References

Bharat Book Bureau (2010). *Report on Shipbuilding Industry*. Maharashtra, India, November, http://www.upvery.com/26660-report-on-shipbuilding-industry.html

China Shipbuilding Economy Research Centre, CSSC (2010). *Bulker Market Development & Tendency,* 25th -27th of August, Qingdao.

Committee on National Needs in Maritime Technology, National Research Council (1996). *Shipbuilding Technology and Education*, National Academy Press, Washington D.C.

Daniel, Q. M. (2010). *The world financial crisis of 2008-2010 – what happened, who is to blame and how to protect your money*. Harvard University.

European Commission (2010). *Defining the Future of the European Shipbuilding and Repair Industry*, Brussels, COM (2003) 717 final.

First marine international limited (2009). *Overview of the international commercial shipbuilding industry,* May.

Fischer, J. O. & Holbach, G. (2011). *Cost Management in Shipbuilding - Planning, Analysing and Controlling Product Cost in the Maritime Industry*, GKP Publishing, Cologne.

Mills, D. Q. (2010). *The world financial crisis of 2008-2010 – what happened, who is to blame and how to protect your money*. Harvard University.

Thorsten, L. & Smets, F.& Tholen J. (2009). *Study on behalf of Otto Brenner Foundation*, Hans-Böckler-Foundation and Community of European Shipyards' Associations (CESA) Frankfurt/Main.

Turtureanu A. (2011). *Aspects of Global Crisis. Acta Universitatis Danubius*. *Oeconomica*, Vol 7, No. 3/2011, pp. 128-137.

***(2009). *The Shipbuilding Industry 2009.Credit Analysis & Research Limited*. December, http://www.researchandmarkets.com/reports/679538/the_shipbuilding_industry_2009

***(2009). *China Shipbuilding Industry Forecast,* October. http://www.bharatbook.com/detail.asp?id=116681&rt=China-Shipbuilding-Industry-Forecast.html

***(2009). *Study on Competitiveness of the European Shipbuilding Industry*. Competitiveness Studies, ENTR/06/054, Rotterdam, 8th of October.

***(2010). *Daily Collection of Maritime Press Clippings*, Clipper #305-#338, Netherland.

# Employability Skills in Chennai Retail Market, India

**Rajkumar Paulrajan**[1]

**Abstract:** The aim of this paper is to report the finding from study to outline the underlying skill set required in getting and sustaining employment in the organised grocery and vegetable retail industry. The focus was 'Employability' which is neither one time attainable nor marketable vocational and academic skills just to create opportunity to get employment. An exploratory study has been carried out to understand the requirement of skill set in organised grocery and vegetable retailing for entry level jobs. Personal interview and questionnaire were the instruments used. Scope of the study to understand and identify required skills for entry level job in the organised grocery and vegetable retailing. Skill Matrix and employability skill set are formulated based on the study for entry level jobs in organised grocery and vegetable retailing sector.This study presents a comprehensive framework for selecting stores level managerial jobs by using Analytic Hierarchy Process (AHP). AHP method, expresses to determine the attributes in a multiple criteria decision-making problem in selection of personnel. Further scope for future research is enormous; study in the area of different or entire profile of retail jobs and geographical employability which is an influencing and deciding factor in organised grocery and vegetable employment.

**Keywords:** Employability; Retail; Skill Matrix; Analytic Hierarchy Process

**JEL Classification:** M51; M12; C60

## 1 Introduction

The liberalization of the Indian economy and simultaneous globalization ignited an accelerated industrial growth across, the spectrum of all market segments in India. Retail industry as a whole is not an exception. Retail industry has witnessed advancement into organised trading. Organised retailing factored into the changes in employment opportunities as well as skill requirements. Human sourcing has experienced a series of transformations in its identification of right resources. The corporate players who are in the organised grocery and vegetable retailing sectors implementing best practice proven globally to run their business cost effectively necessitate employees with specific skill set to suit their requirements. An exploratory study has been carried out to understand the requirement of skill set in organised grocery and vegetable retailing. As the Indian grocery and vegetable

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market is very huge by geographical spread, the study has been carried out to explore Chennai market taking in to consideration of the resource and location constrains the researchers have to satisfy.

### 1.1 Indian Retail Industry

The Indian retail market, which is the fifth largest retail destination globally, was ranked second most attractive emerging market for investment in the retail sector by AT Kearney's seventh annual Global Retail Development Index (GRDI, 2008). Traditional Indian retailers are account for 12 million retail outlets all over the country and more than 40 percent of them sell grocery and vegetable (IBEF, 2008). Only four percent of the traditional retail outlets are more than 500 sq. ft. of area. The outlets of traditional retailing are owned and managed by few people and that to mainly family members. Growth of traditional retail outlets year wise and organised outlet projections outlet type wise are listed in table 1 and 2 respectively (Chengappa et al., 2003). Currently the most popular organised retail formats are Shopping Malls, Hypermarkets, Supermarkets Specialty Stores, Multi Brand outlets, Discount Stores, Department Stores and Convenience Stores. It is reported that there are at least 24 hyper markets, 358 super markets, 240 convenience stores, and 464 discount stores. Super markets consider fruits and vegetables as destination category of goods to attract more customers (Acharya, 2007). According to a report by Research on International Economic Relations, the retail business in India would grow at 13 per cent annually from US$ 322 billion in 2006–07 to US$ 590 billion in 2011–12. Organised retail, which constituted a low four per cent of total retail in 2006-07, is estimated to grow at a rate of 45-50 per cent per annum and attain a 16 per cent share of total retail by 2011-12. (ICRIER, 2008) Government of India termed retail as a sunrise sector, expected organised retail sector to generate 10 to 15 million jobs over the next five years (GOI, 2007).

**Table 1. Year wise growth of Traditional Retail Outlets in India**

| Outlets | No of Outlets ('000) | | | | | |
|---|---|---|---|---|---|---|
| | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 |
| Food retailers | 2769 | 2944 | 3123 | 3300 | 3480 | 3683 |
| Non-Food retailers | 5774 | 6040 | 6332 | 6666 | 7055 | 7482 |
| Total | 8543 | 8984 | 9456 | 9967 | 10,534 | 11,165 |

*Source: Evolution of Food Retail Chains: The Indian Context* (Chengappa et al., 2003)

**Table 2. Organised Retail outlet Projection for the year 2010**

| Outlet type | No. of outlets |
|---|---|
| Hyper Market | 200 |
| Super Market | 280 |
| Mega Store | 400 |
| Specialty Store | 1200 |
| Departmental store | 20000 |

*Source: Evolution of Food Retail Chains: The Indian Context* (Chengappa et al., 2003)

A study by ASSOCHAM on "Job Opportunities in Emerging Sectors" revealed that retail is expected to churn out the maximum number of job opportunities among the upcoming fields after Information Technology enables services – outsourcing. The forecasts suggest that the sector may create 2,000,000 jobs by 2010 directly through retail operations (Bhutani, 2007). Table 3 depicts the estimated figures of the study.

**Table 3. Job Opportunities in Emerging Sectors by 2010**

| Sector | No. of Jobs |
|---|---|
| Business Process Outsourcing | 2,300,000 |
| Retail | 2,000,000 |
| Knowledge Process Outsourcing | 250,000 |
| Hospitality | 94,000 |

*Source:* ASSOCHAM, 2007

This phenomenal growth of organised is expected to result in demand for millions of new jobs. In India, the expected job creation by organised retail requires entirely different skill sets contrary to traditional due to its volume of operation, size of outlets, area of coverage, customer mix and product assortment. Supplying human resource in millions with required skill is a challenge and various universities and training institutes are gearing up to meet the challenges. Leading corporate houses are also venturing into skill building solutions business. Bharti Group with interest in multi sectors from telecom to retail, has set up institute to training human resources, 'Bharti Resources' for their internal requirement as well as partnering with other organizations.

### 1.2 Employment in Retail

Currently Agriculture and retail are the large sectors for employment in India and retail trade constitutes 7.6 per cent of total labour force (NSSO, 2008). The trend in economy growth is expected to continue and retail industry also expected to grow in the same phase. Retail sector is also expected to create huge employment in future. Segment wise, retail sector's employment in India during July 2005 - June 2006 is depicted in table 4. Fresh vegetables, fruits and grocer retailing, both organised and traditional, is a prime source of employment for people with low skill and education. Vast majority of the labour force can easily fit in to retail and related support services.

The emerging organised retailer's expectations of education and skill of their employee are different, rather higher. They expect higher educational qualification, better skill sets and trainable traits. In future labour force seeking employment in to organised retailing should have a high capability to match employer's expectations. Organised retailers face a huge shortage of Skills. The skill shortage is more among those manning the floors rather than at the managerial level. In view of the current shortage in skilled labour needed for organised retail most of the companies such as Subhiksha are resorting to in-house training—which are usually short-term trainings conducted on a monthly basis. Some other leading retailers also have tie-ups with leading business schools to train their employees. (Shaoni and Bino 2008)

**Table 4. Traditional Retail sector employment in India**

| **Retail segment** | **Employment** (million) |
|---|---|
| Food , Beverages and Tobacco - In Store | 12.4 |
| Non-Store Retail | 1.10 |
| Specialized stores | 9.50 |
| Non-specialized | 2.20 |
| Service | 2.60 |
| Total Employment | 27.60 |

*Source: National Sample Survey Organisation (Report No. 522)*

### 1.3 Employability

The quick expansion of retail market and huge demand by volume and wide range of skills of human resource requirement is a test on demand and supply mapping as well as matching. From the demand side, Human Resource Managers experiencing tough times in identifying right source and the supply side, it is even tougher to

impart proper mix of skills. The booming economy is generating more jobs than ever before and contrarily millions of youngsters who are unemployed looking for the first job or underemployed looking for a right job. The missing link between them is the 'Skill Gap". Skill gap prevails not only for the entry jobs but for all levels of jobs. Proper mix of skills paves a way to enrich employability. Employability refers to a person's capability of gaining initial employment, maintaining employment, and obtaining new employment if required (Hillage and Pollard, 1998). Employability is the capability to match skills demanded by the market for a specific job. Eliminated or reduced skill gap is high level of employability and leads to sustainable employment. Employability is neither one time attainable nor marketable vocational and academic skills just to create opportunity to get employment. Employability is a continuous process of acquiring or developing or enhancing knowledge, skill and ability during all phases of career like, pre-employment, unemployment, new employment, underemployment, reemployment, transition employment and transfer employment. Employees with more diversely skilled will increase their employability.

## 2 Research Study

### 2.1 Objective of the Study

Growing consumerism would be a key driver for organised retail in India. Several demographic trends are favourable for the growth of organised trade. Players, who capitalise on the opportunity, need to be aggressive in its outlook and build scale quickly (TSMG, 2006). This phenomenal growth of organised is expected to result in demand for millions of new jobs. Human Resource Department (HRD), especially in the organised retail market, is lookout for skilful and industry ready human resource. Super markets and retail chains need many times more young business graduates. It needs to be noted that already between 2000 and 2005; India created 1.1 million jobs per year, which is the highest among BRIC - Brazil, Russia, India, and China countries (Acharya, 2007). Alternatively HRD is looking for human resources who are trainable, so as organisations can impart skills. The objective of the study is to outline the underlying skill set required in getting and sustaining employment in the organised grocery and vegetable retail industry for entry level jobs and find a selection process for managerial jobs. Hence there is a need to assess the current status and trend of human resource in Indian organised grocery and vegetable market for theses jobs. An exploratory study has been carried out to understand the requirement of skill set for jobs, not attitudes in organised grocery and vegetable retailing. This study is neither intended to investigate method of developing employability skills nor estimate human resource requirements of organised retailing industry but to assess the employability skill set.

### 2.2 Research Methodology

This study is an exploratory study. Scope of the study to understand and identify required skills for entry level job in the organised grocery and vegetable retailing. As the Indian grocery and vegetable retail market is widely spread geographically, the study has been carried out to explore the human resource practices and trend at Chennai taking in to consideration of the presence of corporate retailers. Research frame for data collection is from the city of Chennai, India. Chennai has right demographic mix of customers who are also a critical factor in deciding requirement for entry level job in grocery and vegetable retail. All organised retailers are anchoring in the city of Chennai including grocery and vegetable retail pioneers like Nilgiris Dairy Farm's Super Market popularly known as Nilgiris and Subhiksha which has more number of retail outlets.

Research instruments used for research data collection was structured questionnaire and interview. Human resources department heads, human resource department personnel, warehouse managers, distribution centre managers, functional heads, managers and executives of organised retailers are the target for collecting data. The questionnaire consists of open ended questions and interview is a semi structured. A sample size of 261 respondents covered and sample sizes reflect the number of obtained (complete and accurate) responses. Respondents were asked to indicate the relative emphasis placed on each factor on a five-point Likert scale with end points of 1 (not important) and 5 (extremely important). A focus group formed with industry experts form organized retailers to formulate selection process for managerial jobs. The focus group members are asked about their perceptions, opinions, beliefs and attitudes towards a managerial job in grocery and vegetable retailers. Group members are aided with pilot study results and factors development and tested in pilot study with respondents from multiple strata.

## 3 Research Findings

Aspiring employees of organised retail sector are apparently need skills and basic educational qualifications to gain entry into the Industry, capacity to acquire training, perform to move up in the career ladder and ability to retain the growth. The study has been conducted to understand 'Skills', one of the three components of employability viz. knowledge, skill and ability Based on the survey response, for fresher who are seeking employment as front end sales staff, floor sales personal are listed into a three broader categories viz. Skill matrix, Skill set, Skill Pyramid and its prominent elements. Employers in the organised retailing looking for industry ready personal and impart formal short term training on the company, products the company sells.

### 3.1 Skill Matrix for Entry Level Jobs

The new economy requires a broader set of skills including "hard" and "soft" skills (Carrievale, 1991). Hard skills generally refer to technical skills or management skills related to the industry or organizations. Examples of hard skills include machine operation, typing, proficiency with software, basic mathematics, applications, financial procedures and sales administration. These skills are typically easy to observe, quantify and measure. They're also easy to train, because most of the time the skill sets are brand new to the learner and no unlearning is involved. Soft skills are interpersonal, communication, and learning skills, and basic skills (reading, writing, and computation). Soft skills are career prospect skills and broadly applicable for all type of job. They are needed for everyday life as much as they're needed for work. Examples of soft skills are communication (listening, dialogue, feedback, etc), cooperating as a team member, solving problems, contributing in meetings and resolving conflict. The figure 1 outlines the skill matrix comprising of hard and soft skills of entry level jobs in organised grocery and vegetable retail and numbers are zones, representing intersection of hard and soft skills.

*Zone 1:*

This is the employability zone. Candidate or person's skills fit into this zone are easily tuned to the organization's job requirement. They are 'Work Ready' type of persons and having potential to acquire employment.

*Zone 2:*

Skills of persons matching into the zone 2 are 'trainable' in nature. Organised retailers ready to invest on their training needs and prepare

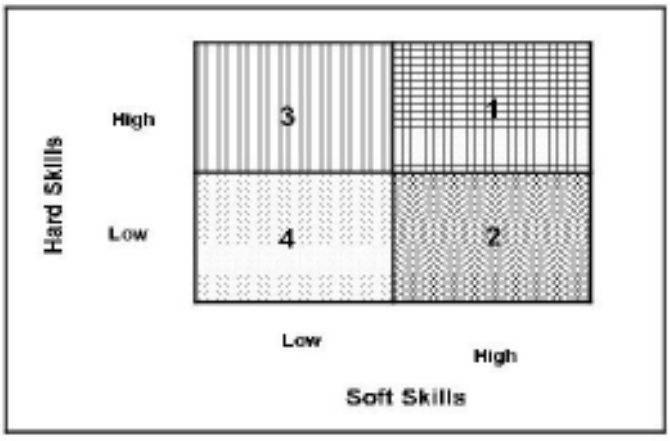


**Figure 1. Skill type matrix**

*Zone 3:*

This is a survival zone. People's skills fall in this zone; probably survive with self initiative and organizational training.

*Zone 4:*

Job seekers with both low hard and soft skills are not preferred lot for employment. Even if they employed, they have difficult career path and vulnerable to loose job.

### 3.2 Skill Set for entry level Jobs

In addition to basic skills, employers expressed a need for employees to have employability skills. Employability is an embedded vocational and personal set of skills with the basic skills. The elements in the skill set is not static; it changes with competition in retail industry, competition among jobseekers, technology growth etc. Recruiters expressed that educational institutions should teach both academic skill and employability skills which are important in acquiring job. Work ready skills are viewed as three major skills sets viz basic, vocational and personal skill sets. The figure 2 illustrates Employability Skill set; intersection of all three skills sets for entry level jobs in organised grocery and vegetable retailing.

*Basic Skills:*

Basic skills are the combination of academic and economic adaptability skills: reading, writing, mathematics and basic arithmetic skills; computer literacy, problem-solving ability; punctuality, following instructions, information identification , time management, attitude, social alignment and values fitments, ethics, and vocational maturity.

*Vocational Skills:*

The second set of skills is the vocational or job-specific skills required by the occupation and critical to career succession and development. Vocational skills include specialized skills - specific to an occupation, technical and commercial Skills, interpersonal Skills - team working.

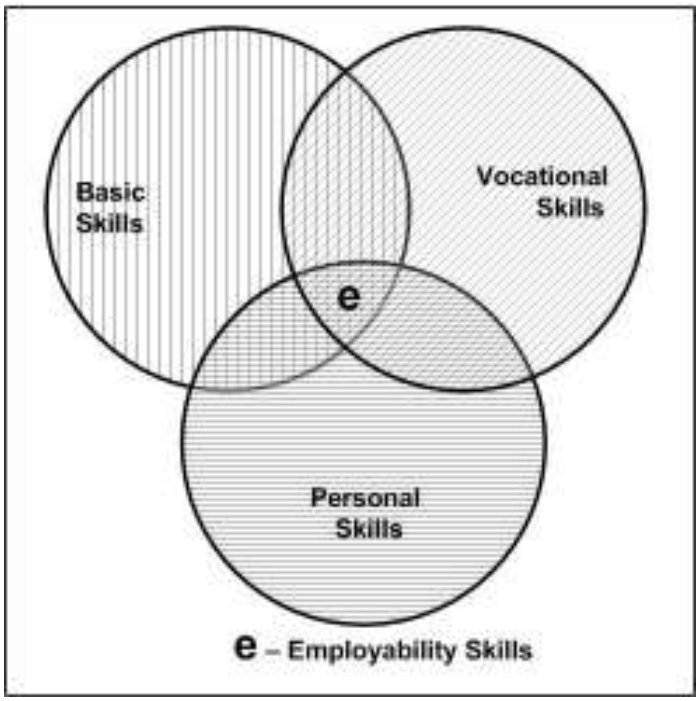


**Figure 2. Employability Skill set of Organised Retail**

*Personal Skills:*

Personal Skills are ability to achieve personal and professional goals. Personal competency skills are communication skills; both speaking and listening skills, comprehension, flexibility, adjusting to work situations, adapt to new situations and Self-management with personal characteristics like attitude, drive and initiative.

*Employability Skills:*

In the organised grocery and vegetable retail sector, employability skills, are considered as 'Work readiness' skills and crucial; they include essential basic skills, vocational and personal competencies skills. Organised retailers train their employee to impart industry, organization and product specific knowledge.

### 3.3 Skill Pyramid

Skill Standards are the bench marking tools to identifying, evaluating personnel qualification, skill and knowledge requirements for a specific job level and industry. Skill standards provide reference for education and training needs of employees during recruitment, job rotations and performance measure for promotions during employment. It is an assessment of skill match between industry expectations and availability for each job levels. This research study identifies the skill standards for entry level jobs in organised grocery and vegetable retailing. The figure 3 depictions of skill requirements in three broad levels viz Bottom, Middle and Top for entry level jobs in organised grocery and vegetable retailing.

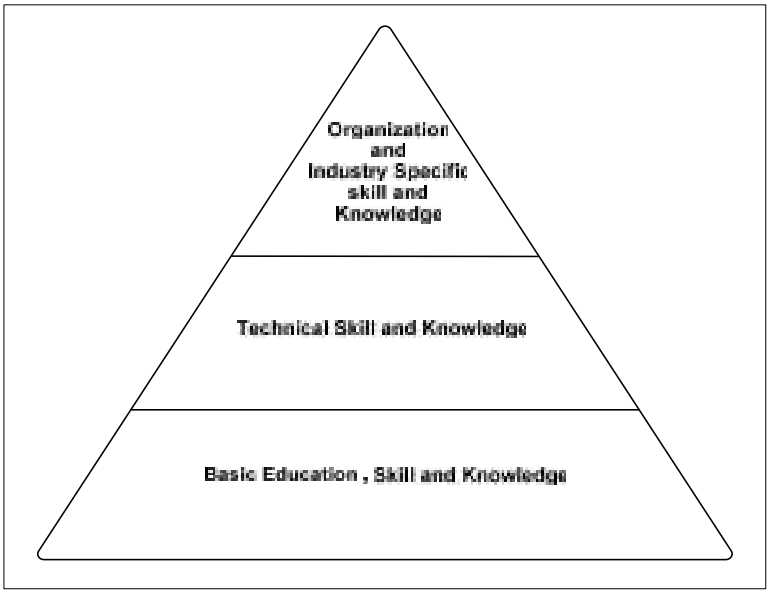


**Figure 3 Skill Pyramid of Organised Retail**

*Bottom Level:*

Bottom of the pyramid signify basic educational qualification, level of competencies – communication skill in the local language, ability to understand need of customers and of and Personality traits - Smartness, Presentable appearance, Eagerness to learn and improve, Positive attitude, friendly and helpful attitude.

**Middle Level:**

Middle level skills are universal skills that are needed in all industry sectors to apply technical knowledge and competencies to operate tools effectively, interpersonal, problem-solving, and other customer service and sales skills. Core competencies and abilities pertain to entry level job of organised vegetable and grocery retailing are monitor floor inventory, maintain aesthetic look of store, build and retain customer relations and support activities.

**Higher Level:**

Higher level skills in the pyramid are industry-specific technical skills, knowledge of product quality and variety and abilities that are unique to individual jobs which are generally imparted by corporate training program. Personal traits - honesty, loyalty and attendance are also part of the top level skills.

### 3.4 Selection for Managerial Jobs

Focus group members are provided with employability skills framework developed by pilot study and factor analysis. The derived five factors listed below are the basis of further development AHP methodology. In this study, paired comparisons of the alternatives on each attribute converted to a numerical scale of 1 to 5. Hierarchical categorisation of the skill factors are shown in Figure 4.

- Academic qualifications;
- Communication skills;
- Leadership skills;
- Teamwork skills;
- Work experience.

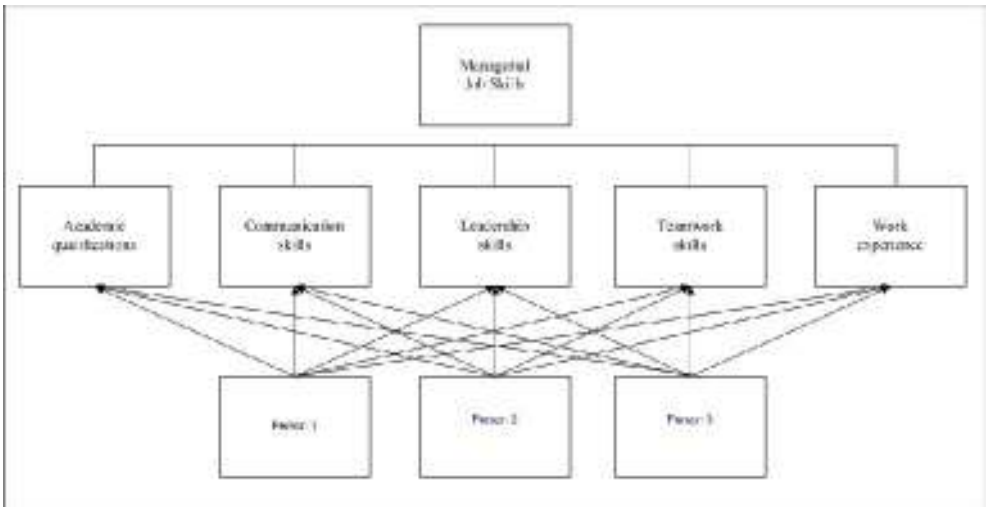

**Figure 4. Hierarchical categorisation of the skill factors**

Table 5 lists the comparison matrices of managerial job skills. Normalised pair wise comparison of Skill set matrix is depicted in Table 6. AHP priority score matrix is illustrated in table 7.

**Table 5. Comparison skill matrices**

| | Academic qualifications | Communication skills | Leadership skills | Teamwork skills | Work experience |
|---|---|---|---|---|---|
| Academic qualifications | 1 | 3 | 2 | 5 | 3 |
| Communication skills | 1/3 | 1 | 3 | 3 | 2 |
| Leadership skills | 1/2 | 1/3 | 1 | 3 | 3 |
| Teamwork skills | 1/5 | 1/3 | 1/3 | 1 | 3 |
| Work experience | 1/3 | 1/3 | 1/3 | 1/3 | 1 |

**Table 6. Normalised pair wise comparison matrix**

| | Academic qualifications | Communication skills | Leadership skills | Teamwork skills | Work experience |
|---|---|---|---|---|---|
| Academic qualifications | 0.42 | 0.60 | 0.30 | 0.41 | 0.25 |
| Communication skills | 0.14 | 0.20 | 0.45 | 0.24 | 0.17 |
| Leadership skills | 0.21 | 0.07 | 0.15 | 0.24 | 0.25 |
| Teamwork skills | 0.08 | 0.07 | 0.05 | 0.08 | 0.25 |
| Work experience | 0.14 | 0.07 | 0.05 | 0.03 | 0.08 |

Total of the elements in each row of the normalised pair wise comparison matrix listed in the table 6 divided by 5 (number of factors). The resultant values listed in table 7 are the priority matrix and the Eigen value estimation of the matrix. The Public distribution system service quality dimensions in the priority matrix of are ranked as per the priority values.

**Table 7. Priority matrix of Skills**

| **Skill** | **Priority value** |
|---|---|
| Academic qualifications | 0.38 |
| Communication skills | 0.25 |
| Leadership skills | 0.20 |
| Teamwork skills | 0.09 |
| Work experience | 0.08 |

In order to verify the pair wise comparison matrix, Saaty (1980) proposed consistency index (CI), consistency ratio (CR) and listing values of random index (RI). The CI and CR are defined as follows.

$CI = (\lambda_{max} - n) / (n - 1)$ and

$CR = CI / RI$

Where $\lambda_{max}$ = maximum principal Eigen value of the comparison matrix and $n$ = number of elements (order of the pair-wise comparison matrix). The value of $\lambda_{max}$ is obtained by first multiplying the pair-wise comparison matrix with the priority matrix. Then divide the first element of the resulting matrix by the first element of the priority matrix, the second element of the resulting matrix by the second element in the priority matrix, and so on. A single column matrix is obtained and the average of the elements of the matrix gives the value of $\lambda_{max}$. The random index (RI) value is 1.12 for matrices of order when $n$ = 5 (Saaty, 1980). Following variables are calculated

$\lambda_{max}$ = 5.38

CI = 0.096

CR = 0.085

The consistency ratio (CR) is 0.085 which is smaller than 0.10 proved that the AHP results are consistent. The priority of factors listed in the table 7, help in selecting person for the managerial jobs in retail stores.

## 4 Conclusions

Employability skills are associated with acquiring jobs in organised grocery and vegetable retailing sector. Mix of academic qualifications, important vocational skills and personal skills are selling skills for entry level jobs. Employers in retail industry are looking for people for the managerial jobs with different set of factors like academic qualifications, communication skills, leadership skills, teamwork skills and work experience. This study of employability in organised retail market help working professional in defining the knowledge and skills required by individuals who seek, obtain and sustain employment.

## 5 Reference

Acharya S.S. (2007). Agricultural Economics Research Review, Vol. 20 (Conference Issue) 2007, pp 409-424.

Andrew Rothwell & John Arnold (2007). Self-perceived employability: development and validation of a scale. *Personnel Review*, *Vol. 36, pp. 23-41.*

Carnevale, A. P. (1991). America and the new economy. *Training and Development Journal*, Vol. 44, pp. 31-50.

Chengappa et al. (2003). Evolution of Food Retail Chains: The Indian Context. *International Workshop on "Agricultural Diversification and Vertical integration in South Asia".*

Colin Lindsay et al. (2003). Unemployment duration and employability in remote rural labour Markets. *Journal of Rural Studies*, *Vol. 19,* pp. 187–200.

Hillage J & Pollard E (1998). Employability: developing a framework for policy analysis. *Department for Education and Employment (DfEE)*. London.

Jyoti Bhutani (2007). A Study on Job Opportunities in Emerging Sectors. *ASSOCHAM*.

Marilyn Clarke (2007). Where to from here? Evaluating employability during Career transition. *Journal of Management & Organization, Vol. 13,* pp. 196–211.

Saxena, K.B.C. & Sahay, B.S. (2000). Managing IT for world class manufacturing: the Indian scenario. *International Journal of Information Management, Vol. 20,* pp. 29-57.

Shaoni Shabnam and Bino Paul G.D (2008). Employment in Retail Sector: A comparison of unorganised and organised retail in India. *ATLMRI*.

Saaty, T.L (1980). *The Analytic Hierarchy Process: Planning, Priority Setting, Resource Allocation*. New York: McGraw-Hill Company.

***GRDI (2008). *Seventh annual Global Retail Development Index by AT Kearney.*

***IBEF (2008). *Retail Industry, update April-June 2008*. Available at www.ibef.org (accessed on October1, 2008).

***NSSO (2008). *Employment and Unemployment Situation in India, 2005 - 06* (Report No. 522). National Sample Survey Organisation, Government of India, January 2008.

***TSMG (2006). TSMG, Tata Review - June 2006.

***UKIBC (2008). *Retail in India*. http://www.ukibc.

# Cost-Based Decision in Public Sector

**Carmen Cretu[1], Victoria Gheonea[2], Carmen Sirbu[3]**

**Abstract**: Management decision must be based on relevant costs (costs that allow for the best measures for business management), recognized by their forecasting characteristics which records hidden or opportunity costs, social costs and outsourced costs. Correctly predicted a profit is to build costs for possible revenue. The cost is a sacrifice, resource consumption. Because decisions aimed at future activities, the management calls in this respect, detailed information on future costs, some of which are not included in accounting data collection system. The power of decision maker on costs is therefore limited.

**Keywords**: managerial accounting; public accounting; outsourced costs; opportunity cost

**JEL Classification**: M41; H83

## 1 Introduction

For management control, the cost relevance is judged by the following manner: a cost is relevant if it is applicable to a certain decision, in that it is related to any option of the manager. Relevant costs are those costs that support the management in decision-making (the right cost for the right decision). And so the question arises: what costs are relevant to decision making? And the answer is very simple: any cost that can be avoided it is relevant for decision-making considerations. An avoidable cost can be defined as a cost that can be eliminated (in whole or in part) by choosing one variant or another in the decision process. Any cost, which is present in one of the variants decision and is absent in whole or in part, in another alternative, is known as an avoidable cost. All costs are avoidable (and therefore relevant) except for costs already occurred and future costs, which differs from past costs.

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Costs already occurred can not be avoided, whatever the action chosen by the manager. Since these costs are no relevant to future events, they must be removed from the decision making process. Basically, the decision based on costs involves the following steps:

1. Collecting all costs associated with each alternative decision;
2. Elimination of costs already occurred;
3. Elimination of costs (information) which do not differ between alternatives;
4. Making a decision based on information (costs) remaining.

Remaining information cost include relevant costs or costs that "make the difference" between the different possible options. Therefore, these costs are called *differential costs*.

Beyond the qualitative characteristics of information cost and the need for a balance between them, it should be noted that the use of certain information or to others in decision making will depend largely on the nature of the environment in which the organization works.

Into need to differentiate costs, depending on the decision-making requirements (a decision involves choosing between two or more types of action) we will consider several categories of decisions based on costs encountered in the public sector.

## 2 The "Make or Buy" Decision. Outsourced Costs

Strategic decision "to make or to buy" some products or services is responsible to evaluate and establish realistic, exactly, that alternative is more beneficial for the final economic results of the organization.

The criteria for review are not only economic and must take into account certain technical reasons, organizational and even social. These criteria representing the main arguments supporting the "make or buy" decision are presented in the table below:

**Table 1. Arguments for the "make or buy" decision**

| TO MAKE | TO BUY |
|---|---|
| ✓ Reduced production costs | ✓ Reduced purchasing costs |
| ✓ Unsuitable suppliers | ✓ Existence of multiple suppliers |
| ✓ Not ensure adequate supply (quantity and time) | ✓ Lack of technical and managerial skills to produce |
| ✓ Use surplus staff and increases profit | ✓ There is no adequate capacity |
| | ✓ It provides flexibility and |

| TO MAKE | TO BUY |
|---|---|
| ✓ Performing the desired quality | alternative supply sources |
| ✓ Eliminating fluctuations in suppliers deliveries | ✓ Fast and expensive technological changes |
| ✓ Protecting employees and maintaining specialists | ✓ Ensure reciprocity in products or services |
| ✓ Maintaining or increasing the number of enterprises | ✓ Eliminates management activities, just negotiation |

The mentioned arguments represent a checklist, after which periodically check that the adopted policy is maintained, justified by the benefits obtained: new capacities, organizational development, changing cost structures, modification of the quantity of products or services requested by customers can be grounds for reconsideration the initial decision.

Below is an example of "make or buy" decision in the City Hospital Targu Bujor in Galati, namely *the decision to make or to buy medical laboratory analysis*.

**I. Economic arguments**

| TO MAKE | TO BUY |
|---|---|
| **Employees required:**<br>1 clinical laboratory doctor, 1 biologist, 2 medical nurses, 1 medical registrar, 1 attendant nurse.<br>**The costs structure:**<br>- Direct costs: staff expenditure (191.438 lei) and expenditure with medicines and sanitary materials, substances and reagents (78.504 lei);<br>- Indirect costs and general administration (19.275 lei);<br>- Annual accreditation costs (9.650 lei);<br>- Initial specific costs (mandatory): implementation and accreditation SR EN ISO 9001 (3.750 lei), implementation SR EN ISO 15189 | ✓ The average tariff per analysis: 7 lei<br>✓ Many suppliers, ability to negotiate tariff.<br>✓ Elimination of costs required for specific accreditation.<br>✓ Reduce administration general expenses.<br>✓ Fast and expensive technological changes: latest laboratory equipment and not older than 10 years (10 years old equipment does not evaluate to contracting with the County Health Social Insurance House, and based on seniority, 5-10 years old - contracting score decreases). |

| TO MAKE | TO BUY |
|---|---|
| (39.740 lei), RENAR accreditation (5.300 lei).<br>**Quantitative indicators:**<br>- Number of analysis for outpatients (17.827);<br>- Number of analysis for hospitalized.patients (23.744);<br>**Average cost per analysis:**<br>- 8.36 lei in first year;<br>- 7.19 lei after accreditation. | |
| **Favorable option: TO BUY** | |

**II. Organizational arguments**

| TO MAKE | TO BUY |
|---|---|
| ✓ The existence of accredited laboratory able to meet one of the criteria required for hospital classification in category IV, which is an advantage to hospital financing.<br>✓ Ability to make additional own income from medical request services.<br>✓ The organizational structure is not modified by order of Minister. | ✓ Elimination of organizational and managerial activities.<br>✓ Elimination of logistics necessary for specific accreditation.<br>✓ Eliminating the need to participate in proficiency testing schemes for medical analysis laboratories. |
| **Favorable option: TO MAKE** | |

**III. Social arguments**

| TO MAKE | TO BUY |
|---|---|
| ✓ It is the only medical analysis laboratory at a range of 60 km.<br>✓ Very high addressability of patients. | There are no social arguments. |

| | |
|---|---|
| ✓ Laboratory has integrated medical system that allows patients to obtain information, schedules and on-line results, without the need for more visits.<br>✓ The Unique National Fund of Health Social Insurance, ie employee and employer contributions, remain in the public system to be used by public hospitals. Most laboratories accredited and that have contract with the County Health Social Insurance House are private. | |
| **Favorable option: TO MAKE** | |

The approach of decision must be made clearly by completion of three categories of decisional arguments: economic, organizational and social. In the economic arguments are used to analyze the relevant costs (differential). It eliminates from decision-making, costs that have occurred anyway, such as general, which have been allocated. In contrast, variable costs (direct materials, direct labor) are relevant because they would not occur if the hospital would not provide laboratory analysis. The same would happen to the cost of laboratory accreditation, which could be avoided. Consequently, since the total of avoidable costs (relevant or differential) exceeds the price proposed by the supplier, the decision is to buy and offer may be accepted.

Instead, in terms of organizational and social, it is obvious that **the final decision will be to make**.

The consequence of manager decision to buy rather than produce is outsourced costs. Outsourcing of certain costs is an organizational tendency frequently encountered in public institutions. Remodeling organizational subsystem based on the value chain, is also based on giving up through outsourcing at certain costs.

Outsourcing is therefore an organizational trend, complementary to the remodeling organizational subsystem based on the value chain: creation of an organizational subsystem based on value chain necessarily involves giving up those activities which do not fall in the value chain and can be performed efficiently by other companies.

Each organization comprises a set of activities of different natures and sizes, whose interactions result its performance (Nicolescu & Verboncu, 2008, pp. 282-283).

Economic and managerial practice in recent years shows the public institutions tend to select those activities that generate superior economic results. In other words, there is a tendency for remodeling of organizational subsystem according to value chain.

Introduced by the famous American expert Michael Porter (Porter, 1990), value chain designate a set of activities-value, strategically relevant for the organization, by whose combined strengths, the organization creates competitive advantage compared to its competitors.

Remodeling organizational subsystem, according to the value chain is a highly complex process, involving a thorough review, both from managers and organizational specialists consulted.

In terms of Porter's model, value chain analysis goes through the following main stages:

1. Decomposition of the process in specific value-generating activities: originality of decomposition model of value-generating activities is to combine the two ways of grouping them: primary activities, which contribute directly to the product and its utility to the buyer, and support activities, which contributes indirectly, but are found dissipated in the first category or contribute to their coordination (Lock, 2001, pp.142-143).

2. Allocation the costs or assets: to the activities previously identified are associated costs of product realization, through an adequate system to track costs, different from that commonly used in accounting. Expression of activity costs takes the form of percentage of product price, taking into account the profit rate. For the identified activities can be associated assets (capital elements, possibly equipments), evaluating their share compared to the total used for that product.

3. Identification of critical activities, namely those based on competitive advantages. The stage involves comparison with major competitors to reveal those activities that are strengths.

4. Identifying 'valuable' collaborators, carried downstream and upstream, respectively an assessment of their contribution to achieving value, through estimation of the collaborators' costs based on the purchase price, respectively selling price.

5. Identification of value-generating links between different categories of activities, including those with collaborators downstream or upstream. Referral to the synergies that exist or may arise, involves the creation of a reference system, which can have as basic elements the previous situation of the organization, the situation of competitors or those best placed, ie an average of interest sector.

6. Optimization of the links between different activities that require their classification after alleged impact on the generation of competitive advantages.

Returning to the example of hospital laboratory, we analyze the value chain by Porter:

– *Specific value-generating activities:* primary activities (labor and direct materials) and support activities (RENAR accreditation of the laboratory and maintaining the standard SR EN ISO 9001);

– *Attributable costs between value-activities*: primary activities - 83% and support activities - 27%. By eliminating the support activities, tariff per analysis would be 6.96 lei, therefore under offer of any private supplier;

– *Competitive advantages:* strategic location - at least 60 km of the following medical laboratory; RENAR accreditation - the only public accredited laboratory in Galati;

– *'Valuable' collaborators:* outside hospital specialists involved in laboratory proficiency testing schemes and internal and external quality control laboratory (quality control analysis between local laboratories and external checks with international laboratories - Finland);

– *Value-generating links:* the existence of an accredited laboratory allows the hospital getting IV classification based on competence. Since July 2011, funding of public hospitals depends on the category of classification granted by the Ministry of Health assessment. Thus, for a lower category, hospital in our example would get 8% less financing: category IV has 15% less financing than category I; category V 23% less than category I).

It is noted that in the value chain analysis, although financially, the decision would be **to buy** surplus value is actually brought by the decision **to make**.

Outsourcing refers therefore to renunciation by an organization to carry out certain processes of work, less important and which does not fall on vector of value of the organization, activities that can be performed by others in terms of price / quality same or better, decreasing the complexity of management and operational activities to focus on key-activities, crucial to its performance.

## 3 Decision In Conditions of Limited Resources. Opportunity Cost

Economic theory states that a decision is based on opportunity cost. This is defined as the value of next best alternative, or, in other words, net earnings lost by not accepting the best alternative available (Stefanović, 2010, p. 25).

The concept of relevant costs, choosing between alternatives requires consideration of expected future costs that differ in alternative actions (Budugan & Georgescu, 2006, p.13). Relevant in decision-making process, the opportunity cost means the sacrificed benefit, when choosing an alternative in favor of another, namely *missed choice cost or chance cost*. Making a decision involves choosing a solution over another.

*Opportunity cost* is therefore the sacrifice suffered by an economic subject when choosing between several possible solutions, cost of election or cost of giving up. There is here, in conceptual terms, an incompatibility because in accounting are recorded only what is, not what could be. It is not an explicit cost recognized in the accounting, but an implicit or economic cost, behind reality, but that counts in making a decision: when a businessman chooses an activity, its economic cost can be considered as net income would have been obtained if he had not made that decision, that is the benefit lost, appreciate economist Ronald H. Coase, Nobel prize laureate for economics in 1991. (Bouquin, 1997, p.76)

Opportunity cost is analyzed rather as a waste of probable resources than as a cost in fact. In economic terms it can be interpreted as a "loss of earnings" resulting from the fact that decider has not made the best decision, or as a "reliable information price", resulting from the fact that the decision-maker, if he had known certain consequences of its decision, would have taken the best decision.

Managers trying ever more to integrate opportunity costs in economic analysis of management problems; (Budugan, 1998, p.116) it comes especially to social opportunity costs, such as the appearance of a conflict or degradation of social environment, as sources of losses.

Opportunity cost is used only for limited resources, because in these conditions, the sacrifice may arise in favor of other more efficient alternatives. In case of unlimited resources, the idea of slaughtering costs for other plans of action can not be considered and the opportunity cost is zero.

The public sector has always faced the problem of limited resources. Whether hospitals, local governments or public universities, the need to provide more quality services to taxpayers with less is becoming increasingly burdensome. The act of choice, especially in the public sector appears as a necessity of limiting resources. Thus, production is subordinate decision process on resource allocation - allocation and best use of resources to better meet several needs. The decision

process consists of a sequence of stages, through which decisions are taken according to the criteria considered.

Resources are limited, rare, especially in the public sector, which makes their use to enter into competition: when we satisfy a need in a greater extent than another, then you have to accept a less satisfy as the other needs. A resource-needs ratio, always higher than one, is a perfectly valid status in the public domain: for example, government expenditures on education enter into compete with the financial resources allocated to health or social protection, or in a public institution, prevails staff expenditure against investment or stocks. And all this because the development of the first of them can be done solely by reduce the last of them, given the amount of resources.

Limitation of resources obliges the public manager, to be effective by restoring priorities. In most cases most of the results is due to a small but very important set of resources. Appealing to the Pareto principle under which, theoretically, we need only 20% of resources to achieve the desired results, at least in the public sector, the remaining 80% is lost due to inefficiency. It is therefore very important that the public manager, under the limitation of resources, to distinguish between **efficiency** ("doing the right things") and **effectiveness** ("doing things right"). He must identify those decision strategies that prove effective use of funds under limited resources. In this sense, cost-benefit analysis provides a set of techniques that are designed to ensure that resources are allocated efficiently.

No matter how restricted is an action of a public institution, it exerts an influence on resource allocation, because it involves itself inevitably consumption of resources and thus, as long as resources are limited, an opportunity cost. **The opportunity** is therefore the best alternative to be waived when using limited resources to produce or procure an economic good.

The decision and the opportunity cost derive from rarity of resources, which forces us to discernment and rational economic behavior. Resources are limited, the choice of certain goods and services means, thus, giving up to others, because the use of resources in a certain way eliminates the possibility of their use in any other way. Every choice has a cost, so managers must choose reasonable, considering the advantages and disadvantages, benefits and costs.

A choice is rational if from it is obtained greater benefits than costs involved. It is economic rationality, the one which requires that limited means to be used so that maximum satisfaction is achieved. Rationality principle can be formulated either as maximum, where obtained the best results possible with limited resources, or as a minimum, where the desired results are obtained with the lowest consumption of resources.

**A limited resource** can be defined as being a resource (material, time, equipment, money) that can be obtained in insufficient quantities in relation to need, and for

which the existing opportunities exceed the total number of resources available. Due to the large number of opportunities, the one who will take the decision will have to choose the optimal alternative, which involves predicting the benefits or contributions coming from possible alternatives.

In general, the decision-maker has the following options:

1. Incremental cost of using limited resources exceeds the money paid to acquire resources, or:
2. Limited resources can be used for other purposes, with other profits.

The optimal resource selection will be based on opportunity cost, which is actually the contribution that can be achieved by using limited resources for other purposes.

Because the opportunity cost is considered to be relevant, we ask if in cases limited resources, the two costs interact. In fact, the relevant cost consists of two elements: the contribution lost by using the best alternative, but also the variable cost of limited resources.

We look for an example of a public hospital decision under limited resources: *day hospitalization - an alternative to continuous hospitalization*. An economic analysis of these two types of hospital services will require a choice. Resources are limited; we can not produce all medical services, even if some may have great therapeutic effects. Therefore, choices must be made between alternatives, based on criteria. A comparative analysis of costs and consequences of various alternative services will help the hospital manager to take the best decision in the context of resource limitation.

The main difference between the two types of hospitalization is the fact that day hospitalization required internment up to 12 hours.

*Continuous hospitalization* is a form of internment, granting preventive, curative, recovery and palliative healthcare throughout duration necessary to complete resolution of the case.

*Day hospitalization* is an alternative to continuous hospitalization for patients who require medical attention more than 12 hours. This is done in surgical structures in which anesthesia and surgery is practiced under conditions that allow the patient to return home the same day. This involves the surgical maneuvers during the maximum 12 hours, after the patient is discharged. It addresses to patients requiring surgery of short duration (60-90 min) in various specialties, with lower bleeding and respiratory risk and predictable evolution, simple, painless or less painful, without unexpected sequelae or disability. Patients may have aged from 6 months up to elderly, with a pathology that is suitable for this type of intervention, biological and hemodynamic balanced, which fall within certain social criteria (to understand and accept the intervention and pre and post-operative

recommendations, who benefit from domestic environmental conditions acceptable, to have access to a telephone or mobile, with an attendant in the period immediately postoperative and in the next 1-3 days, if applicable).

Economic evaluation in this case aims to find the lowest cost alternative, the results being the same: patients healed. **The advantages** of day hospitalization are numerous, both as economic - *reducing hospital costs* and the social aspect - *the patient's confidence in the medical system*:

- Decreasing the period of hospitalization reduces direct medical costs;
- Elimination of the recovery period reduces indirect costs;
- Hotel costs (accommodation, utilities and food) are almost eliminated and general indirect costs of administration are minimized;
- Uses techniques, equipment and instruments last generation, the latest achievements of modern medicine;
- The patient has a very low period of intervention and recovery;
- Reduces patient suffering and postoperative sequelae;
- Reduces patient stress induced by hospitalization, the rupture of the social and environmental;
- Conducting to recovery among family and family support.

An example of a diagnosis that lends itself better to the day hospitalization is "Second trimester spontaneous abortion". Costs of treating patients with this diagnosis are:

Continuous hospitalization:

- average duration of hospitalization: 3 days;
- tariff per day of hospitalization in obstetrics department: 203.57 lei;
- average cost per episode of hospitalization: 610.71 lei;
- net revenue (CAS settlement): 735.03 lei;
- net benefit: 124.32 lei.

Day hospitalization:

- maxim duration of hospitalization: 12 ore;
- tariff per medical service: 194,00 lei;
- net revenue (CAS settlement): 194,00 lei;
- net benefit: 0 lei.

Most public entities are not mainly intended to obtain profit - as patrimonial result, but rather achievement the objectives with given resources. Therefore, the public manager will choose day hospitalization, while the private manager will choose the most likely continuous hospitalization - which brings financial benefits.

The next best alternative is, in this case, continuous hospitalization and opportunity cost, defined as net revenue lost by not accepting the best alternative available is the amount of benefit lost, sacrificed (124.32 lei). Manager's decision to fit into limited public funds, forced him to choose a solution (day hospitalization) at the expense of another (continuous hospitalization). Should not be to understand that the best is not necessarily the lowest cost, but the one that occurs at the appropriate time and place and providing the precision required by the user.

The example presented is within the national strategy of rationalization of hospitals by reducing the number of acute beds. This limitation requires managers to create new models of healthcare, that switching to less expensive services: the alternative of day hospitalization.

## 4 Conclusions

Unfortunately, in the public sector in Romania, strategic cost management is not based on value chain analysis, strategic positioning analysis or sources of cost, able to assist in selecting activities to be taken further and respectively the activities in which to quit. Only interested in immediate and simplistic cost reductions, the Romanian government seems to prefer low-sophisticated approaches: reducing staff, cutting salaries and pensions etc.

Thus, in too many cases, the government has no knowledge or simply ignores equally effective alternative, but being more mature in terms of management, still preserves the chances of success of public sector organizations. It takes cost management based on a strategic plan for a minimum of three years, to pursue the increasing public sector and not “resisting” or “survival” until restoring the situation (Briciu, 2009).

Cost management includes those processes needed to ensure progress and completion of a project of the public entity within the approved budget: resource planning, cost estimating, budgeting, and finally, cost control. Completion of these steps will enable the manager to take the appropriate decisions at some point, which if delayed them, will incur much higher costs. Management ability to influence costs is crucial in public entity activity.

A decision may not be taken unless we consider the costs involved, because the main objective of the entity is to obtain performance, an objective that can not be made only in accordance with decisions correlated with costs. Before taking any significant decision using data based on costs, managers must identify which costs are truly relevant to these decisions.

But at present we live in a world of limited resources which requires a rigorous analysis of social context, economic, cultural and historical of the entity that

implements a particular method of costing. Making use of inexhaustible resources, ie creativity and intelligence, we must decide objectively the opportunity of a particular management accounting system (Talpeş, 2010).

## 5. References

Bouquin, H., (1997). *Comptabilité de gestion/Management Accounting.* Second Edition. Paris: Editions Dalloz-Sirey.

Briciu, S., (2009). Criza şi managementul costurilor/Crisis and Cost Management. Lecture delivered at event *"Economists Day" November 26, 2009, General Association of Economists from Romania Branch Alba*. Retrieved on 26.06.2011 from http://www.ageralba.ro/files/ziua_ec_2009_prelegere_criza.pdf.

Budugan, D. (1998). *Contabilitate de gestiune /Management Accounting.* Focsani: Pro Juventute Publishing House.

Budugan, D., Georgescu, I. (2006). Decizii pe bază de costuri în condiţii de incertitudine/Cost-Based Decision under Uncertainty. Scientific Annals of the "Alexandru Ioan Cuza" University of Iasi - Economic Sciences Series*, Tome LII/LIII, 2005/2006*, pp. 9-13. Retrieved on 17.06.2011 from http://anale.feaa.uaic.ro/anale/resurse/01_Budugan_D,_Georgescu_I_-_Decizii_pe_baza_de_costuri_in_conditii_de_incertitudine.pdf.

Lock, D. coord. (2001). *Manualul Gower de Management/The Gower Handbook of Management.* Bucharest: Codecs Publishing House.

Nicolescu, O., Verboncu, I. (2008). *Metodologii manageriale/Managerial Methodologies.* Bucharest: University Publishing House.

Porter, M. (1990). *Competitive Advantage of Nations*. London: the MacMillan Press Ltd.

Preker, A.S., Harding, A., Travis, P. (2000). Make or Buy Decisions in the Production of Healthcare Goods and Services: New Insights from Institutional Economics Organizational Theory. *Bulletin of the World Health Organization*, *No. 78(6)/2000*, pp. 779-790. Retrieved on 24.09.2011 from http://www.who.int/bulletin/archives/78(6)779.pdf.

Stefanović, R.J. (2010). Gestiunea costului ca nucleu al informaţiei-cheie a managementului companiei/Cost Accounting as the Key Information Core of the Company Management. Scientific Annals of the "Constantin Brancusi" University of Targu Jiu - Economic Sciences Series*, No. 4/2010*, pp. 23-37. Retrieved on 12.09.2011 from http://www.utgjiu.ro/revista/ec/pdf/2010-04.II/3_RADMILA_ JABLAN_STEFANOVIC.pdf, data: 12.09.2011.

Talpeş, C.G. (2010). Contabilitatea de gestiune: la limita dintre tradiţional şi modern/Management Accounting: the Limit between Traditional and Modern. *Scientific Session of Master Students "Excellence in Business, Present and Perspectives", Section V "New Perspectives of Accounting and Financial Audit" May 8, 2010, West University of Timisoara*. Retrieved on 17.06.2011 from http://mastermrufeaa.ucoz.com/s5/Talpes_Cristina.pdf. com/content.php?contentid=29&sectionid=6 (Accessed on March 19, 2009).

# Tax Efficiency vs. Tax Equity – Points of View regarding Tax Optimum

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**Abstract**: **Objectives.** Starting from the idea that tax equity requirements, administration costs and the tendency towards tax evasion determine the design of tax systems, it is important to identify a satisfactory efficiency/equity deal in order to build a tax system as close to optimum requirements as possible. **Prior Work** Previous studies proved that an optimum tax system is that through which it will be collected a level of tax revenues which will satisfy budgetary demands, while losing only a minimum 'amount' of welfare. In what degree the Romanian tax system meets these requirements? **Approach** We envisage analyzing the possibilities of improving Romanian tax system as to come nearest to optimum requirements. **Results** We can conclude fiscal system can uphold important improvements in what assuring tax equity is concerned, resulting in raising the degree of free conformation in the field of tax payment and, implicitly, the degree of tax efficiency. **Implications** Knowing to what extent it can be acted upon in the direction of finding that satisfactory efficiency/equity deal may allow oneself to identify the blueprint of a tax system in which the loss of welfare is kept down to minimum. **Value** For the Romanian institutions empowered to impose taxes, the knowledge of the possibilities of making the tax system more efficient can be important while aiming at reducing the level of evasion phenomenon.

**Keywords:** horizontal and vertical equity; optimal commodity taxation; optimal income taxation; excess burden; welfare economics; tax evasion

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## 1 Introduction

A problem that is today in the attention of many economists and that should be carefully analyzed by authorities, concerns the design of an optimal tax system or, rather, the improvement of the tax system, to bring it closer to the requirements of optimal taxation.

*Optimal tax theory is the study of how best to design a tax to minimize distortion and inefficiency subject to raising set revenues through distorsionary taxation.* (Ljungqvist & Sargent, 2000)

To meet such requirements, modern tax systems should be designed and must function based on commonly accepted requirements. The most important requirements in this respect are the fairness of the tax system and its efficiency.

Efficiency, which is traditionally the purview of economics, and does not involve ethical and normative judgment, considers only how resources are allocated, while equity considers the distribution of resources and required to refer to social norms and value judgment.

As regards the two fundamental requirements of an optimal tax system, there should be noted that, most of the times, meeting the terms of such requirement involves the acceptance of a particular compromise while meeting the conditions of the second one.

According to the opinions of theoretician economists of Romania (Văcărel, 2003), ensuring tax fairness presupposes the fulfillment of four cumulative conditions:

- To determine a minimum tax, applicable to direct taxes on individuals' income;
- General application of taxes and duties by eliminating tax incentives granted to certain categories of taxpayers;
- To determine the tax burden according to the contributive power (vertical equity);
- To determine the same tax burden at the same level of contributive power (horizontal equity).

In terms of tax return or efficiency, theoretician economists of Romania consider that taxes should be collected with minimal expenditure aiming at obtaining a higher amount of revenue to the state budget (Hoanţă, 2000). Thus, ensuring the highest possible tax efficiency involves the fulfillment of the following three cumulative conditions:

- To ensure the universality of taxation, namely to levy taxes from all individuals and legal entities and the entire taxable domain;

- To minimize the cost of establishing the taxable domain, calculation and collection of taxes;

- To minimize the opportunities for tax avoidance (legal and illegal means) of part of the taxable domain.

These three conditions regarding the taxation's efficiency are supplemented by the need of ensuring a fair tax treatment, which we consider very important for increasing the willingness to pay taxes and, thus, to ensure the highest efficiency of taxation. In these circumstances, we can say that tax efficiency does not always determine the reduction of tax return but, on the contrary, it may increase its capacity, equity and efficiency becoming, thus, interdependent conditions in creating an optimal tax system.

In the literature, in close contact with the two requirements mentioned above, especially with the tax equity requirement, the tax neutrality requirement is also approached. In accordance with this, taxes should not affect taxpayers' behavior and resource allocation. However, although *a neutral tax avoids distortion and inefficiency completely* (Rothbard, 1970), it remains a theoretical tax as long as, most of the times, tax tools are used by interventionist governments to correct the inefficiency of certain economic operators and, in general, to reach economic, social and political goals, etc.

## 2 Optimal Indirect Taxation

In terms of optimal indirect taxation, in the early twentieth century, the American economist Frank Ramsey outlined a theory of optimal taxation of products and services, advocating for their differential taxation. The question that Ramsey tried to answer concerns the tools a government uses to tax various goods and services so that, given budgetary constraints, the loss of welfare caused by the tax system to be minimal and thus to meet the conditions for taxation efficiency.

The conclusion reached is that, to minimize total excess burden, tax rates should be set so that the tax-induced percentage reduction in the quantity demanded of each commodity is the same (Ramsey, 1927).

In other words, efficient requires that relatively high rates of taxation be levied on relatively inelastic goods (Rosen & Gayen, 2010).

The question is whether such a mode of taxation of goods and services considered effective, is, at the same time, fair.

If in direct taxation, equity can be ensured, as we shall see below, either using proportional taxation, or the progressive one, in terms of indirect taxation, it is recognized as being (at least in the way which is applied today in modern tax

systems) deeply unfair, and that is because these taxes, through their application, weigh heavier on the shoulders of people with lower income. In other words, the tax burden, for such taxes, is decreasing in relation to the income meant for consumption.

To explain this, we consider two persons: P1 and P2, who have the following income available for consumption: V1=1000 u.m. and V2=10000 u.m. Both persons buy the same product for which they pay a price of 500 u.m., taxed with 10%. The indirect tax owed by each person is approximately 50 u.m., but the tax pressure borne by P1 [(50/1000)*100=5%] will be 4.5 p.p. higher than the one borne by P2 [(50/10000)*100] = 0.5%.

Returning to the efficiency requirement set out by Ramsey, the question is whether consumption can be taxed differently depending on certain characteristics of goods, in this case, the elasticity of their demand.

Excise (special consumption taxes) is an example in this respect, as it is generally applied to those categories of goods that have inelastic demand for consumption, hence the high efficiency of this type of tax.

Can this criterion be applied for general consumption tax?

If, through the application of differential taxation, indirect taxation becomes effective, does it become, at the same time, more equitable?

In general, goods with inelastic demand, are either those for basic necessities (basic food) or those that have no substitutes in consumption. Should they be taxed at higher rates?

For example, if a person with low income allocates most of the revenues to buy basic food (bread, milk, etc.), while another person with high income allocates most of their income to the purchase goods such as: perfumes, fur coats, luxury car fuel and the like, the consumption of the two categories of goods should be taxed at the same rate, as high as possible to ensure greater efficiency? The answer is obviously no. Welfare economics focuses on the usefulness the assets have in use. Therefore, even though the two categories of goods have inelastic demand for consumption, the taxation of necessities should be made in order to ensure a fair taxation based on lower tax rates.

Resuming the example above, if P1 buys only basic goods, in amount of 900 u.m., levied with 10%, this person will bear a tax pressure of 9% while P2 buys goods in amount of 9000 u.m., levied at the same rate, bearing the same tax pressure of 9%. If the goods bought by P2 were differently taxed, depending on their type of category, namely goods in amount of 900 u.m., taxed with 10% and goods in amount of 5000 u.m., taxed with 20%, the tax pressure borne by P2 would be 12.9%, 2.9 p.p. higher than the one borne by P1 and it would be broadly correlated with the contributive power of taxpayers.

Therefore, the application of the value added tax in Romania is highly unfair given that, with few exceptions which usually do not concern basic goods, the taxation rate is the same for the rest of categories of goods and services subject to taxation.

## 3 Optimal Direct Taxation

As regards direct taxation, one of the most important such taxes is the income tax, tax with a substantial contribution to the formation of public financial resources and with important implications for decision of individual taxpayers to use their available time to work or to spend it as free time (leisure).

The way in which income is taxed is one of the most controversial issues in public finance.

One of the models which attempted to analyze the optimal taxation of income is the model devised by Fracis Ysidro Edgeworth (Rosen & Gayen, 2010). The model is based on the following assumptions:

- Individuals have utility functions based on their income, such functions increase with the income, but based on decreasing rates;
- Considering budgetary constraints, the optimal tax system is the one which manages to maximize total social welfare W, as sum of individual utilities (U1, U2…., Un)
- W = U1+U2+….Un, where n is the number of the persons in the society;
- The total amount of the available income is fixed.

Edgeworth believes that to maximize social welfare, individual utilities must become equal by taxation, but the conditions under which the utility function of people with higher income, has higher values, then such income should be taxed more, namely with higher tax rates. To ensure tax fairness, these rates would apply only to the corresponding utility of income which exceeds the equalized utility for all individuals.

In other words, the model hereby upholds the progressive taxation of income, because, through taxation, the welfare loss will be higher for the rich and lower for the poor, thus their utility functions would equalize.

The main criticism of the model is that the amount of available income in society is fixed, or in circumstances, where, for equalizing the utilities, the marginal tax rate for the highest income would reach 100%, individuals will refrain from activities generating that part of income to be seized, therefore the total amount of available income will be reduced.

Given that the optimal taxation system distorts labor decisions and leads to welfare loss, marginal taxation rate should be lower than 100%. Thus, the theory states that an optimal tax policy should maintain tax pressure within the admissible area of the Laffer curb.

In 1987, Nicholas Stern studied a similar taxation system. He suggested for the income collected from a person to be determined as follows:

*Collected tax income* = $-\alpha + t$ * *Individual income*, where $t$ is the taxation rate, and $\alpha$ may be the minimum non-taxable income.

According to this model, when the individual model is 0, individuals should receive subsidies from the government equal to $\alpha$. The subsidy to be received is the difference $\alpha$ - $t$ * *Individual income*. Thus, the individuals are tempted to wait for the governmental subsidies and thus labor is not encouraged.

J. Gruber and E. Saez (2002) undertook much more interesting analyses and suggested a taxation system based on the use of progressive rates. The advantage of such a model is that the tax paid in absolute amount, increases along with the income and individuals, having lower tax rates, could manifest an increased demand for employment and to generate taxable income, perhaps with positive consequences as regards tax evasion.

An alternative to income tax, thought to remove the distortions generated by progressive taxation, is taxation on ability, the ability of individuals to generate income. This tax alternative takes into account that progressive taxation may cause people with high capacity of earning large revenue to refrain from certain activities. Moreover, it is also the main criticism by supporters of proportional rate, progressive taxation.

In terms of revenue the state needs, such a solution could be interesting as far as not to create opportunities for tax evasion, but tax authorities find it difficult to identify such abilities and, thus, this variation is still at the stage of hypothesis. Moreover, by applying such a tax system would somehow arrive at some kind of tax "per capita" and certainly, for certain categories of people, it would lead to income confiscation.

The lump-sum tax is another topic approached in related literature. As N.G. Mankiw, M. Weinzierl and D. Yagan (2009) mentioned, in the absence of market imperfections, the optimal tax system is the one that does not make changes of the taxpayer. Given that the tax distorts economic decisions, a loss of wealth is created and therefore a reduction in existing social welfare before tax, the lump-sum tax could be a solution.

Lump-sum taxes can be built with or without taking into account the size of income received. In the first case, they are deeply unfair and create an increase in the

relative tax burden for people with low income. In the second case, given that they still can be called so, lump-sum taxes do not meet the conditions of non-distortion and thus cannot be considered optimal.

Returning to the lump-sum tax in its pure form, established without taking into account the size of income or other criteria, as mentioned above, it fails to comply with tax fairness requirements, namely the establishment of the tax burden on the power of contribution, individuals or families with low income finish bearing the much higher relative value than high-income individuals or families.

Because of the distortions generated in terms of tax fairness, lump-sum taxes are little used by modern tax systems[1].

The current Romanian tax system uses various forms of lump-sum taxes.

An alternative is the lump-sum tax, in its pure form, found in the case of certain income obtained by various categories of taxpayers from independent activities. The tax, which does not take into account the size of yield, as determined administratively by other criteria such as type of activity, venue, taxpayer age, etc. creates under legal ways, wide possibilities of tax evasion with consequences to ensure equal and fair treatment at the level of taxpayers who receive income from independent activities, but also to other taxpayers subject to income tax.

A second variant of the lump-sum tax, common for all income from self-employment, is where the taxable income is determined by taking into account the expenses set by the fiscal authorities in flat-rate system. In these circumstances, taxpayers who, in fact, record lower expenses than those set out in the lump-sum system will avoid the taxation of a statutory part of the taxable material. But those whose costs exceed the costs set in the lump-sum system will have to bear a higher tax. In reality, this type of tax is optional; the consequences over the state budget may be insignificant.

The third option of lump-sum tax was introduced in Romania in May 2009. It was applied to personal income (profit tax and small enterprise tax), being rather a minimum tax, namely taxpayers pay a profit tax, calculated on the basis of proportionate rate of 16% but not less than the minimum tax revenue set in the previous fiscal year.

Having been established according to the revenue obtained in the previous fiscal year, the tax did not account for the contributive power of the taxpayers, and the moment of its implementation was poorly decided (the economic crisis hit Romania) and led to an unjustified increase of the tax burden for some taxpayers and the decapitalization of others. The tax was abolished in September 2010.

[1] A variant of this "per capita" of the lump-sum tax led to the resignation of the Margaret Thatcher Government, in 1990.

## 4. Conclusions

Although tax fairness can sometimes increase the efficiency of tax revenue, in terms of increasing voluntary payment compliance, fairness and efficiency, as the main requirements of an optimal tax system, are difficult to implement in practice, all and at the same time. Therefore, the tax system, as a system of coercion, will never be neither effective nor fair to all taxpayers.

Studies carried out in time in the field of taxation, have tried to bring more fiscal fairness under a given level of efficiency or to maximize social welfare by reducing its costs (excess burden) at a given level of fairness.

However, the optimization of the tax system remains still an open question for both academics and for policymakers when making decisions about shaping the tax system.

Given the analysis hereby, in our opinion, the Romanian tax system can withstand changes in terms of improving its fairness, with consequences over the increase of the payment compliance of taxpayers.

## 5 References

Gruber, J., & Saez, E. (2002). The Elasticity of Taxable Income: Evidence and Implications. *Journal of Public Economics*, 1-33.

Hoanţă, N. (2000). *Economie şi finanţe publice*/*Economics and public finance*. Iasi: Polirom.

Ljungqvist, L., & Sargent, T.J. (2000). *Recursive Macroeconomics Theory*. MIT Press.

Mankiw, N.G., Weinzierl, M., & Yagan, D. (2009). Optimal Taxation in Theory and Practice. *Journal of Economic Perspectives*, 147-47.

Ramsey, F.P. (1927). A Contribution to the Theory of Taxation. *Economic Journal*, 47-67.

Rothbard, M. (1970). *Power and Market: Government and the Economy*. Institute for Human Studies.

Rosen, H.S., & Gayer, T. (2010). *Public Finance*. The McGraw Hill Companies.

Toader, S.A. (2007). *Evaziunea fiscala in Romania in perioada de tranzitie*/ Tax evasion in Romania in transition period. Bucharest: ProUniversitaria.

Toader, S.A. (2010). The impact of Tax Equity on Income Tax Collection during Economic Decline. *Romanian Economic and Business Rewiew*, 118-127.

Vacarel, I., Bistriceanu, Gh., Bercea, F., Anghelache, G., Mosteanu, T., Bodnar, M., Georgescu, F., (2003). *Finante publice/Public finance.* Bucharest: Editura Didactica si Pedagogica.

# Virtual Infrastructure Approach for SADU Implementation

**Florin Postolache**[1]

**Abstract:** This paper proposes a new way of structuring the virtual infrastructure in terms of knowledge acquisition for SADU implementation. Through virtualization, the hardware infrastructure becomes a service, virtual machines become predominant within the infrastructure and their way of functioning can be affected by certain malfunctions. SADU supports human diagnostician in order to provide possible solutions to the raised issues. A virtualized IT infrastructure consists of layers that virtualized the used hardware components. Based on layers membership we propose a new approach to structuring the virtual infrastructure. This approach has fundamentally changed the architecture at the layer levels, increasing the security and availability of resources. Grouping layers depending on membership or type (hardware, virtual infrastructure, software) around the concept of stack led to a separation of intelligent agents' responsibility for knowledge acquisition and fault diagnosis, allowing a better understanding of the field, reflected by developing a new ontology.

**Keywords:** virtualization; DataCenter virtualization; structuring virtual infrastructure

**JEL Classification:** O10; O11

## 1. Introduction

Allowing the more efficient use of the available resources, which is stated and by the community of the IT specialists, the virtualization is one of the major benefits brought to an organization. Also, the continuous improvement of the DataCenter architecture has as main purpose to reduce the operating costs.

Today, many organizations have already in course of implementation or take into considerations the virtualization projects due to the immediate benefit represented by the reduction of capital costs and decreasing of costs related to real estates and power consumption.

The IT managers thus have the possibility of distributing the hardware resources, for the operating systems and applications based on timesharing, by using special products and services of virtualization. In this sense, can significantly increase the use and efficiency of servers, network equipments and storage devices, reducing the total number of physical devices required, the rack space necessary for their

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physical location and of course the requirement of physical equipment of management. Also, referring to saving the operational costs, the virtualization brings many benefits due to the unique management console, accessible from anywhere.

Like any transitions, a virtualization project is likely to have a major impact on the organizational structure and responsibilities of those involved.

The virtualization allows the implementation of software without modifying the operating system or the file system concomitantly with the significantly reduction of the conflicts between application, thus allowing the use of a single application on multiple versions of the operating system. In other words, according to VMware, the applications are more easily secured, implemented, updated and in the case of its non-functionality, to come back at the previous step of its modification (rollback).

## 2. Virtualization and Cloud Computing

The system virtualization and cloud computing are highly debated topics in the recent period which lead towards numerous strategies, quite different. The virtualization involves the transformation of a number of hardware components and network devices in software and it's uploading on a strong hardware platform, in other words, the services offered by a virtualized hardware component are abstracted from the physical component.

The virtualization is applied to servers, storage media, network and desktops so that most of the discussions concerning the virtualization and cloud highlight the unlimited access at the processing resources, storage and in the network at the network bandwidth. Concretely, the virtualization and cloud computing cannot exist without a DataCenter and the physical resources that it stores. The server consolidation is the next step in the restructuring of the architecture, achievable only through the virtualization of the available physical resources (see Figure 1).

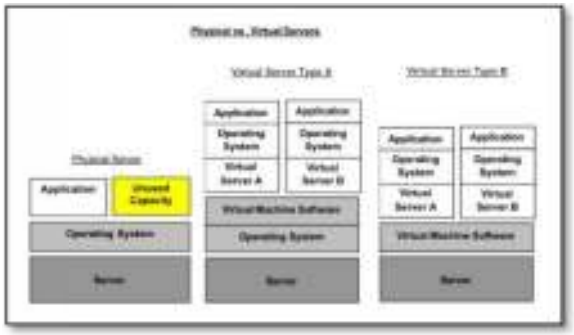

**Figure 1. Types of server virtualization** *(Postolache F. et al., 2010)*

In the case study concerning the virtualization of the informatics system subject to testing consists of three DataCenters, connected via a redundant fiber optic ring. In the main DataCenter we have an IBM Blade Center E, which consists of three IBM HS blade servers, each one equipped with two Xeon Quad Core and 32 G RAM. The data storage is made on a Storage Area Network IBMDS3400 redundant linked by Blade Center through optic fiber, which consists of five hard drives, three hard drives of 750 GB and two of 1 TB.

It was preceded to the virtualization of network, servers and of an informatics laboratory consisting of 32 computers, thus forming a Cloud. On the other hand, the cloud computing and server virtualization is mutual completing due to the following reasons:

- both require a robust physical infrastructure, relying heavily on the network and involving a rethinking of the traditional infrastructure
- cloud computing services are implemented after the Data Center is virtualized, in other words, only the virtualization layer supports the Cloud architecture.
- The cloud computing adds a new layer of virtualization between the final user and the entire IT infrastructure.

In our approach we emphasize especially the model of the virtualized infrastructure, the DataCenter server's consolidation and therefore on the virtual machines and the installed applications on them.

## 3. IT Infrastructure Virtualization

Allowing the more efficient use of the available resources, which is stated by the IT specialists' Community, the virtualization is one of the major benefits brought to an organization. Also, the continuous improvement of the DataCenter architecture has as main purpose to reduce the operating costs. The concerned hardware layers (Figure 2.) in a common virtualization design are: storage, servers and networks they serve.


**Figure 2. Infrastructure hardware layers**

To succeed all these things that the virtualization promises, it is necessary to have an infrastructure that really can support the virtualization of each component and hence of the DataCenter (Figure 3).

Here we mention that not any application requires or benefits by the advantages of installing virtualized environments and that is why it is necessary that our infrastructure to provide some flexibility to support both the installation of the applications both on dedicated hardware and on virtualized hardware.

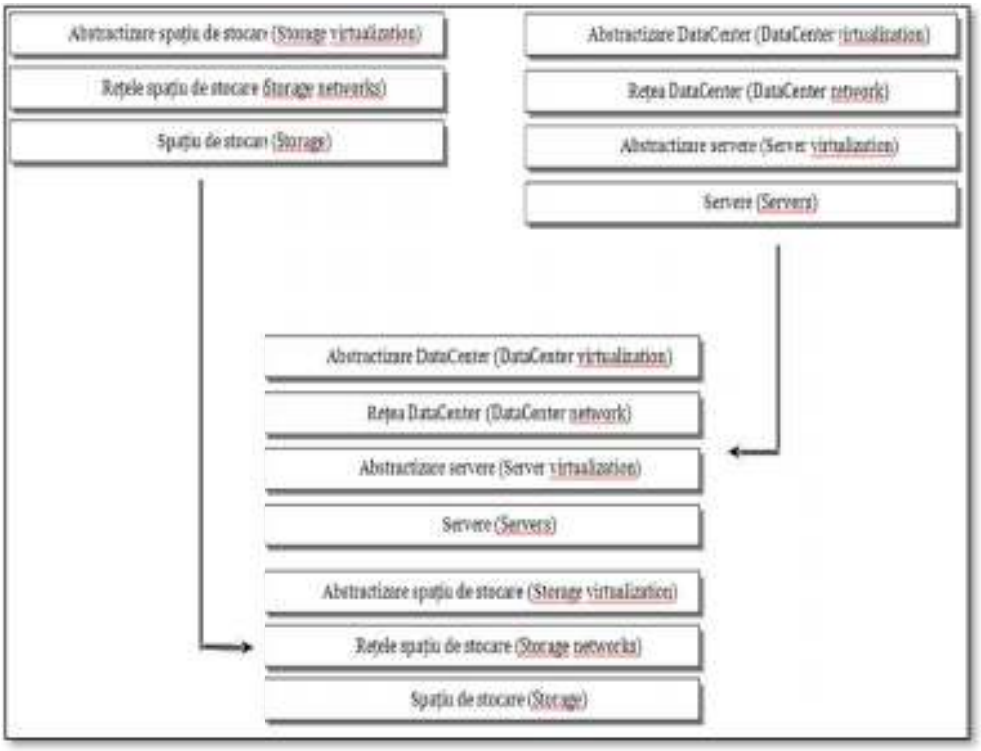


**Figure 3. Layers virtualization**

According to VMware, a virtualized IT infrastructure consists of layers which virtualize the used hardware components.

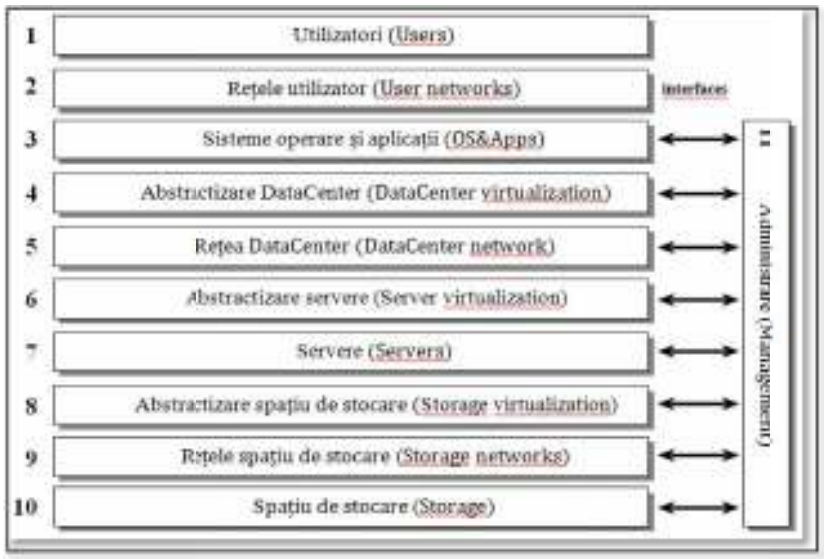


**Figure 4. IT infrastructure virtualization(VMware)**

Initially, the IT infrastructure was structured according to Figure 4, having the following layers:

- **Users**. The DataCenter supplies applications to the users connected with the help of any fixed or mobile devices that allow this (notebooks, traditional or virtual desktops, tablet PCs, smart phones, PDSs, etc.)
- **User networks**. This generally, is optimized to reduce the cost at the expense of performance, therefore, the connection at DataCenter through the network it must be made regardless of the client type and of the instrument used to connect.
- **Operating system and applications** (OS& Apps). At the level of the operating system the accent is directed towards the management of resources allocated to the application, the transfer rate towards HDD, on the number of processes that are in the background and the number of clients connected simultaneously. At this level, the functionality of the application is the most important objective that must be pursued carefully.
- **DataCenter virtualization**. It is mainly made to benefit as much as possible of the maximum capacity of the available resources but, and of the advantages offered by the layer of virtualization in the relation between clients and DataCenter.

- **DataCenter Network**. Require a secure and powerful network to support the mobility of applications between them, provided by speed connectivity within the network.
- **Server virtualization**. It is the software layer installed on the hardware platform, which is necessary to provide services that ensure the management of physical resources and of servers that goes into the compound of the virtualized infrastructure or of the cloud computing.
- **The servers**. Hosting on physical platforms, powerful of the virtual servers is a condition imposed because the servers' consolidation is not justified if we have few virtual machines per platform.
- **Storage virtualization**. It is necessary when the operations mustn't be interrupted by an upgrade or a replacement of a storage device.
- **Storage network**. To support the mobility of the virtual machine any server must have shared the storage space and to have a redundant connection with SAN. The redundancy requires that every DataCenter to have at least two physical SAN's separated.
- **Storage**. It is vital that the storage system to be capable to support any type of application due to the fact that each manager follows its own strategy.
- **Administration**. It requires the coordination of the behaviour from LAN and SAN whether the traffic is intersecting.

The management of the available layers' resources, whether there are hardware or software, are made with a separate interfaces (Figure 4) which, from a single console, allow the management, monitoring and configuration of resources easily available.

## 4. Implementation of Proposed Model

In the conducted study, we propose a new vision of the traditional model based on the experience of debugging / using virtual systems in order to ensure a resource and knowledge management for effective fault diagnosis. The virtualized IT infrastructure, structured according to the proposed approach also allows us to deepen know and understand the virtualization domain, its components and their relationships.

Compared to the virtualized model suggested by the developer, within the existent infrastructure we have made a combination of the layers that virtualizes the physical components (it does not mean that we combine the software with the hardware components) and a unification of the layers concerning the networks from DataCenter (the storage and physical network for the IP traffic), with the

observation that we did not combine the network services (Figure 5). We mention that the new model of virtualized infrastructure not exclude any layers from the previous model.

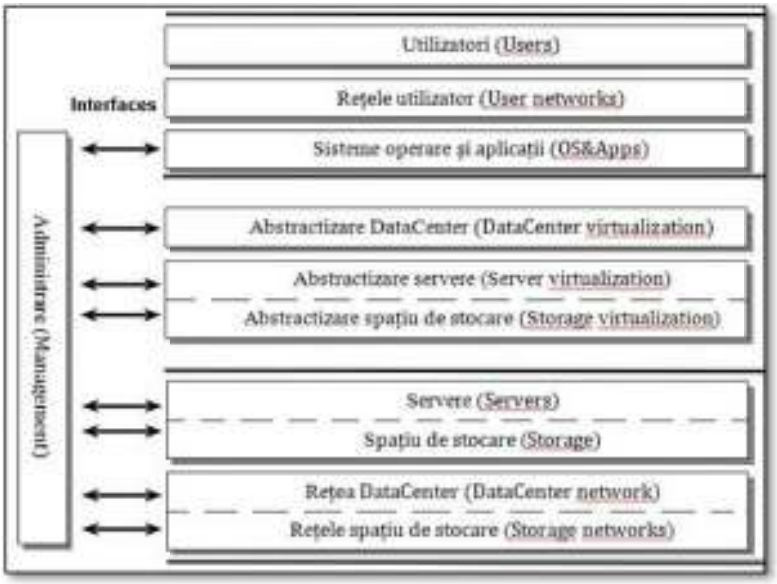


**Figure 5. Virtualized IT infrastructure approach**

This new approach, where some layers are combined, presents of course separated interfaces of administration for management, monitoring and configuration of services (LAN and SAN). Similarly, the interfaces for storage and servers remain independent.

Initially implemented in 2008, May, this approach has fundamentally changed the architecture at LAN and SAN level, materialized through the increase of security and availability of resources, and of economically, by reducing costs.

Tested IT system consists of three DataCenters, connected via a redundant optical fiber ring. The main DataCenter (B) have an IBM Blade Center E, which consists of three IBM HS blade servers, each equipped with two Quad Core Xeon processors and 32 G RAM. Storage of data is performed on an IBM DS3400 SAN (having three hard drives of 750GB) with a redundant fiber connection. DataCenter (C) has two IBM HS servers and one IBM DS3400 SAN with two 1TB HDD. We virtualized the physical networks, servers and storage from DataCenters and also an IT laboratory consisting of 32 computers, forming a Cloud (Figure 6).

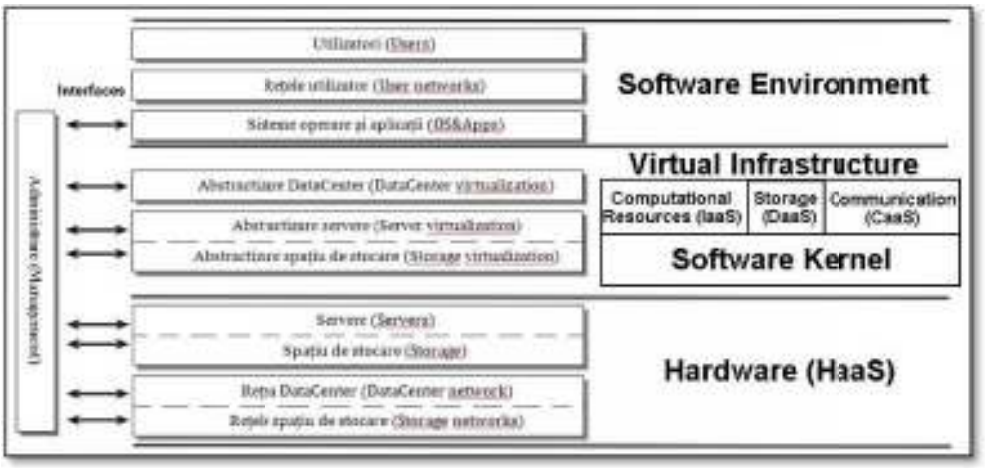


**Figure 6. Implemented Model**

The proposed model requires in exchange the removal of the separation layer between SAN's and involves the combination of what were once two independent physical networks of storage into one network.

Involving a rethinking of traditional infrastructure, cloud computing and server virtualization complement each other because both require a robust physical infrastructure, heavily based on network.

In conclusion, the assumed approach in terms of layers membership or type (hardware, software, etc.) based on stack concept led to a separation of responsibility of the intelligent agents during knowledge acquisition process for fault diagnosis and allowed a better understanding of virtualization field.

## 5. Model Characterization

The model signalized possible problems, which we can meet if we do not provide redundancy at the level of layers. During the three years since the implementation, the model confirmed certain advantages highlighting in exchange and the risks at which it may be subjected.

**Advantages**

- **Cost**. Regardless of the economic condition of the infrastructure owner, we have the certain advantage of a low cost because of that on a "single cable" we will have all traffic. Because the equipments used by LAN and SAN become common, the management if equipments is more convenient, leading to an easier monitoring of the traffic.

- **Infrastructure administration**. Using the unique administrative console met in the case of the traditional architecture (multiple interfaces of administration, travel time, ensuring the functionality and conflict resolution, etc.)
- **Server Consolidation**. There is an increased utilization of existing hardware resources along with a significant decrease in the number of physical servers.
- **Availability of resource**. It is the strength of the approach because we can always have a certain resource which is initially allocated to another virtual machine. Here we refer to all the generalized physical resources (disk, network, memory, processor, etc) of which we have within the infrastructure.
- **Testing new solutions**. Due to limited time and the ease of creating new servers, premises quickly creates an enabling environment for testing new software, updates, patches, etc.
- **Security**. The techniques and instruments of hackers are mainly designed for IP or intranet because of that they do not work and in the case of Fiber Chanel San. The existence of a layer of separation between SAN and the sources of threat from the IP networks make the attack techniques useless. Physically it is impossible to separate this networks, in exchange their administration it can be done separately.
- **Green infrastructure**. According to VMware, for each virtualized server saves the equivalent of about 7KW/h or 4 tons of carbon dioxide/year.

**Disadvantages**

- **I/O constraints**. This is an impediment in terms of information transport because a small number of I / O devices serving an increasing number of virtual machines.
- **LAN or SAN configuration**. A possible disadvantage it could be, in the proposed model, the moment of intervention in the LAN or SAN configurations. Due to merging the blocks, if we intervene in LAN, there implicitly occurring changes and in SAN and vice versa. Due to the fact that physical it is impossible to separate these networks, they can be administered separately and it is possible that this thing to affect the operational and maintenance procedures of the infrastructure.
- **Application Functionality**. Another reason that it is possible to meet is that not all the applications will work in the proposed model. Possible delays may occur in the process of installation and accessing the operating system implicitly of the applications supported by it.

For example, we met some difficulties in the moment of installing Microsoft Windows Server 2003, Standard Edition (32 – bit) on the virtual machine

win2003srv. These were small but were manifested by an increase of the response time to requests and delays in the feedback of applications.

Here, too, may intervene and the limitations at which are subjected the complex virtualized systems, starting from the I/O constraints, storage capacity, their management and spreading but continuing with the economic ones, fear of new, institutional resistance and continuous technologic development.

## 6. Conclusion

Due to the current economic circumstances but, and of the problems imposed by the security of the informatics systems, the companies have now started to use virtualization technologies to better protect their most valuable assets: data stored. Reducing the costs involved by the investments in hardware, software and by granting the licenses as well as and reducing the utility bills, minimizing the downtime of non-functionality of equipments and of simplification and rationalization of the management processes are objectives of which we can benefit through virtualization. This technology changes the way in which a DataCenter operates, is managed and administered. For example, before implementing the virtualization, it was known at all times which are the most used applications, on what physical machines are installed, how much of the machine's resources are used, which are the moments of maximum loading, etc.

Thanks to virtualization, this traditional connection between hardware and software is broken, and this creates a better perspective concerning the functionality and solving conflicts. Due to the cyclical profile of applications, the administrators have a global overview on the system, knowing the way of operation of it and which are the applications and moments that slowdown the performance of the system. The strength is the management of the entire virtual informatics system using a single console.

The IT departments involved in projects of servers' consolidation are aware by the possibilities of reducing the number and types of servers that support different applications, which ultimately leads to significant savings of the companies' costs.

Once with the growth and development of the company, are increasing and the necessities. Of course, we always hit with new problems and obstacles, therefore we must take into account that it is possible than an application that we today virtualized it may have to be moved back on a physical environment, as a result of the necessity of more computing power or due to some priority processes. We must analyze in detail with what instruments we operate for migrating the machines and applications at a virtual environment, ensuring that the selection was correct in the case in which we go back on a physical server or migrate the application on different virtual machines installed on different hardware machines. Also, the

security strategy of the DataCenter must take into account both the physical devices and of the virtual devices.

The virtualization also has an impact on physical infrastructure due to the computing power necessary to the physical devices that support multiple virtual machines, and some capacity of the network to satisfy the transfer requests between the virtual and physical machines.

The main contribution that results from this paper is related on how grouping layers around the stack concept in order to composing the virtualized infrastructure.

## 7. References

Brocade Communications Systems (2010). *Applications of Virtualization, Cloud Computing, and Convergence in the Next-Generation Data Center*. Technical Brief, 06/10 GA-TB-277-00.

Deleuze, G. (2002). *The Actual and the Virtual. Dialogues*. Second Edition. Trans. Eliot Ross Albert, Columbia UP.

Massumi, B. (2002). *Parables for the Virtual. Movement, Affect, Sensation*. Duke University Press.

Patton, R. J., Lopez-Toribio, C. J. & Uppal, F. J. (1999). Artificial intelligence approaches to fault diagnosis for dynamic systems. *International Journal of Applied Mathematics and Computer Science* 9 (3): 471-518.

Popper, F. (2007). *From Technological to Virtual Art*. Leonardo Books, MIT Press.

Postolache, F. (2011). Framework on economical implication and issues of SADU implementation. *Acta Universitatis Danubius. Œconomica* No. 2(7)/2011, pp. 139-154. http://journals.univ-danubius.ro/index.php/oeconomica/article/view/893.

Postolache, F., Bumbaru, S. & Ariton, V. (2010). *Complex systems virtualization in the current's economical context*. *EuroEconomica* No. 3(26)/2010, pp. 29-50, http://journals.univ-danubius.ro/index.php/euroeconomica/article/view/714.

Postolache, F., Bumbaru, S. & Ariton, V. (2010). Knowledge acquisition and structuring for diagnosis in complex virtual systems. *The 1st International Conference "Advances in Engineering & Management" ADEM 2010* – Drobeta Turnu-Severin.

Postolache, F., Bumbaru, S. & Constantin, F. A. (2010). Framework on virtualisation applications and benefits. *The 4th International Workshop on „Soft Computing Applications" - SOFA2010,* pp. 83 – 88, Arad, Romania – July 15-17, 2010. IEEE Catalog Number: CFP1028D-CDR. INSPEC Accession Number: 11516913, Digital Object Identifier: 10.1109/SOFA.2010.5565620, http://sofa2010.org/index.html, http://ieeexplore.ieee.org/xpl/freeabs_all.jsp?arnumber=5565620&abstractAccess=no&userType=

Wooldridge, M., & Jennings, N.R. (1995). *Agent Theories, Architectures, and Languages: a Survey*. Wooldridge and Jennings Eds. *Intelligent Agents*. Berlin: Springer-Verlag, pp. 1-22.

# The Real Economy after Episodes of Financial Crises in Central and Eastern Europe

**Marius Constantin Apostoaie[1], Dan Chirlesan[2]**

**Abstract:** The occurrence of the most critical international economical and financial crisis of the 21st century brought into the spotlight the damages that crises can bring to our economy. After its burst in the autumn of 2007, the crisis has spread all over the world through the Contagion Effect, and has led to an accelerated and sharp deterioration of economic activity. The effects of the episodes of financial crises have on the real economy seemed to be more important and persistent in some specific countries. For this reason we focused our attention upon eight European transition countries and a sample of thirteen financial crises. The aim of this study is to perform an econometric analysis of the effects of episodes of financial crises on real output (GDP) for eight economies from Central and Eastern Europe (CEE) using an ARDL equation and an impulse response function. The main findings of the paper suggest that, in the case of the CEE economies analyzed, financial crises have an important and long-lasting effect, lowering the real output by about 12-14%.

**Keywords:** financial turbulences; real GDP; CEE; ARDL equation

**JEL Classification:** F43; G01; G19

## 1 Introduction

The financial crisis which started off in the autumn of 2007 in the United States and then spread throughout the world through the contagion effect has led to an increased deterioration of economic activity in most world economies. Its occurrence reopened the debates concerning the real effects of a financial crisis (regardless of the form they take) on economies and their duration. The focus of this paper is on the impact of different episodes of financial crises on a specific panel of economies from Central and Eastern Europe; more specifically, the research paper investigates the cases of Bulgaria, Estonia, Latvia, Lithuania, Poland, the Czech Republic, Romania and Hungary.

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This study aims to conduct a qualitative and empirical analysis, focusing on the case of eight economies from Central and Eastern Europe, of the effects of episodes of financial crises on real output. In our scientific approach we focus, at the same time, on the losses generated in the economy by an episode of financial crisis and we ask ourselves if these losses are permanent or if they can be recovered on a medium or long term. This paper is part of a wider analysis of the effects of financial crises (seen as adverse effects of economic globalization) on the monetary policy instruments used by the central banks throughout the world in order to ensure financial and price stability.

## 2 Theoretical Considerations

The financial crisis which started off in the autumn of 2007 in the United States and then spread throughout the world through the contagion effect has led to an increased deterioration of economic activity in most world economies. Its occurrence reopened the debates concerning the real effects of a crisis on economies and their persistence.

Economic literature, in general, associates financial crises with major economic declines (Reinhart and Rogoff, 2009); among the first impact studies concerning the real effects of a crisis on economies, it is worth mentioning those belonging to (Bagehot, 1873). We take note, however, in economic literature, of a couple of studies which mention a null or modest effect of financial crises on the performances of an economy (Boyd *et al.*, 2005) and the examples given are generally those of developed countries affected by minor (local) crises. As concerns the real effects of currency crises (one of the forms of manifestation of financial crises), according to the traditional view, a real depreciation, in the case of a nominal rigidity, favors exports and boosts output and employment. An illustrative example in this respect is the study conducted by Demirguc-Kunt *et al.* (2006), who identified a positive impact for 40% of the analyzed currency crises.

Financial crises affect real economy through *massive depreciations of the currency* and *increases in the prices of the imported factors of output and of output costs.* Financial crises affect, at the same time, the behavior of economic agents through *the increase of uncertainty in relation to future profits* and *the decrease of the level of investments and consumption.* In addition, banking crises, as a form of manifestation of financial crises, produce a decrease at the level of investments through the distress of credit intermediation and of the payments system, following the diminution of the values of securities.

These effects turn out to be more visible and more persistent for emerging countries. Actually, emerging economies are more vulnerable to factors which lead to the occurrence of crises, such as, for example: the exposure of banks and of

private economic agents to *maturity mismatches* and *currency mismatch*es, distress at the level of international capital markets, banking panic or sudden stops of the entry of foreign capital. These statements are supported by solid empirical evidence in economic literature. Moreover, specialized studies have shown that the effects of financial crises on economic activities are bigger for emerging economies than for developed economies. For example, Hutchison and Noy (2005) analyzed the effect of currency and banking crises on economic output for developed, as well as for emerging countries. They noticed, in the case of emerging countries, an average decrease of output of 8% (for a period of over 2 years), whereas, in the case of developed countries, the average decrease of output was of only 2% (for a period of 1 year). In a study conducted by Dell' Ariccia *et al.* (2008), one could see that emerging economies registered a level of real effects of banking crises bigger by 1.5 percentages than the level registered by developed economies. At the same time, Reinhart and Rogoff (2009) noticed that the decrease at the level of the GDP, following the manifestation of a financial crisis, is much bigger for emerging economies than for developed ones.

In this context, European transition economies (countries belonging to Central and Eastern Europe or *CEE*) are of particular interest from the perspective of the real effects of a financial crisis. Moreover, we must see whether the losses generated in the economy (in the case of CEE countries) by a financial crisis are permanent or whether they are recovered in the short or long run.

## 3 Particularities of the Countries from Central and Eastern Europe

The former socialist countries belonging to Central and Eastern Europe registered significant changes in their economic structures, changes that are visible primarily in the higher living standards and in their increasing integration in the European bloc. It is worth mentioning, nevertheless, the imbalances which exist with regard to the pace of these processes. For example, Estonia, Latvia, Lithuania, Poland, the Czech Republic, Slovakia, Slovenia and Hungary joined the EU in 2004, whereas Bulgaria and Romania adhered to this group in 2007. Slovenia adopted the unique European currency in 2007, whereas Slovakia is scheduled to adopt the euro in 2009. Although they have some similarities with developed economies, the CEE countries continue to present the characteristics specific to emerging markets. In addition, structural reforms, which may increase the degree of resistance of economies to financial shocks, are still in the process of implementation, thus increasing the probability for the effects of the financial crises to be bigger and to last more in time.

The global financial crisis which erupted in the autumn of 2007 exposed the intrinsic weaknesses of the growth model specific to the CEE countries. Excess external funding generated a very big external debt and enabled a fast expansion of

credit, especially of foreign currency credit. At the same time, the high internal demand in many CEE countries led to overheating, with inflationist pressure and substantial (unsustainable) current account deficits. The decrease of liquidities at an international level and the pressure exercised on the exchange rates drew attention in these countries on the risks of an increased independence in relation to the already highly volatile foreign capital.

Returning to the matter of the large external imbalances (the deficits in current and capital accounts) of the CEE economies, these were generated by the rapid GDP growth, which was strongly and increasingly based on domestic demand and financed by capital inflows. As we can see in Figure 1 most CEE countries have encountered significant external imbalances in the period before and during the crisis. Exceptions are the cases of the Czech Republic and Poland for whom the current and capital account deficits didn't fell below 10% of GDP.

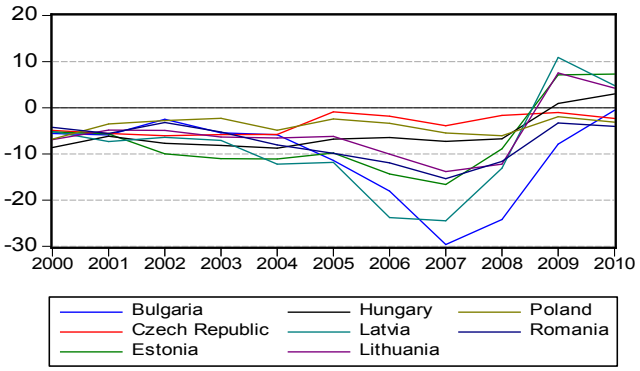


**Figure 1. Combined current and capital account deficit in the CEE economies during the 2000-2010 period (% of GDP)**

*Source: authors' calculation using Eurostat data*

Given the fact that most CEE countries, except for Poland, were affected by severe recession starting with 2009, we wonder whether the sudden stop of economic growth is lasting or whether the economies will register an ascending trend in the close future. In many of the CEE countries, the international financial crisis increased the volatility of the exchange rate and affected the budgets elaborated by the governments, thus causing significant imbalances at the level of economies.

This paper assesses the impact of financial crises on certain economies from Central and Eastern Europe, more specifically on: Bulgaria, Estonia, Latvia, Lithuania, Poland, The Czech Republic, Romania, Hungary. The main characteristics which differentiate these specific economies from CEE from other emerging economies are : 1) the CEE countries analyzed have gone through a deep and unprecedented process of transformation, from planned to market economy;

this involved, amongst others, significant investments in assets, as well as in human resources, multiple changes of the economic integration model, etc. 2) the economies that are part of this study participate to the economic integration process; the CEE economies analyzed are EU members (an economic area with a high degree of integration on the market of goods, services, capital and, to a certain extent, of the workforce) and have adopted European standards at the level of their economic policies, institutions and government model. Moreover, the CEE states studied will adopt, after meeting the convergence criteria specified in the UE treaty, the unique currency, the Euro.

Separated from the communist bloc, the CEE economies initially collapsed (see Figure 2). However, by the middle of the '90s, due to various reasons (like the process of macroeconomic stabilization, structural reforms, low interest rates, a rapid development of the financial sectors, the perspective of EU membership etc.), the real GDP started to increase again in all the analyzed countries, reflecting primarily the results of the macroeconomic stabilization process and of an extensive range of structural reforms.

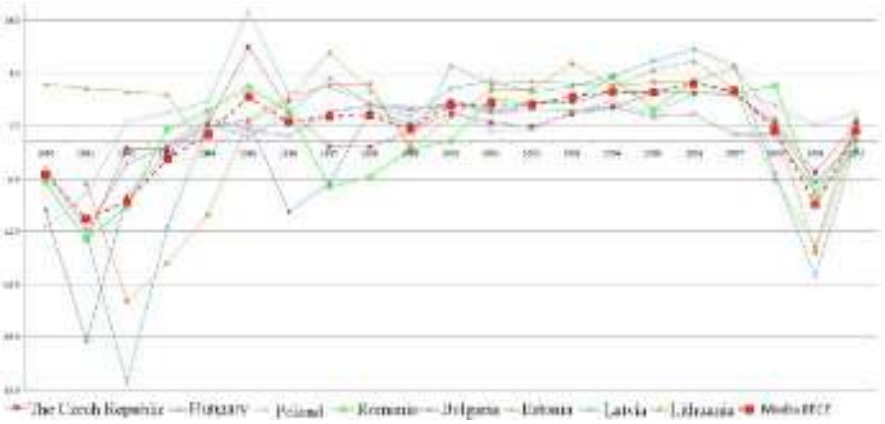

**Figure 2. Annual growth of real GDP in the CEE countries during 1990-2010 (%)**

*Source: authors' calculation using World Economic Outlook database*

For example, the average of the annual increase of the real GDP for the CEE economies over the 1994-2008 period was 4.7%, with a fast acceleration starting with 2000, of approximately one percentage point per year, reaching its maximum value, of 7.6%, in 2006. We may notice, at the same time, a strong decrease of the analyzed indicator, from 6.6% in 2007 to 1.4% in 2008 to -8.5% in 2009. Despite all these, 2010 brought economic growth equal to more than 1% in the studied countries.

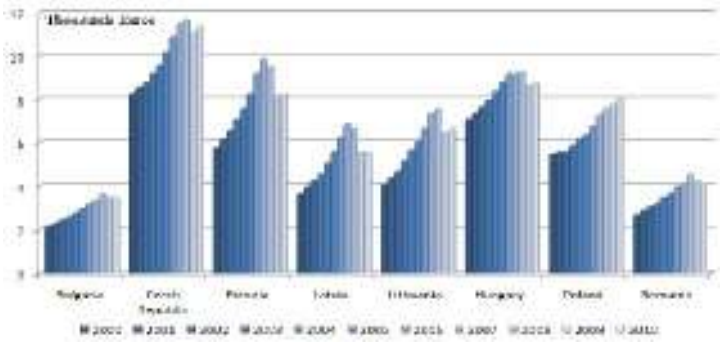

**Figure 3. Real GDP per capita in the CEE economies (thousands of Euros per capita)**

*Source: authors' calculation using Eurostat data*

The significant economic performances of the 8ECE countries were also reflected in the process of real convergence, described herein as the level of real GDP *per capita* in terms of PPP (see Figure 3).

## 4 Used Data and Research Methodology

This paper uses a sample of data on eight countries from Central and Eastern Europe (Bulgaria, Estonia, Latvia, Lithuania, Poland, the Czech Republic, Romania and Hungary) starting with 1989 and ending with 2010 (annual data).

In order to achieve the primary objective of this paper, we intend to apply the methodology initiated by Romer and Romer (1989) and subsequently developed by Furceri and Zdzienicka (2011) for the purposes of assessing the impact of monetary shocks on output. In more concrete terms, we wish to estimate an autoregressive equation with distributed lags, also called ARDL function, by using as dependent or endogenous variable "the increase of the gross domestic product", and as independent or exogenous variable "the financial crisis". Starting from here, we will calculate the impulse response functions under the form of a chart, estimating the confidence bands with the help of the Monte Carlo simulation (by using 1000 trials) in order to quantify the medium and long term effects of financial crises on the economies included in the panel. This method supplements the previous attempts of evaluating the costs generated by financial crises by taking into consideration short and long term impact. Although there are studies which associate some banking and foreign currency crises with short term output losses, few of them analyzed whether these losses were recovered in the medium and long run. Traditional approaches (initiated by Kaminsky and Reinhart, 1999; Calvo and Reinhart, 2000) take into consideration regressions of the *output*, with various control variables, real time variables and deviations (real growth, real GDP per capita) and *dummy* variables of the financial crises for the panel data of developed

and emerging economies (for example, studies conducted by Barro (2001), Bordo *et al.* (2001), Demirguc-Kunt *et al.* 2006).

The use of *impulse response functions* in order to distinguish between the short term and long term effects of final crises on the real GDP is a novelty, the pioneers of this methodology being Cerra and Saxena (2008). The method was used afterwards by European Commission to evaluate the impact of the 2007 financial crisis on potential growth, and more recently, by Furceri and Zdzienicka (2011) to assess the impact of financial crises on output for 11 European transition economies.

**Table 1. Financial crisis episodes in the 8CEE countries**

| Country | Systemic banking crisis | Currency crisis | Public debt crisis | The starting point of the financial crisis |
|---|---|---|---|---|
| Bulgaria | 1996 – 2002 | 1996 | 1990-1991 | 1990, 1996 2008 |
| Estonia | 1992 – 1999 | 1992 | - | 1992, 2008 |
| Latvia | 1995 – 1996 | 1992 | - | 1992, 1995, 2008 |
| Lithuania | 1995 – 1996 | 1992 | - | 1992, 1995, 2008 |
| Poland | 1992 – 1995 | - | - | 1992, 2008 |
| Czech Republic | 1996 – 1998 | - | - | 1996, 2008 |
| Romania | 1990 – 1993 | 1996 | - | 1990, 1996, 2008 |
| Hungary | 1991 – 1995 | - | - | 1991, 2008 |

*Source: authors' calculation using World Economic Outlook database; including Laeven and Valencia (2008), Cecchetti (1999), Furceri and Zdzienicka (2011) and Frydl (1999) for determining the starting point and the duration of the financial crisis*

For the purposes of this analysis, we will use the IMF database (Laeven and Valencia, 2008) for the financial crisis episodes from the 1990-2007 period, to which we will also add the international financial crisis which broke out in 2007 (we will refer to 2008). Table 1 lists the episodes of financial crisis used in this study.

In order to determine the impact and duration of the effects of financial crises on economic growth, we will use an autoregressive equation. An autoregressive equation with distributed *lags* of the order *p* and *n* or ARDL (*p,n*), for a scalar variable $y_t$ has the following structure (equation 1):

$$y_t = c + \sum_{i=1}^{p} a_i y_{t-i} + \sum_{i=1}^{n} b_i x_{t-i} + \varepsilon_t \quad (1)$$

where,

*c* is the intercept,

$\varepsilon_t$ is the error term, a scalar of zero mean,

$x_t$ is column vector with dimension K,

$a_i$ is a scalar while $b_i$ is a vector.

The model which we intend to estimate is an ARDL (p, n) model presented in the form of equation 2.

$$\Delta LPIBr_{i,t} = c_i + \sum_{j=1}^{p} a_j \Delta LPIBr_{i,t-j} + \sum_{j=1}^{n} b_j CF_{i,t-j} + \varepsilon_{i,t} \quad (2)$$

where,

$LPIBr_{i,t}$ is the natural (or Napierian) logarithm function of real output ($PIB_r$) for country *i* at moment *t,*

$c_i$ is a constant and it is used to capture the specific characteristics of a country (*i*) that are unobservable,

$CF_{i,t-j}$ is a dummy variable which takes the value 1 if a country (*i*) is passing through an episode of financial crisis in moment *t* and 0 if otherwise,

$a_i$ and $b_i$ are parameters which explain the influence of the observed variables upon the dependent variable ( $\Delta LPIBr_{i,t}$ ).

We will test the number of *lags* for the equation (2) starting from ARDL (1,1) and we will increase their number until an additional *lag* no longer produces an effect on the analyzed variable. When it existed, heteroscedasticity was corrected, and the problem of self-correlation with regard to the dependent variable is solved by involving the values of *lags* as explanatory values.

All the necessary information is taken from the *IMF International Financial Statistics* and *World Economic Outlook.* The data are analyzed using the panel data approach and consists of annual observations from the period 1989-2010 for the 8 CEE economies. The episodes of financial crises (currency crisis, banking crisis and sovereign debt crisis) are presented in Table 1 one along with the sources of the data.

## 5 Results

During the first stage, we have estimated an equation of the impact and persistence of financial crises on the real GDP in the 8 analyzed ECE economies (equation 3) by using a single *lag*, namely ARDL (1, 1).

$$\Delta LPIBr_{i,t} = c_i + a_1 \Delta LPIBr_{i,t-1} + b_0 CF_{i,t} + b_1 CF_{i,t-1} \quad (3)$$

The econometric estimates specific to this equation are presented in Table no. 2. According to the econometric findings in Table 2, at the level of the data panel, the increase of the value of the indicator "real GDP" is influenced both by the economic growth registered during the previous year and by the *dummy* variable which describes the financial crisis episodes. We may notice a visible contemporary effect of financial crises on the increase of the real GDP.

All the parameters corresponding to the exogenous variables in equation (3) are statistically significant at a confidence level of 99%. The value of *F-statistic* is 29.7 and the probability associated with it is smaller than 0.001%, which makes the estimated equation statistically significant for a confidence level of 99%. The analyzed variables account for approximately 36% (values of the determination coefficients $R^2$ and $\overline{R}^2$) of the behavior of the dependent variable (that is, the modification of the logarithm values of the increases of the real GDP), the difference being caused by other factors included in the error term ($\varepsilon_{i,t}$). According to the *Durbin Watson stat* (DW) test, the value of 1.75 is below the limit (of approximately 2), which means that there is not serial correlation of the errors.

**Table 2 Econometric estimations for the ARDL (1, 1) equation**

Dependent Variable: $\Delta LPIBr_{i,t}$
Method: Pooled Least Squares
Date: 07/08/11 Time: 00:09
Sample (adjusted): 1992 2010
Included observations: 19 after adjustments
Cross-sections included: 8
Total pool (balanced) observations: 152

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| C | 0.023776*** | 0.006389 | 3.721128 | 0.0003 |
| $\Delta LPIBr_{i,t-1}$ | 0.501132*** | 0.065563 | 7.643500 | 0.0000 |
| $CF_{i,t}$ | -0.041998*** | 0.011340 | -3.703489 | 0.0003 |
| $CF_{i,t-1}$ | -0.016468*** | 0.011969 | -3.775943 | 0.0009 |

| | | | |
|---|---|---|---|
| **R-squared** | **0.375834** | Mean dependent var | 0.022526 |
| **Adjusted R-squared** | **0.363182** | S.D. dependent var | 0.068660 |
| S.E. of regression | 0.054791 | Akaike info criterion | -2.944614 |
| Sum squared resid | 0.444306 | Schwarz criterion | -2.865039 |
| Log likelihood | 227.7907 | F-statistic | 29.70550 |
| Durbin-Watson stat | 1.751762 | **Prob(F-statistic)** | **0.000000** |

Note: ***, ** and * denotes significance at 1%, 5% and at 10% confidence level

In conclusion, regarding the estimated ARDL (1, 1) equation, both the real output growth from the previous year (which was affected or not by a financial crisis) as well as the financial crisis dummy variable with one lag, affect economic growth at time *t*. We now focus our attention on assessing the impact and the persistence of

financial crises on real GDP in the 8CEE economies (equation 4) using 2 lags, i.e. ARDL (2, 2).

$$\Delta LPIBr_{i,t} = c_i + a_1\Delta LPIBr_{i,t-1} + a_2\Delta LPIBr_{i,t-2} + b_0CF_{i,t} + b_1CF_{i,t-1} + b_2CF_{i,t-2} \quad (4)$$

We use the "trial and error" method. For reasons of space the table with the results for the equation (4) was not inserted in the paper. According to the individual tests – the *t-statistic* as well as the *F-statistic* – applied to the model, all the coefficients from the regression equation are statistically significant at a 0.1%. The analyzed variables explain almost 44% of the variation that the dependent variables has (i.e. the variance of the log of real output), the difference being caused by other factors included in the error term ( $\varepsilon_{i,t}$ ). In conclusion, like in the ARDL (1, 1) equation, the estimated ARDL (2, 2) equation proves that economic growth at time *t* is affected by the real output growth from the previous year as well as the financial crisis dummy variable with two lags.

In equation (5) we computed the parameters for the ARDL (3, 3) model.

$$\Delta LPIBr_{i,t} = c_i + a_1\Delta LPIBr_{i,t-1} + a_2\Delta LPIBr_{i,t-2} + a_3\Delta LPIBr_{i,t-3} + b_0CF_{i,t} + b_1CF_{i,t-1} + b_2CF_{i,t-2} + b_3CF_{i,t-3} \quad (5)$$

As we are introducing more lags, the effects of financial crisis on economic growth are disappearing (or at least estimates of the parameters for dummy variables are found to be statistically insignificant). According to individual tests – t-statistic and F-statistic tests – almost all of the regression equation coefficients are statistically significant at a level of relevance of 0.1%. Analyzed variables explain around 45% of the behavior of the dependent variable, the difference being caused by other factors included in the error term ( $\varepsilon_{i,t}$ ).

**Table 3. Econometric estimations for the ARDL (3, 3) equation**

Dependent Variable: $\Delta LPIBr_{i,t}$
Method: Pooled Least Squares
Date: 07/08/11 Time: 00:13
Sample (adjusted): 1994 2010
Included observations: 17 after adjustments
Cross-sections included: 8
Total pool (balanced) observations: 136

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| C | 0.028951*** | 0.006175 | 4.688040 | 0.0000 |
| $\Delta LPIBr_{i,t-1}$ | 0.439473*** | 0.091953 | 4.779321 | 0.0000 |
| $\Delta LPIBr_{i,t-2}$ | -0.015370 | 0.097271 | -0.158010 | 0.8747 |
| $\Delta LPIBr_{i,t-3}$ | -0.090306 | 0.075269 | -1.199784 | 0.2324 |
| $CF_{i,t}$ | -0.028689*** | 0.010106 | -2.838904 | 0.0053 |
| $CF_{i,t-1}$ | -0.026477** | 0.012384 | -2.138051 | 0.0344 |
| $CF_{i,t-2}$ | -0.049235*** | 0.011867 | 4.149053 | 0.0001 |

| | | | | |
|---|---|---|---|---|
| $CF_{i,t-3}$ | -0.010772* | 0.010120 | -3.064411 | 0.0889 |
| **R-squared** | **0.471741** | Mean dependent var | | 0.033003 |
| **Adjusted R-squared** | **0.459024** | S.D. dependent var | | 0.052376 |
| S.E. of regression | 0.041604 | Akaike info criterion | | -3.464206 |
| Sum squared resid | 0.221557 | Schwarz criterion | | -3.292874 |
| Log likelihood | 243.5660 | F-statistic | | 12.27918 |
| Durbin-Watson stat | 2.037696 | **Prob(F-statistic)** | | **0.000000** |

Note: ***, ** and * denotes significance at 1%, 5% and at 10% confidence level

When performing these calculations we must pay attention also to information criteria (*Akaike Info Criterion* and *Schwarz Criterion*) that will help us choose the correct model (their values should be as small as possible because they measure the information lost in a given model). Sometimes the author is constrained to take a critical decision when choosing between models: either chose the model with big values for the *R-squared* / *adjusted R-squared*, but with the sacrifice of higher values for the information criteria or a model with low values for the information criteria but with the sacrifice of small values for the $R^2$ and $\overline{R}^2$.

In equation (6) we have computed the parameters for the ARDL (4, 4) equation.

$$\Delta LPIBr_{i,t} = c_i + a_1 \Delta LPIBr_{i,t-1} + a_2 \Delta LPIBr_{i,t-2} + a_3 \Delta LPIBr_{i,t-3} + a_4 \Delta LPIBr_{i,t-4} + b_0 CF_{i,t} + \\ + b_1 CF_{i,t-1} + b_2 CF_{i,t-2} + b_3 CF_{i,t-3} + b_4 CF_{i,t-4} \quad (6)$$

Looking at the results of the regressions for the ARDL (4, 4) and at the data presented in Tables 3 we are convinced that in order to evaluate the impact and persistence of financial crisis on GDP in the case of the 8CEE economies, 3 lags are necessary (being the fact that all 3 lags are statistically significant) in the ARDL equation. Thus, regarding the estimates of the financial crisis dummy for all the lags presented in Table 3 we can deduct that, in the case of the 8CEE economies, the occurrence of a financial crisis in moment *t* generates a decrease in output in the long run (in three years) by almost 11.49%. The validity of the data can be verified by using the impulse response function (which we can generate based on equation (5) and the parameters estimated and presented in table no. 3). By simulating a crisis episode with a one year' duration (the impulse), we generate the increase of the real GDP index (the response). Subsequently, this is included in a band with a confidence level of 95%, generated with the help of the Monte-Carlo simulation for 1000 trials. According to Figure 4, the impulse response function confirms the previously obtained results, namely the fact that financial crises have significant effects on the increase of the real GDP throughout three *lags* (respectively 3 years). By applying the index of Leaven and Valencia (2008), the financial crises decrease the level of growth of the real GDP by approximately 14% in the long run (a result close to the value of 11.49%, obtained by using the ARDL model).

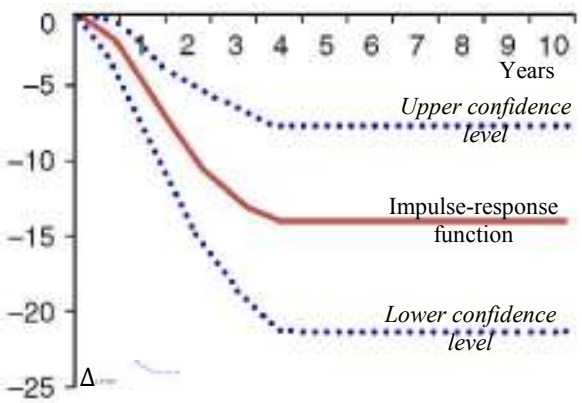


**Figure 4. Impact of financial crises on economic growth in the 8ECE countries**

The findings of this study are in agreement with those obtained by Furceri and Zdzienicka (2011), who quantify a cumulative loss of output of 17% as a result of the manifestation of financial crises for a number of 11 countries from Central and Eastern Europe, or with those reported by Cerra and Saxena (2008), who measure the magnitude of long-term effects of financial crises by using a data panel made up of several transition economies. At the same time, the findings confirm the observations concerning the fact that the impact of banking and twin crises (banking and currency crises) on output is bigger than the impact of currency crises Kaminsky and Reinhart, (1999).

## 6 Conclusions

The primary objective of this study is to assess, based on some econometric analyses, the effects of financial crises on real output for 8 states from Central and Eastern Europe. Our scientific study relies on the methodology employed by Romer and Romer (1989) and involves the estimate of an ARDL equation based on a data panel comprised of 13 financial crises which occurred in the 8ECE states over the 1989-2010 period. The findings obtained as a result of the empirical analysis led us to the conclusion that financial crises have a significant and lasting effect (on the short term, as well as on the long term) on economic growth. As concerns the 8ECE economies, in particular, the occurrence of financial crises caused a decrease of the real output of approximately 3 percentage points after a year (the contemporary effect) and of 12-14 percentage points after a 4 years' period. The findings of this study turned out to be in agreement with the ones obtained by Furceri and Zdzienicka (2011), who quantify a cumulative loss of output of 17% as a result of the occurrence of financial crises for a number of 11 countries from Central and Eastern Europe.

## 7 Acknowledgments

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## 8 References

Bagehot, W. (1873). *Lombard Street.* London: Henry S. King and Company.

Barro, R. (2001). Economic growth in East Asia after and before the financial crisis. *NBER Working Papers,* No. 8330 (June 16), pp. 1-42.

Bordo, M., Eichengreen, B., Klingebiel, D., & Soledad Martinez-Peria, M. (2001). Is the crisis problem growing more severe?. *Economic Policy*, No. 16(32), pp. 51-82.

Boyd, J., Kwak, S., & Smith, B. (2005). The real output loss associated with modern banking crises. *Journal of Money, Credit and Banking*, No. 37, pp. 977-999.

Calvo, G., & Reinhart, C. (2000). When capital inflows come to a sudden stop: Consequences and policy options. *MPRA Papers*, No. 6982, University Library of Munich, Germany.

Cecchetti, S.G. (1999). Legal structure, financial structure, and the monetary poliy transmission mechanism. *NBER working paper,* No. 7151 (June), pp. 1-35.

Cerra, V., & Saxena, S. (2008). Growth dynamics: The myth of economic recovery. *American Economic Review*, No. 98, pp. 439-457.

Dell'Ariccia, G., Detragiache, E., & Rajan, R. (2008). The real effect of banking crises. *Journal of Financial Intermediation*, No. 17(1), pp. 89-112.

Demirguc-Kunt, A., Detragiache, E., & Gupta, P. (2006). Inside the crisis: An empirical analysis of banking systems in distress. *Journal of International Money and Finance*, No. 25(5), pp. 702-718.

Frydl, E.J. (1999). The Length and Cost of Banking Crises. *IMF Working Paper No. 99/30*, International Monetary Fund, Washington.

Furceri, D., & Zdzienicka, A. (2011). The real effect of financial crises in the European transition economies. *Economics of Transition*, No. 19(1), pp. 1-25.

Gardó, S., & Martin, R. (2010). The impact of the global economic and financial crisis on Central, Eastern and South-Eastern Europe. A stock-taking exercise. *ECB Occasional paper series*, No. 114.

Hutchison, M.M., & Noy, I. (2005). How Bad Are Twins? Output Costs of Currency and Banking Crises. *Journal of Money, Credit and Banking,* No. 37, pp. 725-752.

Kaminsky, G., & Reinhart, C. (1999). The twin crises. The causes of banking and balanceof-payments problems. *American Economic Review*, No. 89, pp. 473-500.

Laeven, L., & Valencia, F. (2008). Systemic banking crises: a new database. *IMF Working Papers,* No. 224, Washington.

Reinhart, C.M., & Rogoff, K.S. (2009). *This Time Is Different: Eight Centuries of Financial Folly*. Princeton: Princeton University Press.

Romer, C., & Romer, D. (1989). Does monetary policy matter? A new test in the spirit of Friedman and Schwartz. *NBER Macroeconomics Annual*, No. 4, pp. 121-170.

# Current Market Trends Maritime Transport Services

**Florin Dan Puscaciu[1], Rose Marie Puscaciu[2]**

**Abstract:** Maritime transport services is a fundamental component of international logistics, given that approximately 80% of world trade is carried by sea. Also, considering the spatial distribution of resources according to the processing sites and disposal of finished goods and the fact that nearly two thirds of the globe is covered by water, has led a Norwegian ship-owner, Erling Næss , to claim that "Divinity has been very generous with ship owners."[3] In the 3rd millennium, when this study was done, there were a number of trends representing some sequels of a prior period and also a series of phenomenon of the current period. We aim to address key market segments of shipping. In order to carry out the graphs and determine the indicators we used Matlab software.

**Keywords**: world's merchant fleet; types of vessel segments; the average age

**JEL Classification:** L91; L90

Shipping services market is compounded of many segments that are based on a specialized type of ship as cargo, the method of ships operations, consequently in line mode or random, limited or unlimited navigation system according to a certain area, etc. This market segmentation shipping services is not only analyzing the global market, but these segments also generate independent markets that can register divergent trends in certain periods of time. Also, these segments of maritime transport services market are influenced by both general and specific factors. Among the general factors we can identify:

- the global economy;
- evolution of marine commerce;
- cyclical events;
- transportation costs.

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[3]"God must have been a shipowner." (Stopford, 2009, p. 417*)*

In turn, the transport services market is displayed by a series of indicators such as:

- evolution of the world fleet;
- productivity in fleet operation;
- production of ships;
- market development for scrap (of ships for dismantling and melting);
- freights evolution, etc.

Market-specific factors refer to:

- the evolution of commodity prices;
- utilization of productive capacity for a type of goods for which transport fleet is specialized;
- evolution of final good market, etc.

Although, transportation is not an end itself , but is only a marketing support, transport activity generally responds differently to its influencing factors. Thus, the global maritime fleet recorded during the first decade of the current millennium a continuous upward trend , despite the global economical crisis (see Figure 1). The explanation for this trend of continuous growth consists in both temporary differences between the order of completion of a vessel and time of entry into exploitation, and also the qualitative improvement of world fleet , i.e. descending the exploitation period of the ships designed with lower fuel consumption and shipbuilding responsible for higher regulations on navigation safety and environmental protection measures, etc. (Puscaciu, 1999)

Registered world fleet trend can be modeled as following:

y = 4.916 + -2.682 * t ^ 2 t + 743.9 (1)

where coefficients with 95% probability located between:

a1 = 4.916 (4.555, 5.277);

a2 = -2.682 (-7.128, 1.765);

a3 = 743.9 (732.3, 755.5)

y = million tons dwt fleet in the world, t = time 2001 = 1.

ESS: 168.1, R-square: 0.9995, Adjusted R-square: 0.9994, RMSE: 4.584.

It is estimated that in the next 4-5 years the world fleet will continue to grow. This increase is due to the global fleet growth, i.e. the difference between new constructions and exit from exploitation.

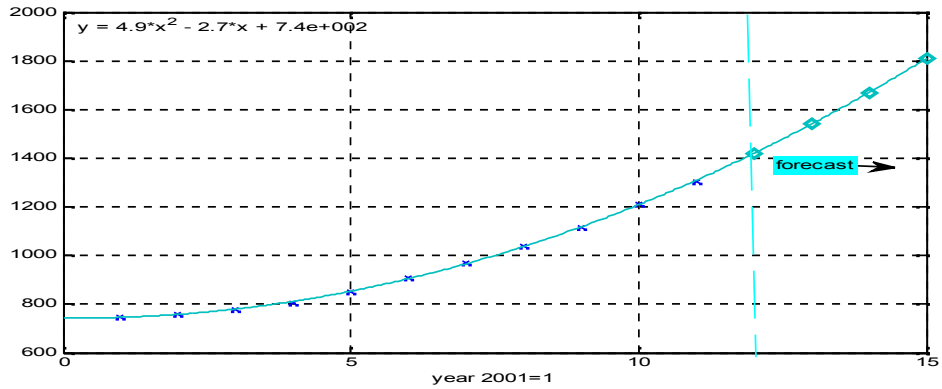


**Figure 1. Evolution world fleet between 2001-2011 mill dwt**
*Data source: U.C.T.A.D. Review of Maritime Transport 2011*

But it can be seen that growth is becoming less which will contribute to a more moderate growth of the world fleet, see Figure 2.

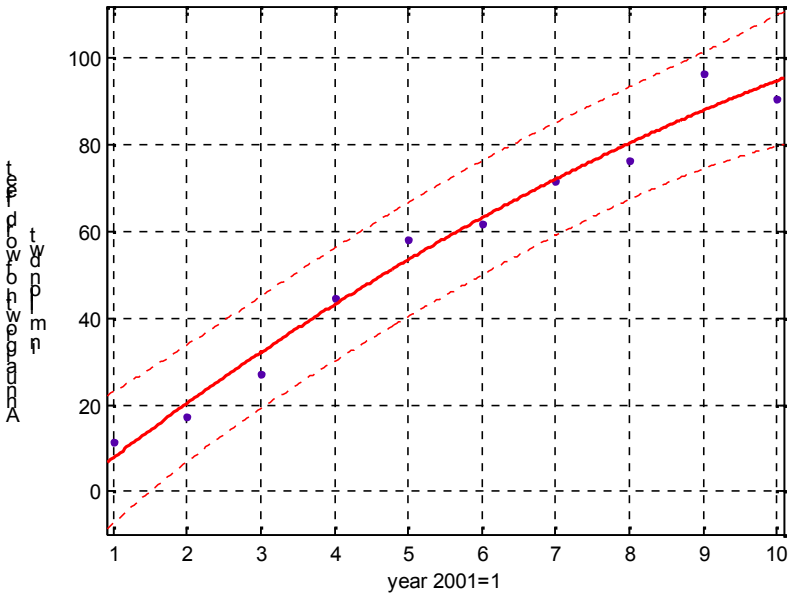


**Figure 2. Evolution annual growth of world fleet in million dwt in the period 2001-2011**
*Data source: U.C.T.A.D. Review of Maritime Transport 2011*

Shipping fleet transport offer is aiming to cover transport demand expressed by goods carried by sea. This dependence is expressed in Table 1.

**Table 1. Evolution and trade interdependence of world maritime fleet**

| Year | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 |
|---|---|---|---|---|---|---|---|---|---|---|
| world fleet in million dwt | 749 | 760,6 | 777,7 | 804,9 | 849,6 | 907,6 | 969,4 | 1040,8 | 1117,1 | 1213,3 |
| Million tons maritime trade | 6020 | 6.127 | 6.480 | 6.758 | 7.109 | 7.545 | 7.882 | 8.169 | 7.858 | 8.408 |
| tonnes of freight / ton dwt | 8,04 | 8,05 | 8,33 | 8,40 | 8,37 | 8,31 | 8,13 | 7,85 | 7,03 | 6,93 |

*Data source: U.C.T.A.D. Review of Maritime Transport*

As you can see, there is a tendency to reduce the tones of freight per unit carried, which shows an increase compared to the evolution of the global fleet of maritime commerce, or in other words, a decrease of productivity in world fleet exploitation. For a long period assessment of the main types of ships we can analyze Figure 3.

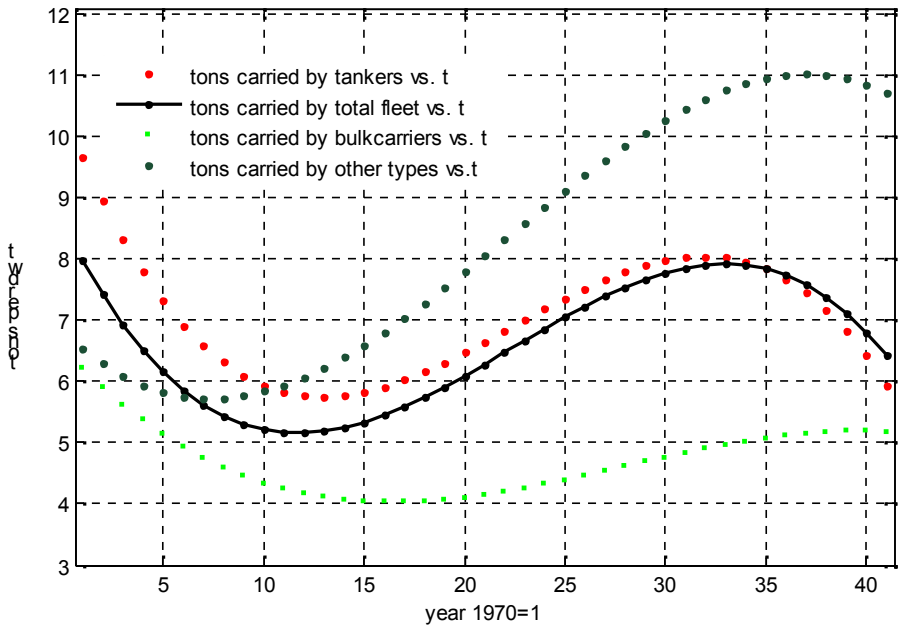


**Figure 3. Evolution tonnes of cargo transported per unit dwt adjusted sizes during 1970-2010**

*Data source: U.C.T.A.D. Review of Maritime Transport - various numbers*

It follows that the phenomenon of productivity in world fleet exploitation is registered in all major types of ships, but with different intensities. The highest productivity is occurring in other types of ships and cargo vessels including container vessels, while the lowest are registered on bulk carriers and tankers. The explanation is that these vessels are exploited only in one direction, usually returning empty.

The world fleet has developed in a divergent structure in the early 2000s while towards the end of the period there is a general trend of convergence. This trend can be expressed by indices signifying changes brought forward by a segment of the world fleet if it would increase by 1%, see Figure 4.

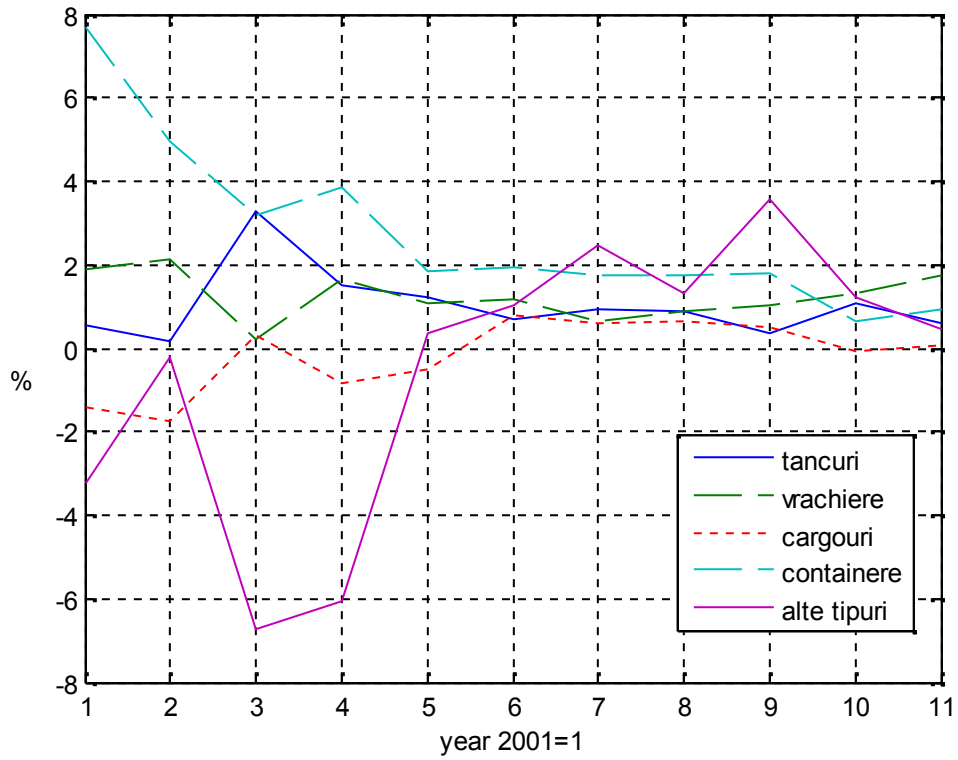


**Figure 4. Indices of brought forward types of ships to the total fleet**

Another phenomenon of the world fleet that has contributed to its growth is the increase in transport capacity per unit, i.e. of dwt. As shown in Figure 5 this tendency is outstanding in new ships, in other words, naval greatness is more

pronounced amongst new ships. It is an embodiment that takes into account the benefits of scale economies and its future increase.

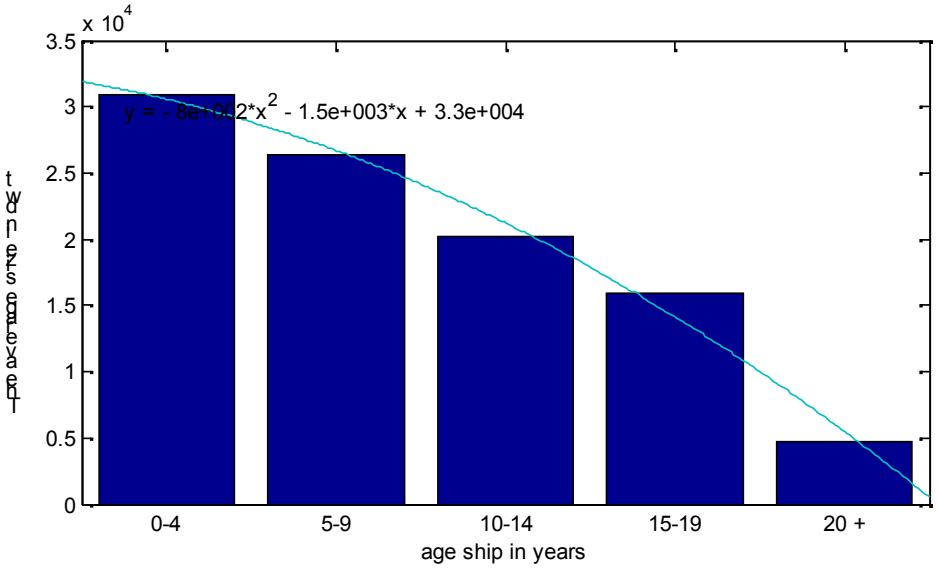


**Figure 5. Dependence of average age and size of ship**

*Data source: U.C.T.A.D. Review of Maritime Transport 2011*

We believe that this trend will be a reaction of the fleet to the current global crisis, even if larger vessels are more vulnerable to shifts on the transported goods market

## Conclusions

The analysis above has proved that despite the global economical crisis, the worlds maritime transport fleet capacity has not been affected, but in the future it will not register significant growing tendencies. In terms of ships types, the reactions of the world fleet independent segments are different. Both cargo fleet and post containers ships seem to be affected by the crisis and it is expected so since both are goods transporters .Meanwhile, tanks and bulk carriers are less sensible to the crisis because they transport industrial goods. We consider that in the future the transport capacity will result in an exploitation productivity growth and not an increase in capacity through new constructions.

## References

Stopford, Martin (2009). *Maritime Economics*. 3rd Edition. Routledge Taylor & Francis Group Publishing.

Puscaciu, Florin Dan (1999). *Management services in transport*. Galati: Latin Publishing House.

***Platou Report 2011.

***UNCTAD Review of Maritime Transport 2011.

# Times of Crisis – From a Comparative Perspective

**Gabriela Marchis**[1]

**Abstract:** *Are we accursed to live in these tumultuous times that we are crossing now?* Nowadays, one of the most heard questions is: *What is the economic crisis and how it manifests itself over the years?* However, we ask about causes and consequences and most of all *when it will ends?* Economic crises are forms of disruption to economic life, due in large part to an "overproduction". The term "overproduction" does not refer here to an output exceeding the society needs, but the situation when these needs remain uncovered, and the demand drops due to lack of funds. This major financial crisis affected the economy of all countries in all its segments: industry, agriculture, construction, trade, transport and etcetera, due to the close links between countries, as a natural consequence of globalization. Thus the current financial and economic crisis has affected industries on which the entire world economy relies on. But, from an economic perspective, the crisis is not a surprise, knowing that the economic cycles are repeated. This paper tries to identify the similarities with the previous economic downturns as a necessity to learn from the lessons of the past.

**Keywords:** economic cycles; economic downturn; Great Depression; European Union; financial panic.

**JEL Classification:** G01; F01; N10.

## 1 Introduction

The discussion in this paper is based on the idea that the economic crisis was no surprise, because from the economic perspective, fluctuations in economic activity is something normal and the stages of an economic cycle are very well known: crisis, depression, revival and boom.

Based on theoretical consideration I believe that the current economic crisis was predictable, knowing that the economic cycles are repeated. The whole world is currently at the end of a cycle of 70-80 years, with dramatic increases in all areas, a world where speculative economy is overrated, a world that consumes more than produces, in which the loans without coverage recently was in bloom.

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In an attempt to understand the coherent nature of the economic crisis, I reach to three simple conclusions:

- current crisis is not in a discordant note to other "accidents" in the course of economic cycle;
- each time for the Marxist tradition, cyclic recurrence economy is postulated as the "Achilles heel" of capitalism;
- economic theories inspired by the Great Depression of the 1930s, which were recently rejected from a healthy logic of economics, are now revived by appealing to an extreme interventionism and regulation of banking financial environment.

I tried through this study to clarify the causes, consequences and responses on the current worldwide economic depression by looking into the past. Also, the aim of this research is to provide a blueprint of reality and of the current economic conjuncture.

## 2 The Crisis – Theoretical Concepts

The term *crisis* comes from the noun Greek *krisis* which means choice, decision, and judgement.

The word *crisis* first appeared in legal, rhetorical and medical terminology as a turning point in a decision, an argument, or a disease.

In the eighteenth century it appears to refer to processes, historical periods or events, and by the last half of the twentieth century it stands and spreads as a term for a crucial stage or a decisive condition of business.

The National Bureau of Economic Research defines *crisis* as "a significant decline in economic activity spread across the economy, lasting several months, which can be seen in GDP, real income, employment, industrial production and other indicators".

The ***economic crisis*** is ultimately a state of difficulty, a dramatic change in economic activities, a serious moment for the whole economy, characterized by stagnation or decline in macroeconomic performance.

"*An economic crisis is an unexpected phenomenon with strong consequences for nations, institutions and people's wealth, habits, and behaviors. It departs from the 'normal' evolution of the affairs foreseen by economic theory. It makes the claim for new theoretical explanations. It surprises the economic agents (individuals, firms and governments) that try to ascertain what kind of phenomenon they are facing in order to decide the appropriate actions to undertake. It calls for revisions of theory, plans and expectations. Overall, a crisis calls for an explanation which*

*clarifies its causes*." (Crespo, 2009) The emergence of alarming economic imbalances between supply and demand and between production and consumption is usually triggered by a *financial crisis*.

The ***financial crisis*** is a situation where demand exceeds supply of cash money, so that liquidity is quickly evaporated because available money is withdrawn from the banks, which are forced either to sell other investments to reduce the deficit, or go bankrupt.

These definitions confirm that an unexpected economic crisis is a phenomenon that has strong negative consequences on nations and institutions but also on the customs and people's welfare.

## 3 Important Crisis with Global Effects – A Brief Overview

Latest economic evolution indicates that the current crisis is the deepest global slowdown in economy after the Great Depression of the 1930s, marking the return of macroeconomic fluctuations of a magnitude unprecedented from the interwar period.

In terms of initial conditions and geographical origin of the crisis, there are clear similarities between the crises of 1907-1908, 1929-1933 and 2007-2011.

All occurred after a sustained boom, characterized by monetary and credit expansion, the rise of assets price and very high risk-taking of investors.

All were triggered in the first stage of events in the U.S., although the causes and imbalances that rise thereto were more complex and global, all spreading internationally to profoundly affect the world economy.

Viewed from another perspective, the lack of money in financial sectors with great worldwide repercussions, together with a sudden reduction in world trade were the main channels of transmission in the real economy.

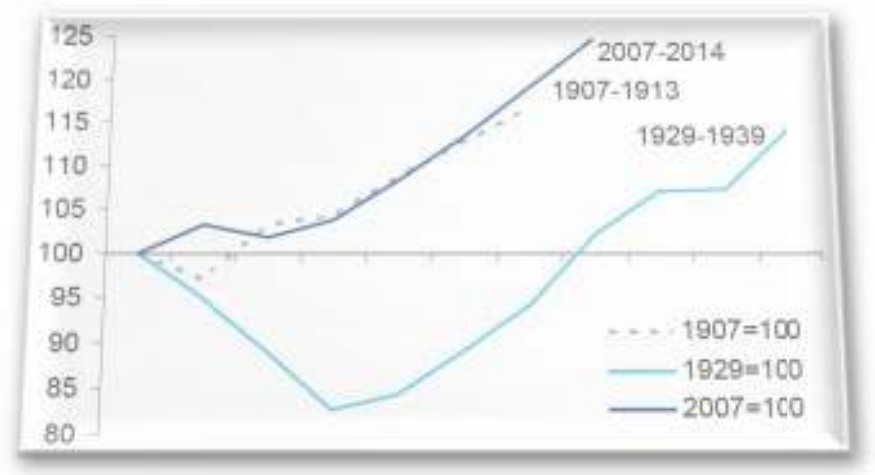


**Figure 1. GDP levels during three global crises**
*Source:* (European Commission, 2009, p. 15)

### 3.1 The Financial Panic of 1907-1908

Financial panic of 1907 is similar to the recent crisis – although some European countries have largely managed to avoid financial difficulties at that time – the accumulation of credits and asset price growth in the period before the crisis, stimulated by the insufficiently supervision of financial sector, and by the role of liquidity gap at the height of panic.

Also in 1907, countries were closely linked through trade and international finance, being in the glory days of the classical gold standard, in the first period of globalization, so U.S. financial markets events were quickly transmitted to other economies.

World trade and capital flows have been affected, and the world economy entered a very deep recession but for a relatively short period, followed by a strong recovery.

Balance in the economy was restored by the intervention of JP Morgan & Co. and U.S. Treasury which provided the necessary liquidity in the banking system.

### 3.2 Great Depression: 1929-1933

Great Depression was the largest global economic collapse so far. In the period preceding the crisis of the 1930s, most of the features presented at the one of 1907 have been met, but there were also notably differences, especially in the lower degree of financial and trade integration which were in the early stages. By the end of 1920s, the global economy has failed to overcome huge disruptions in financial

and commercial ties, arissed from World War I, even if productivity and structural changes have had a strong impulse from technological developments.

The size of international capital flows and global economic integration level decreased greatly. Gradual return to the gold standard after World War I was not enough to restore financial order functionality and credibility to the prior conditions of 1914. An important source of international financianal tensions were the controversies related to German redress payments established by the Treaty of Versailles. Due to the large number of bank failures in U.S. and Europe and to the inappropriate political reactions, the recession has dramatically deepened in the early 1930s.

"*Increasing protectionism and the asymmetric exchange rate adjustments devastated international trade and capital flows*". (European Commission, 2009).

With so many ways of transmission, the 1929 crisis, initially emerged in the U.S. and rapidly turned into a worldwide depression, with several consecutive years of losses in GDP (see Figure 1) and industrial production (see Figura 2), and fragile recovery not until 1933.

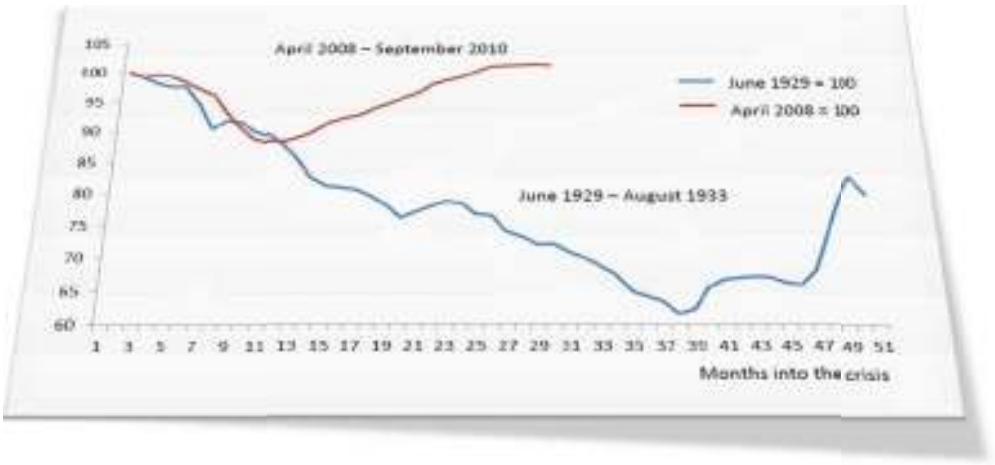


**Figure 2. World industrial outputs during the Great Depression and the current crisis**

*Source: Adapted from (European Commission, 2009, p. 16)*

Based on these indicators, the negative impact of the Great Depression seems to be more severe and on a greater time period to the current crisis.

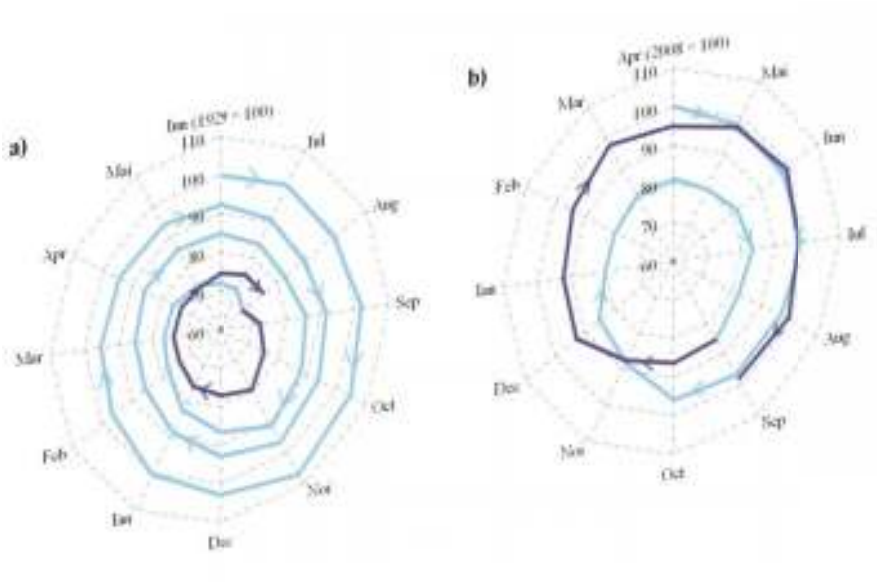


**Figure 3. The decline in world trade during Great Depression (Jun. 1929-Aug. 1933) and the current crisis (Apr. 2008-Sep. 2010)**
*Source: Adapted from (European Commission, 2009, p. 16)*

As shown in Figure 3, the reduction of world trade is more acute now than in the early 1930s. This can be explained both by the shock size and also by the faster contagion in supply chains. However, despite the initial fall, more acute in 2008-2009, the stabilization and improvement of trade seems to be faster in this crisis than in the past century.

While in the Great Depression, both developed countries and the marginal world economy were affected to a similar degree of magnitude, in the current crisis, emerging economies, whose growth was highly dependent on foreign capital flows, seem to suffer the greatest impact in the real economy, and not the countries where the crisis descended.

Another major difference is that in the 1930 there were strong and repeated decreases in the overall level of prices, causing a strong deflationary impulse spreaded by intended restrictive policies.

Finally, in the Great Depression there was mass unemployment, both in the U.S., where the unemployment rate approached 38% in 1933 and in Europe, where it reached even 43% in Germany and over 30% in other countries.

According to European Commission (2009), in terms of financial stress and severity fall in world trade, asset prices and economic activity, the current crisis developed faster than the Great Depression.

Also, scientific literature shows that the Great Depression offers important lessons for the current economic crisis. „*Both downturns featured global banking crises which were generated by boom–slump macroeconomic cycles. During both crises, world trade collapsed faster than world incomes and the trade decline was highly synchronized across countries. During the Depression income losses and rises in trade barriers explain trade's collapse. Owing to vertical specialization and more intense trade in durables, today's trade collapse is due to uncertainty and small shocks to trade costs hitting international supply chains. So far, the global economy has avoided the global trade wars and banking collapses of the Depression, perhaps owing to improved policy. Even so, the global economy remains susceptible to large shocks owing to financial innovation and technological change, as recent events illustrate.*" (Grossman & Meissner, 2010)

### 3.3 Current economic and financial disaster: 2007-?

Experts in economics and finance, economic commentators and everyone believe that the current financial and economic crisis is in fact the result of "greed" and "wild capitalism". Practical reality is that this crisis is only the natural consequence of a long series of interventionist policies. These policies have done nothing over time than to undermine the market economy. The beginning of the end was started in early 2007 when the U.S. housing market started to show signs of weakness. Nowadays, this scenario is well known in Europe, as well. It may be considered that triggering economic disaster in the United States was based on the following specific reasons: state insolvency bond packages; the failure of monetary stability measures; centralized monetary planning; encouraging the subprime lending by state (mortgage loans granted by banks without taking into account the creditworthiness).

Fundamental determinant of the crisis is the inflationary policy of the early 2000s, manifested by an extremely serious "monetary relaxation". Credit boom in developing economies in Eastern Europe has the origin into the permissive monetary policy of Federal Reserve System (FED), Bank of Japan (BoJ) and European Central Bank (ECB) in the early 2000s. For example, by 2006 the real interest rate in Euro Zone and Japan was at a level close to zero, and in U.S. real interest rate was negative between 2000-2002, which means that the banks were paid to take money from the FED, money which in the economy have been spend in accordance with others incentives and political constraints that influence decisions process.

It can be said with any certainty that the cause of the most important European economic crisis is current account deficits of countries. In most situations encountered, these deficits were fueled by a boom in housing market and huge increases in consumer spending, along with a significant decrease in savings. In

other circumstances, it was government deficits or even more loans in excess, or rather, the increasing debts of the population and businesses.

A normal question that arises is: **Which way forward**? "*The movement toward new economic global governance is not the result of a single strategy but, rather, an original blend of different solutions enhanced by flexibility and experimentalism. Some of these solutions involve efforts to strengthen multilateral agreements and the effectiveness of supranational institutions and regulatory measures; others aim to develop new forms of cooperation among governments, through a "concerted practice" form of action.*" (Napolitano, 2011)

## 4 Conclusions

The expansionary policy in the monetary area continues, the more serious bad investments will be, more painful will be to return back on the path of healthy growth. Therefore, the solution of the crisis really can not stand in the "money circulation"supplement, since this is a serious confusion between countercyclical and procyclical policies. This is why, we must understand that, slowing or even stopping cheap money policy are steps towards recovery.

The phenomenon of economic recession manifested itself differently in EU countries due to the diversity of these countries, in terms of economic power, pattern and level of development, culture, economic development branches. It may be observed that all EU countries and more, countries from across Europe, have seen a sudden reversal of capital flows, as investors retreated from risky markets and turned to safer savings. The results of investors' reactions were predictable and at the same time brutal for European Union emerging economies For exemple, Hungary, Romania and Latvia have appeal to substantial loans from the International Monetary Fund, all three Baltic countries were confronted with rising unemployment, Latvia, which can be said to have been hardest hit, has been confroted with the fall of the government and with the rating downgrade.

These countries fall into the classic pattern of the evolution of emerging economies, which soar to heights increase alongside with the influx of foreign capital and after that collapse, when investors prefer to withdraw from these markets and this is the boilling point because these countries become very sensitive to macroeconomic changes.

It is important to mention that, in this macroeconomic context European decision makers from the highest level have hesitated to adopt a bold policy of economic stimulation. European countries who could afford an ambitious economic stimulus program and were well correlated with the movement of markets at the macroeconomic level (as was the case of Germany) initially disaproved the economic rescue measures taken at EU level, and, on the other side, countries that

had most need it (Spain, Portugal, Italy and Greece) lacked the necessary money, these countries being already affected by huge budget deficits and massive debt, compared with their size and economic capacity.

So, I must conclude that time is very important in taking a decision and it may be essential for the success of actions and it can distinguish between success and failure.

Lack of strong and consistent decisions made that global economy contracted at a rate that is comparable, in magnitude and depth, with the collapse of 1929 and 1931 that marked the beginning of the Great Depression. By comparison, we can ask, if we are on the verge of a profound crisis for the Euro and for the European Union's existence?

The response of the Euro Area and EU as a whole, we witness in the near future, but, transposing this crisis in the European context, in terms of the particularities occurred on European economy, makes us wonder: *Are we accursed to live in these tumultuous times that we are crossing now?*

## 5. References

*Board of Governors of the Federal Reserve System.* (n.d.). Retrieved from www.federalreserve.gov.

Crespo, R. F. (2009). Thinking about the financial and economic crisis: some brief notes on its causes and remedies. *Think*, 97-103.

*European Central Bank*. (n.d.). Retrieved from www.ecb.int.

European Commission. (2009). *Economic crisis in Europe: causes, consequences and responses.* Luxembourg: Office for Official Publications of the European Communities.

Grossman, R. S., & Meissner, C. M. (2010). International aspects of the Great Depression and the crisis of 2007: similarities, differences, and lessons. *Oxford Review Economic Policy, 26*(3), 318-338.

Krugman, P. (2008). *The return of depression economics and the crisis of 2008.* New York: W.W. Norton & Company Inc.

Napolitano, G. (2011). The two ways of global governance after the financial crisis: Multilateralism versus cooperation among governments. *International Journal Constitutional Law, 9*(2), 310-339.

*The National Bureau of Economic Research*. (n.d.). Retrieved from www.nber.org

Vira, A., Philippon, T., Richardson, M., & Roubini, N. (2009). The Financial Crisis of 2007-2009: Causes and Remedies. *Financial Markets, Institutions & Instruments, 18*(2), 89-137.

**Financial Institutions and Services**

# Central Banking: Between Policy Monetary and Global Crisis

**Mariana Trandafir[1], Georgeta Dragomir[2], Luminita Maria Craciun[3]**

**Abstract:** Central Banks have been at the heart of the recent Global Financial Crisis and in the face of unprecedented challenges: to ensure monetary stability in a period of deep financial turmoil. Which seems to require rethinking the theoretical precepts and practice of international monetary this study is to survey the evolution of the central bank in terms of functions performed throughout its history in the context of the dominant paradigm of each stage of evolution of society. The empirical research work carried out year impact of monetary policy on the evolution of inflation targeting price stability over the last fifty years. The Great Inflation to the current global crisis. Paradigm dedicated to monetary policy focused on price stability as an independent and objective, seems to resist the crisis. Although there is agreement on maintaining price stability as a priority objective of the central bank, most researchers and practitioners believe that financial stability is as important for monetary authorities.

**Keywords:** central banking; monetary policy; global financial crisis; price stability

**JEL Classification**: E 31; E 52; E58

## 1. Introduction

The current global financial crisis has shown, if needed, that the monetary savings are not science laboratories equipped with the ability to conduct controlled experiments and that no central bank, ore monetary policies cannot ensure a financial stability atolls.

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Starting in August 2007, the world was hit by a "once-in-a-century credit tsunami" (Alan Greenspan). The financial crisis pushed Central Banks in front line (Caruana, 2011) and it highlighted a new set of challenges for central banking. The financial crisis caused the most severe contraction since the world-wide great depression and is associated with often subliminal changes in the mandates and functions of both central banks, but it seemed to sweep away also the confidence in the ability of central bankers to successfully manage the economy. (Mishkin, 2011) Central bankers responsible for inaction were worsening the broadly held during the great economic downturn inflation of the 1970's. Milton Friedman was attributed responsibly for the great inflation economic and political leaders. He argues that the great inflation occurred because of the political and economic officials in charge who were at the time. And the great inflation of the people ended because ware in charge at that time. (Taylor, 2002) The failure of weak monetary regimes to reign in high inflation led to the establishment, in the early 1980's, monetary policy of price stability frameworks solidly anchored by mandates, and safeguarded by independent and Central Autonomous

The 'great moderation' of the 1990's appeared to have inflation under control permanently and conveyed the impression that the monetary policy battles of yesteryears had been won, but the current financial crisis has brought new challenges and requires new approaches monetary theory and practice.

The crisis has reaffirmed the Importance of a clearly defined having objective for price stability and central bank of independence, which, under the specific mandates together with transparent communication continue to policies will be instrumental in the pursuit of price stability by monetary authorities, but incorporating monetary phenomena in the policy framework established can help the economy in the medium term. That coupled with the inescapable fact inflation is a monetary phenomenon in the long term, this is a reason to redress powerful under-appreciation of the monetary and credit variables in policy frameworks characteristic of the policy paradigm in the run-up to the crisis.

## 2. Central Banking - Between Science And Art In Monetary Policy

### 2.1. Highlights of the evolution of central banking

From the viewpoint of history, the central bank is a relatively new "invention", the last of the three great inventions since the beginning of time, revealed by Will Rogers, (Samuelson & Nordhaus, 2000) located at the "crossroads" and involving in practice a considerable amount of learning and adaptation to a changing environment. (Silk, 2002)

Whit the descent set in history in the second half of the eighteenth century, central banks (table no. 1) did not meet until the early twentieth century, a major role in the economy, their appearance is caused by reasons related to:

- Public debt management and operation as clearing house for commerce, similar to Swedish Riksbank, the first central bank recognized as a institution;

- Financing the costs of war, the typical example being the Bank of England, structured as a finality of a long evolutionary process of the commercial bank status;

- Stabilize the currency after the hyperinflation of paper money during the French Revolution and to aid in government finance, such as Bank of France;

- Creation of new institutions, invested with a clearly defined mandate and specific tasks, a situation found, in Bank of Japan or the National Bank of Romania.

An American President, Andrew Jackson (1829 - 1837) even dispensed with his country's central bank in the nineteenth century Because he did not think that it was very important, attitude confirmed by the reality: in 1900 only nineteen countries have central banks of which two were placed outside the European area - Bank Indonesia (1828) and Bank of Japan (1882).

Implemented under the rule of dominant theoretical precepts of that time, the current political pressures and the dictum “think before taking decisions,” said central banks were on the stage of economic life after 1900, at developments at all surprising, almost tripling the number by the end of the twentieth century, reaching 1990-161 central banks, compared with 59 central banks in 1950 were one (Capi Forrest, 2004), because at the beginning of the millennium, in 2011, to operate in the world's 173 central banks . An important place it occupies in the hierarchy of their latest creation in the European Central Bank, holding a new central bank, conceived as a supranational body, immune to the interests and influences national governments of the Member States.

Strong economic international environment and institutional marking The Great Depression years1929-1933, World War, United inflation and the rising of unemployment in most developed countries as a result of the collapse Bretons Woods arrangements, but the oil shocks of the 1970s, re-imposed conventional thinking and Central Banks have turned into “the force that drives the whole banking system.” (Kiriţescu, 1994), with responsibilities in ensuring the health of the banking system and currency stability. Since 1936, in her book The Rationale of Central Banking, Vera Smith Lutz explained that the twin mandates of Central Banks stable money and sound banking was. in fact, the main objective of the Bundesbank, established in 1957 in the country suffered from hyperinflation That during the inter-war, was price stability.

## 2.2. Defining features of modern central banking

In a world where "the monetary savings are not science laboratories equipped with the ability to conduct controlled experiments" (Friedman, 2000) central banks, combining scientific rigor with professional makers, fulfilling different functions, the appropriate concept of management economic and financial development of each stage of economic and financial.

In the report of Central Bank Governance Group (BIS, 2009). David Archer analyzed a sample of 41 statutes including central banks and emerging economies belonging to the diversity of functions, customary designed "for the Economic Interests of the nation, consistently with government economic policy" and found, in part or in whole, in the laws governing the activity of each central bank. In the modern central banking the list of central bank functions is open-ended and dynamic, and the relative importance of the functions of the central bank have changed over time and across countries. (Lastra, 2009)

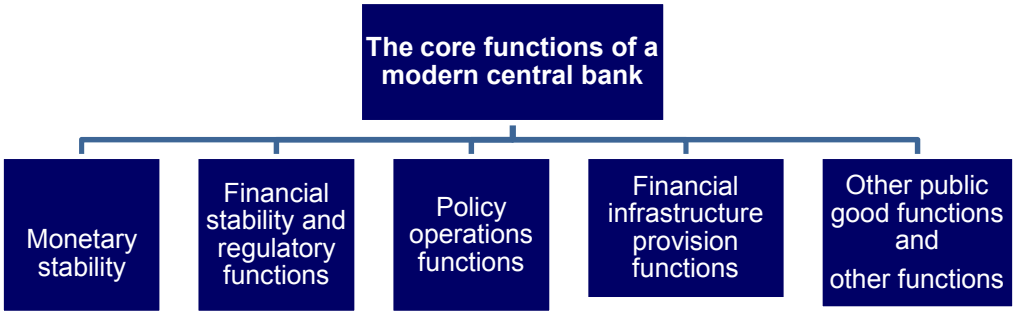


**Figure 1. Central Bank Functions**

That breakthrough industrialized economy to have narrowed Central Banks awnings their range of functions over time, Archer identifies two main reasons for the Emerging Market Economies in Central Banks to be allocated awnings wide range of functions of Central Banks in industrialized economies:

• in this countries, Central Banks is a source of expertise often that can be used in wide range of applications;

• responsible for Central Banks is often guiding the development of immature Financial Systems.

International experience shows that, at the end of a century of expansion, mystic and mystery that characterized the activity of central banks, has become, especially in the last two decades in power, independence, accountability and transparency in history unrivaled experience, professionalism, intuition, ability and competence of decision makers are essential criteria which gives credibility to central banking. Although it cannot be legislated, credibility in monetary terms is a concept of insurance policies attached to currency stability and community. (Fraser, 1994)

In the established sense, central bank independence as legal status is defined by freedom conferred on it by using tools available in the manner it deems appropriate to ensure price stability. In this context, Rosa Lastra argues that Central Bank independence is conceived as a means to achieve the goal of price stability. (2009) In stand's view, Central Bank independence means that, except in exceptional circumstances, nobody can interfere in the decisions made by the central bank in the exercise of its functions or, reverse the course of its decisions. (2003)

An extensive literature reveals agreement on central bank independence, designed to protect the many temptations of political power in a world of democracy in which politicians "are shortsighted because they are driven by the need to win the next election, with the first objective, they focus on long-term goals such as promoting price stability." (Mishkin, 1995)

In a recent approach, nuanced under the impact of the current international financial circumstances, the central bank Adam Posen independence is defines as "the ability to say no when demands for bond purchases they have economically unjustified, no more, no less." (2010)

Central bank independence has allowed the affirmation of a new behavioral dimension: transparency of its operations. With different connotations, central bank transparency is defined in the literature as "the public can monitor and infer central bank intentions, in particular, the current intentions." (Hans Dillen, 1998)

The new paradigm "independence and transparency" is a topic of the debate academic. At the official level of monetary policy transparency is considered "extremely useful in a firm anti-inflationary orientation banks," (NBR, 2002) suggesting the public the seriousness and responsibility of monetary policy targets announced and generating reputational gains. Public credibility of central bank policy remains a useful tool for policy makers working in monetary central bank responsibility for decisions regarding the independence and transparency associated concepts.

## 3. Pre-crisis Monetary Policy Paradigm

### 3.1. Price stability - one of the twin foundations of the dominant paradigm monetary policy

Main concern, with fiscal policy, which "influence governments, usually in a market economy, speed and direction of all economic activities, including not only the aggregate production and employment, and the general index increase or decrease in prices." (Friedman, 2000) monetary policy decision-making and implementation is the defining characteristics of the central bank.

The Great Inflation of 1965 to the mid-1980's the central monetary event of the latter half of the 20th century. It destroyed the Bretons Woods system of fixed rates exchanges, bankrupted much of the thrift industry, and heavily taxed the U.S. capital stock, and redistributed income and wealth arbitrarily. It was an event policy also, having all major policy issues. (Meltzer, 2005)

In this context, monetary policy responds to the challenges of structural changes affecting the global economic architecture in an attempt to model the real economy side, incited to further explore the nature of practical action opens up new horizons. The monetary history of United States during the post-World War II period consists of the Great Inflation flanked by two periods of relative price stability: from price stability in the mid 1950s through the 1960s, late 1960s to inflation from the 1980s to the early, disinflation in the early 1980's, to price stability in much of the period since then. Milton Friedman attributed responsibility for the Great Inflation economic and political leaders. He argues the Great Inflation occurred because of the political and economic officials in charge who were at the time that started. And the Great Inflation of the people who ended because were incCharge at the time that ended. (Taylor, 2002)

**Table1. Inflation developments in United States and United Kingdom, 1969 – 1983**

| EAR | 1969 | 1970 | 1971 | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 | 1978 | 1979 | 1980 | 1981 | 1982 | 1983 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| U.S.A. | 5.4 | 5.9 | 4.2 | 3.3 | 6.3 | 11.0 | 9.1 | 5.8 | 6.5 | 7.6 | 11.3 | 13.5 | 10.4 | 6.2 | 3.2 |
| U.K. | 5.5 | 6.4 | 9.5 | 7.1 | 9.2 | 16.1 | 24.7 | 16.3 | 15.8 | 8.6 | 12.6 | 16.9 | 12.2 | 8.5 | 5.2 |

*Source: Nelson Edward The Great Inflation of the Seventies: What Really Happened?, Working Paper January 2004. Federal Reserve Bank of St. Louis*

The consensus model of monetary policy aims in the sense of good friend, the priority for price stability, the targeting of core inflation rather than headline, the importance of credibility for low inflation and preemptive interest transparent policy rates supported by objectives and procedures. (2007)

Learning lessons of practical experiment, price stability, namely "the ability to achieve a stable currency based on trust in society and in the future" (Otmar Issing, 2000) became, after the 80's, a fundamental objective of most central banks. Price stability is defined as a member in the general price level which is literally the inflation rate is stable or sufficiently low and stable. (Papademos, 2006)

The monetary low level, and relatively stable levels of inflation of the "Great Moderation", showing strong anti-inflationary commitment of government policies involving more credibility and monetary authorities have transformed the disinflation process in a "global phenomenon" (Borio, 2003) with a significant impact on economic performance.

The lower and more stable inflation performance of recent years reflects, in part, a sea change in thinking at Central Banks. The high inflation of the 1970s led to Central Banks to focus policy on a much Greater degree inflation performance over the medium term.

In this context, it should be noted that at the beginning of the millennium, inflation seemed bet was finally won: in international and emerging economies, inflation rates over 10 percent annually constitute rare exceptions.

**Table 2. Inflation rate between 1980-2001**

| | **1980/1984** | **1985/1989** | **1990/1994** | **1995/1999** | **2000/2001** |
|---|---|---|---|---|---|
| Major industrialized countries* | 6.9 | 1.4 | 1.5 | 0.9 | 2.2 |
| Other industrialized countries** | 8.4 | 4.6 | 2.0 | 0.9 | 3.5 |
| East Asia*** | 12.1 | 4.3 | 4.1 | 13.9 | 6.5 |
| Latin America**** | 106.0 | 306.9 | 1202.9 | 32.5 | 10.5 |

*Source: Claudio Borio, William English, Andrew Filardo: "A Tale of Two Perspectives: Old and New Challenges for Monetary Policy?", Bank of International Settlements, Working Papers no. 127/februarie 2003*

(*USA, Euro Area, Japan, Britain, Canada, **Australia, Sweden, Norway, Switzerland, ***Thailand, Malaysia, Indonesia, Korea, ****Brazil, Mexico)

The fear of inflationary pressures in maintaining consensus reflected in the governmental authorities to assume the priority of price stability objective of monetary policy inflation target by directly targeting strategies.

Academic level, the final nomination of monetary policy pursued by objectives the central bank is widely debated topic, divergent approaches focus on either "steady increase domestic production and maintain low unemployment" (Samuelson & Nordhaus, 2000), "Nominal income targeting" (R. E-Hall, NG, 1994), price stability and real GDP (Feldstein & Stock, 1994) or employment and price stability added growth (Fry, 2000) or price stability.

According to a survey undertaken in July 2007 (Cocris, Capraru, 2008) on the Statutory Objectives of Central Banks, comprising a sample Statutes 128 Central Bank, monetary stability is the ultimate goal for 57 central banks (44.5 percent), price stability the central bank only 38 (29.6 percent), price stability and one or / and others objectives for 22 central banks (17.2 percent) and economic growth or "for the purpose of economic growth" for 38 central banks (29.6 percent).

### 3.2. Challenges of Grand Moderation and the "New Economy" Pre-Crisis

Multiplying the intellectual capacity in the same way as the industrial revolution has increased the physical capacity, information and communications technology, with a major impact on the financial services industry, has generated various financial innovations and allowed quick and easy access to information flows linking all spheres of human activity, bringing academic debates of the 90's year's, a new concept of a "new economy".

"The new economy," whose essence lies "in a permanent increase in potential output growth, with productivity gains due to technological innovation as the main force behind this development" (Duisenberg, 2003), held in it new challenges:

• various information technology innovations resulting from advances in the form of new products and financial instruments such as internet banking, electronic money, Broking services on-line or electronic system for conducting financial transactions, have dissipated within the boundaries between different financial instruments;

• causing expansion of capital markets, IT infrastructure has had a rapid impact technology on financial markets, incorporating new developments in investment decisions, opened a new era of business opportunities, exceeding all previous records in the field. For example, the amount of new investments in stock markets in the euro area increased from 130 billion in 1998 to 320 billion euros in 2000, while average monthly price-earnings ratio of shares held in the fields of technology, media and telecommunications overcome, in March 2000, over five times the average of the last 25 years.

• explosive growth of stock prices, creating the illusion that "the sky may become limited" (Duisenberg, 2003) in early 2000, accompanied by excessive volatility, stock prices led the decline and expanding financial imbalances. In the euro area, stock prices, measured by Down Jones Euro Stocks Index, represented the end of April 2003, only about 43% from the level recorded in March 2000. Issuance of new shares was in 2002, only about 45 % of the annual average for the period 1999-2002. International Monetary Fund estimated in 2003 that 10% supported reducing the share price could affect economic growth with a lag of two years of decline in market capitalization, especially in countries with traditional markets, channel and consumer spending investment.

**Table 3. The evolution of inflation and real GDP, 2003 -2007**

| | 2003 | | 2004 | | 2005 | | 2006 | | 2007 | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Inflation | Real GDP | Inflation | Real GDP | Inflation | Real GDP | Inflation | Real GDP | Inflation | Real GDP |
| The World | 3.6 | | 4.9 | | 4.6 | | 5.3 | | 5.4 | |
| Advanced economies | 1.9 | 1.9 | 3.1 | 2.0 | 2.7 | 2.3 | 3.1 | 2.4 | 2.8 | 2.2 |
| U.S. | 2.5 | 2.3 | 3.5 | 2.7 | 3.1 | 3.4 | 2.7 | 3.2 | 1.9 | 2.9 |
| E.U. area | 0.7 | 2.1 | 2.2 | 2.2 | 1.7 | 2.2 | 3.2 | 2.2 | 3.0 | 2.1 |
| Emerging and Developt Economies | 6.2 | 6.6 | 7.5 | 5.9 | 7.3 | 5.8 | 8.2 | 5.6 | 8.9 | 6.5 |
| Central and Eastern Europe | 4.8 | 10.9 | 7.3 | 6.6 | 5.8 | 5.9 | 6.4 | 5.9 | 5.5 | 6.0 |
| Independent States | 4.8 | 12.3 | 7.3 | 10.4 | 5.8 | 12.1 | 6.4 | 9.4 | 5.5 | 9.7 |
| Developed Asia | 8.1 | 2.6 | 8.5 | 4.1 | 9.5 | 3.7 | 10.3 | 4.2 | 11.5 | 5.4 |

*Source: IMF, Global Outlook Report, September 2011*

This extraordinary dynamism printed on all levels of economic life revealed reverse: although episodes of boom and bust (boom and busts) have existed since the early 80's. Global emphasize integration of financial markets and increasing capital flows and investment portfolio, experiences of the new millennium were sometimes even surprise the authorities.

The global economy has produced since the fall of 2001, new surprises. The U.S., on the first line of home business reduced engine power, in an amazing synchronization across the planet, (table) with a possible combined effect of the end of a boom in investment activity (investment boom) with strong fluctuations in stock prices.

Unforeseen events which succeed each other rapidly, more and more virulent financial crises and the overall evolution of the global economy are real challenges for central banks. Statutory requirement to maintain price stability over the medium time horizons, and should focus efforts towards maintaining financial stability through information analysis, current and future, financial markets and their incorporation in the content of strategic decisions at the central bank sent the real economy through financial markets

Signaling capacity of the monetary authority, essentially the ability to communicate in a credible and convincing, his intentions on changing conditions in the money markets and long-term objectives may influence the behavior of integrated financial markets. Credibility and good communication with the markets are allowed to transform the financial system in an efficient mechanism for allocating resources in society, able to avoid failures.

## 4. Paradigm of Monetary Policy during the Global Crisis - Lessons of the Crisis

Although the evidence is the dimension of the recent global turmoil Financial, Almost four years after the onset of the crisis, There is still no full agreement among policymakers and Researchers on what caused an the build-up of Financial imbalances Globally. Jean-Claude Trichet believes that the main causes of the crisis HAS Been the negligence of Financial Risk. (2011), Blundell-Wagnall while Adrian Paul Atkinson and the Current Financial Crisis Explained as being at two levels caused an: Policies affecting liquidity by global macro by the very poor and Regulatory Framework (2008).

In fact, the global crisis was an outcome of the interplay between both macroeconomic and microeconomic factors. From a macroeconomic perspective, the crisis has been attributed to the persistence of global imbalances, excessively accommodative monetary policy pursued in major advanced economies and lack of recognition of asset prices in policy formulation. From a microeconomic perspective, the crisis has been attributed to the rapid financial innovations without adequate regulation, credit boom and the lowering of credit standards, inadequate corporate governance and inappropriate incentive system in the financial sector and overall lax oversight of the financial system. (Mohanty, 2009)

The crisis has brought the global economy in a dangerous new phase. Global activity weakened and become more uneven, confidence recently fallen sharply, and downside risks is growing. Besides, the euro area encountered major financial turbulence, global markets suffered a major sell-off of risky assets, and there are growing signs of spillovers to the real economy. The structural problems facing the crisis-hit advanced economies have proven even more than expected intractable, and the processes of devising and reform implementation are even more complicated.

*World Economic Outlook* (WEO) projections indicated that the global growth moderated to about 4 % through 2012, from over 5 % in 2010. Real GDP in the advanced economies is projected to expand at year anemic peace of about 1 ½ and 2 % in 2011 respectively 2012 (table)

**Table 4. Real GDP and inflation estimates, 2011 - 2016**

| | 2011 | | 2012 | | 2016 | |
|---|---|---|---|---|---|---|
| | Real GDP | Inflation | Real GDP | Inflation | Real GDP | Inflation |
| World | 4.0 | | 4,0 | | 4,9 | |
| Advances economies | 1,6 | 2,6 | 1,9 | 1,4 | 2,7 | 1,8 |
| United States | 1,5 | 3,0 | 1,8 | 1,2 | 3,4 | 1,7 |
| Euro Area | 1,6 | 2,5 | 1,1 | 1,5 | 1,7 | 1,9 |
| Emerging and Development Economies | 6,4 | 7,5 | 6,1 | 5,9 | 6,7 | 4,3 |
| Central and Eastern Europe | 4,3 | 5,2 | 2,7 | 4,5 | 3,9 | 3,6 |
| Commonwealth of Independent States | 4,6 | 10,3 | 4,4 | 8,7 | 4,2 | 6,4 |
| Developing Asia | 8,2 | 7,0 | 8,0 | 5,1 | 8,6 | 3,5 |

*Source: IMF, Global Outlook Report, September 2011*

## 5. Acknowledgment

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## 6. Reference

Bernanke B. (2003). Constrained discretion and monetary policy. *BIS, Review no. 5/ February.*

Bordo M. (2010) *Central Bank Independence and Financial Crisis in History*. Vienna.

Borio C. E. & William F. A. (2003). A Tale of Two Perspectives: Old and New Challenges for Monetary Policy?. Bank of International Settlements, *Working Paper* no. 127/ February.

Blundell-Wignall A. & Atkinson P. & Se Hoon L. (2008). *The Current Financial Crisis: Causes and Policy Issues Financial Market Trends*, OECD.

Caruana J. (2011). *Central Banking between past and future: which way forward after the crisis?*. Speech South African Reserve Bank, Pretoria.

Cocris V.& Capraru B. (2008) Controverse privind obiectivul principal de Banca Centrală de stabilitate a preţurilor/Controversies on the Central Bank Main Objective of Price Stability. *Review of Theoretical and Applied Economies* no 9/2008.

Duisenberg W. F. (2001). The role of financial markets for economic growth. Economic Conference *The Single Financial Market: TwoYears into EMU*. Viena, May 2001.

Fraser B.W. (1994). *The Art of Monetary Policy*. Reserve Bank of Australia Bulletin, Octomber 1994.

Fischer S. (2011). *Central banking lessons from the global crisis*. BIS Central bankers speech.

Goodfriend M. (2007). How the World Achieved Consensus on Monetary Policy. *Journal of Economic Perspectives*, vol 21, no 4.

González-Páramo J. M. (2011). ECB Workshop *The Macroeconomic Impact of Non-standard Monetary Policy Measures*. Frankfurt am Main, 24 March 2011.

Greenspan A. (1996). The Challenge of Central Banking in a Democratic Society. Speech at *Annual Dinner and Francis Boyer Lecture of the American Entreprise Institute for Public Research*, Washington (1996).

Lastra R. (2009). Central Bank Independence and financial stability. *Banco de Espana. Estabilidad Financiera/ Spain bank. Financial Stability* no 18.

Marvyn K. (1999). *Challenges for Monetary Policy: New and Old. Federal Reserve Bank of Kansas City.*

Meltzer A. H. (2005). *Origins of the Great Inflation*, Federal Reserve Bank of St. Louis *Review*, March/April, *87*(Part 2)

Mohanty D. (2009). The global financial crisis – genesis, impact and Lessons. *Speech at the International Conference on "Frontiers of interface between statistics and science"*. University of Hyderabad.

Mishkin F. (1995). *The Economics of Money, Banking and Financial Markets*. Fifth Edition. Harper New York: Collins College Publishers.

Mishkin F. (1996). *Understanding Financial Crisis. A Developing Country Perspective*. National Bureau of Economic Research, *Working Paper Series*, no. 500.

Mishkin F., Schmidt H. K. (2001). *One Decade of Inflation Targeting in the World: What Do We Know and What Do We Need to Know*?. NBER Woking Paper 8397.

Mishkin F. (2011). *Monetary Policy Strategy. Lessons from the crisis*. NBER Working Paper 16755.

Samuelson P., Nordhaus W. (2000). *Political econo*my. Bucharest: Teora.

Schinasi Garry *Responsibility of Central Banks for Stability in Financial Markets*. IMF Working Paper 03/121/ June

Stark J. (2011). *The global financial crisis and the role of central banking*. Institute of Regulation & Risk, North Asia, Hong Kong, 12 April 2011.

Svensson L. (1999). *How Should Monetary Policy Be Conducted in an Era of Price Stability*?. New Challenges for Monetary Policy, Federal Reserve Bank of Kansas City.

Vinals J. (2010). *Central banking lessons from the crisis*. May, www.imf.org/external/np/pp/.../052710.pdf.

*The future of central banking under post-crisis* mandate (2011). BIS Papers no 55, January, http://www.bankersalmanac.com/addcon/infobank/central-banks.aspx).

# Evolution of Taxation in Romania between 2001 – 2010

**Pripoaie Silviu[1], Pripoaie Rodica[2]**

**Abstract:** The general characteristic of modern economies is given by the rapid growth of the demand of financial resources as compared to the possibility of acquiring them. In periods of economic *boom,* when State levies allow the procurement of sufficient resources, the way of applying State conjuncture policies and its functions do not cause any debates. However, when the economy is in crisis and as the economic disequilibria carry along social difficulties, the need for financial resources can generate conflicts both between the adepts of different economic doctrines and in other environments as well (population and taxpayers included).

**Keywords:** taxation; tax pressure; economic policy

**JEL Code:** H20; H21; H25

## 1. Tax Pressure - Important Tool in Influencing the Effects of Economic Conjunctures

The obligation to pay taxes appeared along with the emergence of the State and of Law in the human society and the attempt to elude this system was more or less strong according to the increase or decrease of tax burden.

Irrespectively of the terms used: tax burden, tax pressure, fiscal coefficient, compulsory levies rate, etc. the central idea is that of the obligation towards the State and of the diminution / cutting of personal incomes. (Cioponea, 2007, p. 205)

The *tax pressure* indicator (or tax rate) represents the ratio between inland revenues (of the State and of local communities) and GDP or NDP, expressed in

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percentages. This indicator measures the share of tax in the obtained wealth and thus allows determining the tax burden.

The compulsory levies rate is often emphasised as an indicator measuring the degree of State intervention and is frequently used for international comparisons, especially in order to measure differences between countries, in matter of tax pressure particularly. (Craiu, 2004, p. 123)

The aim of conjuncture policies is to stabilise the economy by means of counter-cyclical methods: expansionist, in periods of recession and restrictive, in periods of expansion. Therefore, the fiscal policy of a State represents an important tool in influencing economic conjunctures, either in modifying the tax rate, or in changing the structure of State expenditures.

The change of the tax rate and / or of the share of budget resources categories in the total State revenue varies with the economic situation: when economy boost is wanted, in case of recession, the tax rate will be low, direct taxes will be less burdening, etc, while in case of economic overheating, contrary measures shall be adopted.

It is known that an increase in indirect taxes causes inflation (a reduced economic growth) and in case of recession, the decision to opt for preponderantly favouring inflation decrease at the risk of disfavouring the rhythm of economic growth is difficult and controversial, the tools of fiscal policy being crucial.

The increase of the role of State in present economies is more and more obviously and thoroughly regulated. State budget - the tool by means of which the State influences the evolution of economy - has become the tool of a new economic policy, that is, budgetary policy. Thus, broadly speaking, budgetary policy includes:

- fiscal policy;
- allocation policy (or budgetary policy, strictly speaking);
- budgetary balance policy (deficit financing and budgetary surplus exploitation).

In the analysis of the impact of State's fiscal policy on the economic growth, an important part is played by the phenomena of underground economy development and of tax evasion stimulation generated by the enforcement of much too high tax rates. Tanzi Vito (Tanzi, 1995, p. 15) analyses the effects of a tax system with arbitrary exceptions and other distorter elements: the degree of corruption increases, production and, consequently, physical capital stock decreases; corruption reduces the rate of economic growth through the distortion caused on resource allocation, destroying the relationship between the social profitability and the financial profitability of an investment. (Obreja Braşoveanu, 2007, p. 117)

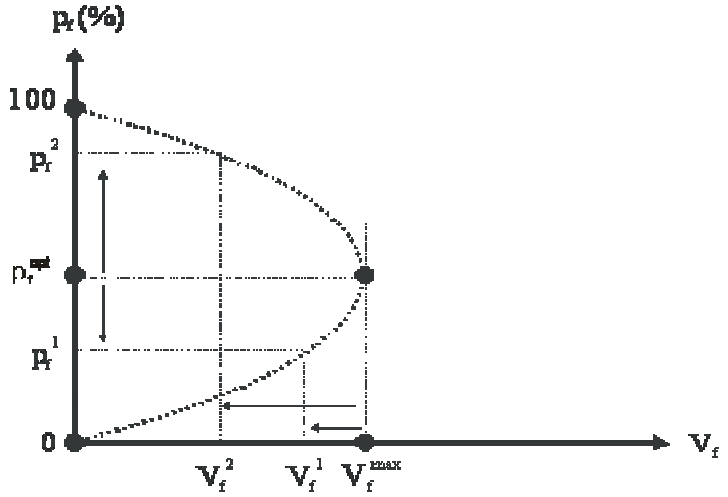
The existence of a developing underground economy determines the erosion of the tax basis increase, which leads to a decrease of inland revenues and to the State's deprivation of a part of its incomes, giving rise to budget disequilibria or to the accentuation of the already existing ones.

The erosion of the tax basis and, consequently, the diminution of budget returns imply the restriction of the State's manipulation possibilities in the economic, social, etc. field.

In this field, the most eloquent analysis is provided by ***Laffer curve*** and by the theory **"*too much tax, no tax*"** which aim at explaining the relationship between the tax rate and the level of tax incomes. Thus, the more a tax is based on a high tax rate, the more the State's inland revenues increase but, over a certain tax threshold, earnings start to decrease.

"Laffer" curve reflects the results of a growth of compulsory levies at a macroeconomic level: it deters the will to work and to save money. This because the increase of the tax rate, from a certain point up, limits the incitation of economic agents, deters investments, narrows taxation bases; also, a tax rate beyond a certain limit may carry along tax evasion actions, such as the orientation towards activities which benefit from tax advantages, fiscal frauds, diminution of NDP and decrease of inland revenues. The volume of revenue may increase even through the reduction of the tax rate, applied however to a greater amount of taxable income. (Pestieau, 1989, p. 46)

According to Lafer's theory, tax level is closely related to the size of underground economy. An exaggerated tax on income will determine a migration of the activities from the sector of real economy to that of underground economy.



$P_f$ – tax pressure rate

$\mathbf{V_f}$ – tax incomes

## 2. Ways of determining the level of tax pressure

The determination of tax burden is susceptible of several acceptations:

- the officially communicated rate of tax pressure;
- the rate of tax pressure, broadly speaking;
- the rate of tax pressure, strictly speaking;
- the rate of tax pressure at the level of the economic operator;
- the rate of individual tax pressure.

*The rate of tax pressure officially communicated* by the Statistic Annual drawn up by the National Institute of Statistics is calculated as follows:

$$R = \frac{VF}{PIB} \bullet 100, \text{ where}$$

R – the rate of tax pressure,

VF – tax incomes,

PIB – the volume of gross domestic product

If tax incomes are deemed to be made of taxes, duties and contributions, *the rate of tax pressure, broadly speaking*, is calculated as follows:

$$R = \frac{I + T + C}{PIB} \bullet 100, \text{ where}$$

**I – the volume of collected taxes,**

**T – the total sum of collected duties,**

**C – State social security contributions;**

***The rate of tax pressure, strictly speaking*, can also be calculated by excluding State social security contributions from the numerator:**

$$R = \frac{I + T}{PIB} \bullet 100$$

In the analysis of tax pressure, as generating factor of underground economy, apart from the rate of tax pressure, officially communicated by the

Statistic Annual drawn up by the National Institute of Statistics, *the recalculated rate of tax pressure* can also be determined:

$$R_{rec} = \frac{VF}{PIBrec} \bullet 100, \text{ where}$$

PIBrec = PIBoficial – the value of hidden economic activity

From the standpoint of economic operators, taxes paid to the State are seen as elements of tax pressure, the greater their share in the obtained added value, the higher the tax pressure.

$$r_f = \frac{If}{VAf} \bullet 100, \text{ where}$$

$r_f$ – the rate of tax pressure at the level of the economic operator,

$I_f$ – the total sum of paid taxes (tax on profit / income, social security contribution, tax on land, tax on buildings, etc.),

$VA_f$ – the added value obtained by the economic operator

We may consider that a high level of paid taxes leads to an increase of the tax pressure at the level of the economic operator.

Apart from the tax pressure measured at the national level and at the level of the economic agent, the individual tax pressure can also be quantified, psychologically felt and measuring the threshold of tax tolerance. This is calculated as the ratio between the total tax levies born by the taxpayer - natural person and the sum of gross incomes obtained by him / her (incomes before taxation). (Cioponea, 2007, p. 210)

$$r_i = \frac{PFi}{VBi} \bullet 100, \text{ where}$$

$r_i$ – the rate of individual tax pressure,

$PF_i$ – total tax levies paid by the individual,

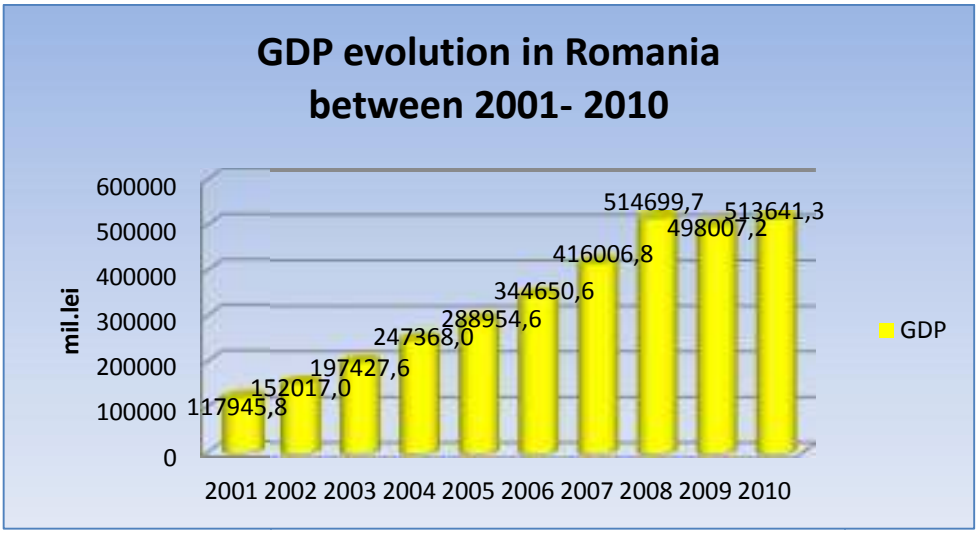
$VB_i$ – gross incomes earned by the individual

The accurate determination of tax pressure at this level is very difficult because of certain randomly elements: diversity of levies, the occult character of including taxes in prices, the value of public services the individual benefits from, etc.

Irrespective of the level on which tax pressure is determined, the value of this indicator is influenced by a multitude of economic, social, psychological, doctrinarian, etc. factors.

## 3. The Evolution of GDP between 2001 and 2010

According to the data provided by the National Institute of Statistics, the level of the yearly GDP for the period 2001 - 2010 had the following evolution:



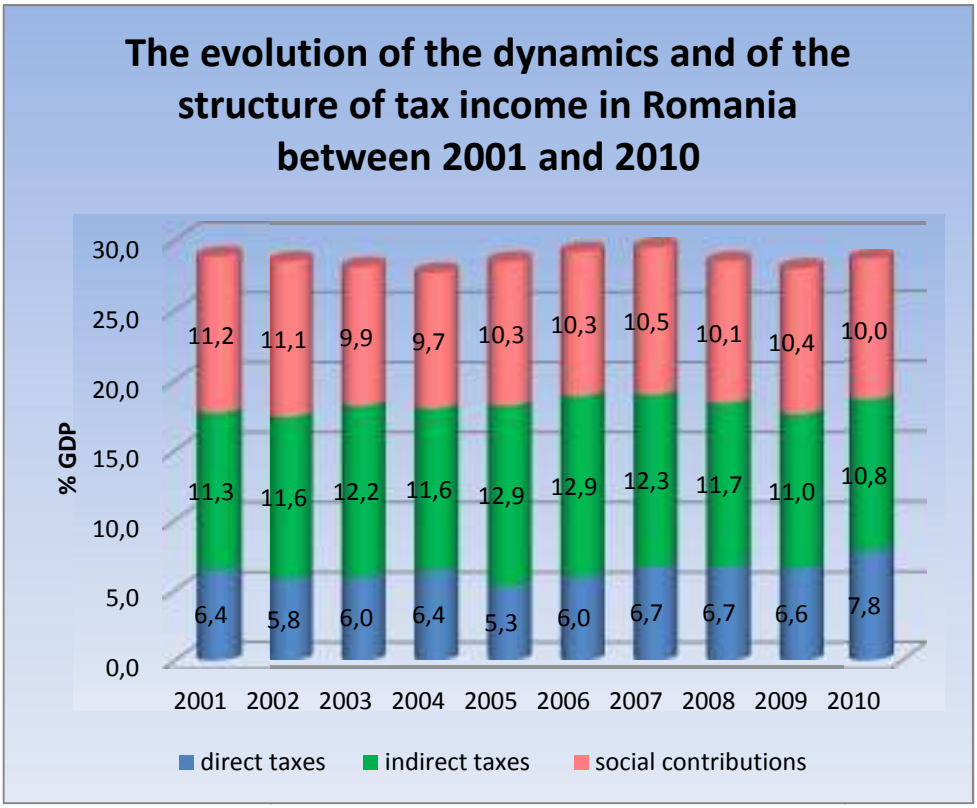

*www.insse.ro*

## 4. The Evolution of Tax Incomes between 2001 and 2010

In August 2010, Tax Council[1] published the study "The Position of Public Finances in Romania - International Comparisons", paper which emphasised the dynamics and structure of budget incomes, budget expenditures, budget deficit, public debt, etc. between 2001 and 2010.

The calculation methodology for the main categories of public resources and budget expenditures was ESA95 Methodology (European System of Accounts), methodology which ensures the perfecting and updating of financial position models in view of sending the data required by financial reporting as per the requirements of the European Institute of Statistics (EUROSTAT). ESA95 standard differs from the cash methodology by the registration of incomes and costs in an "accrual" system (based on commitments and not on actual payments, as in the cash system) and the treatment of EU funds (EU is considered a separate sector in the ESA95 system).

[1] *Consiliul Fiscal – Poziţia finanţelor publice în Romania/Tax Council - Public finance position in Romania,* 2010




From the data provided above[1], on the structure of financial resources, we can draw the following conclusions:

- in the indirect taxes chapter (VAT, excise duties, customs duties), the data show that their level recorded a decrease in 2010 (10,0%) as compared to 2009 (10,4%), with a very low degree of collection;
- although excise duties increased, the level of the revenue collected from excise duties decreased;

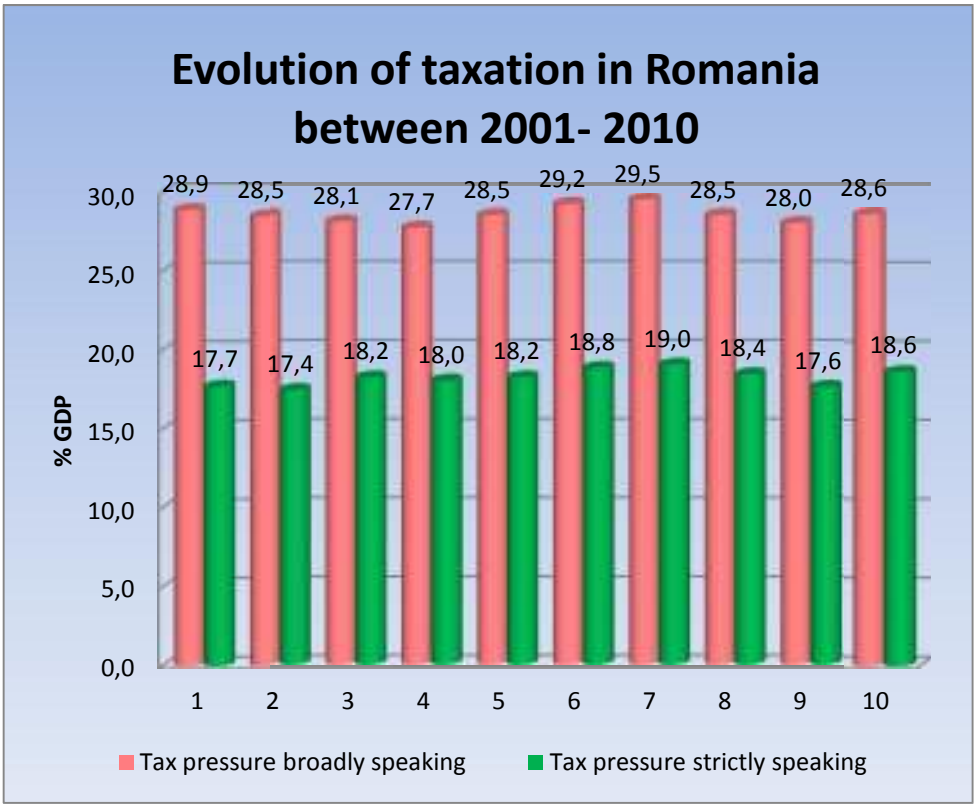
[1] Consiliul Fiscal – *Poziţia finanţelor publice în Romania/ Tax Council - Public finance position in Romania* 2010

## 5. The Evolution of Taxation in Romania Between 2001 and 2010

Given the data provided by the National Institute of Statistics and by the Tax Council, we proceeded to the calculation of the level of tax pressure for the period 2001 - 2010, the data obtained being centralised in the table below:

| Year | GDP (mil. Lei) | Tax incomes % GDP | Direct taxes % GDP | Indirect taxes % GDP | Social contributions % GDP | Tax pressure broadly speaking | Tax pressure strictly speaking |
|---|---|---|---|---|---|---|---|
| 2001 | 117945,8 | 28,9 | 6,4 | 11,3 | 11,2 | 28,9 | 17,7 |
| 2002 | 152017,0 | 28,5 | 5,8 | 11,6 | 11,1 | 28,5 | 17,4 |
| 2003 | 197427,6 | 28,1 | 6,0 | 12,2 | 9,9 | 28,1 | 18,2 |
| 2004 | 247368,0 | 27,7 | 6,4 | 11,6 | 9,7 | 27,7 | 18,0 |
| 2005 | 288954,6 | 28,5 | 5,3 | 12,9 | 10,3 | 28,5 | 18,2 |
| 2006 | 344650,6 | 29,1 | 6,0 | 12,9 | 10,3 | 29,2 | 18,8 |
| 2007 | 416006,8 | 29,5 | 6,7 | 12,3 | 10,5 | 29,5 | 19,0 |
| 2008 | 514699,7 | 28,5 | 6,7 | 11,7 | 10,1 | 28,5 | 18,4 |
| 2009 | 498007,2 | 28,0 | 6,6 | 11,0 | 10,4 | 28,0 | 17,6 |
| 2010 | 513641,3 | 28,6 | 7,8 | 10,8 | 10,0 | 28,6 | 18,6 |

According to the data provided by the previous table, the level of the taxation in Romania between 2001 – 2010, had the following evolution:




## 6. Conclusions

➢ the data represent ***the official level*** of tax pressure, because the data provided by the two institutions and the results obtained from research must be recalculated and correlated with a series of economic, social, psychological, doctrinarian factors, the quantification of which can not be accurately determined;

➢ the most common factors emphasised in specialised literature are: the level of economic development, the amount of public debt, the level of underground economy, governmental policy by establishing the priority of certain public expenditures, the efficiency of financial resource usage, the degree of voluntary conformation to tax payment, etc

➢ although the officially declared level of tax pressure, broadly speaking, ranges between 27.7% and 30.6% and the one of tax pressure, strictly speaking ranges between 17.4% and 19.2%, we may appreciate that is much higher. In order to achieve an as accurate analysis as possible, we must study the following:

- the level of real economy, meaning that it must be calculated after the deduction of the official GDP of the percentages representing hidden economy, given that these incomes are characterised by tax avoidance,

- the existence of a significant amount of activities exempt from certain categories of taxes - the favourable tax regime applicable to free zones, duty-frees, disfavoured areas, etc,

- parafiscality, respectively the existence of an impressive number of taxes and duties which are not to be found in the State budget but in the budgets of certain agencies;

➢ the analysis of the level and of the structure of tax pressure must be correlated with the **intensity of tax regulations**, that is, with the large number of normative documents, frequent amendments, bureaucratic formulations, legal overlapping, etc. The most eloquent example is that of Law no. 571/ 2003 on the Tax Code which between December 2003 and August 2010 was modified by no less than 75 amending documents and Decision no. 92 / 2003 on the Fiscal Procedure Code was amended 15 times during the same period.

## 7. References

Cioponea, M. C. (2007). *Finanţe publice şi teorie fiscală/ Public finance and tax theory.* Bucharest: Fundaţiei România de Mâine.

Craiu, N. (2004). *Economia subterană între Da şi Nu/The subterranean Economy between Yes and No.* Bucharest: Economică.

Obreja Braşoveanu, L. (2007). *Impactul politicii fiscale asupra creşterii economice/The impact of fiscal policy on economic growth.* Bucharest: ASE.

Pestieau, P. (1989). *L'Economie souterraine/The subterranean economy.* Paris: Hachette.

Tanzi, V. (1995). Corruption, Governmental Activities and Markets. *IMF Working Paper*, p. 15.

Şarpe, Daniela & Gavrilă, Emil (2002). *Microeconomie – Teorii şi aplicaţii*/*Microeconomics - Theory and applications*. Bucharest: Economică.

***Consiliul Fiscal – *Poziţia finanţelor publice în Romania/ Tax Council - Public finance position in Romania*, August 2010.

# Active Ageing: An Analysis

**Alina-Cristina Nuta**[1]

**Abstract:** The problem of ageing is a highly topical for Romania and for European Union. In this framework, to create and implement some strategies for active ageing is an important objective. The international and regional forums set (supported by official statistics) that the number of older people growing rapidly. Romania needs some programmes (with labour, social, economic, health care aspects) to deal with the demographic changes, programs that will reform the existing working life structures and legislation. Despite the actual pension reform, which tries to close the opportunity of early retirement (by penalizing the total pension flows, or increasing the retirement age, etc.), the labour system does not sets some important targets for this area.

**Keywords:** active ageing; social protection; older people

**JEL Classification:** MO; M31

## 1 Introduction

World Health Organization define "active ageing" as "the process of optimizing opportunities for health, participation and security in order to enhance quality of life as people age" (http://www.who.int/ageing/active_ageing/en/).

If in 1950 the older age population (aged 65 and over) represented 5.2% in the total global population, this part of population will exceed 15% of total population.

The Third Demography Report of the European Commission shows that the percentage of the total population aged 65 and over in the European Union grows from 13.7% in 1990 to 17.4% in 2010. In addition, the predictions are that this segment of population will be in 2060 over 30%. These demographic changes will affect all member states, but some regions will suffer more. (Turtureanu, 2011) In this respect, the increase of the elderly people dependency ratios create some challenges to health care system, pension system, and social protection programs, which will affect the budget and the public finance sustainability.

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## 2. Longevity: A Challenge

In this context appears the need to rethinking the socio-economic system that will face longevity problem and will put together solidarity between generations and active ageing to a more healthy living and to a higher level of welfare for all generations.

It is known that older people have increased societal and health care needs, but the truth is that the elderly people have in the same time experience and knowledge that can be used for the modernization of the society. Sometimes, they even have the financial resources that can help the others.

Romania must find new ways for involve actively the older people, for sustain people to work longer. The European Year for Active Ageing and Solidarity between Generations (2012) will "serve as a framework for raising awareness, identifying and disseminating good practice and encouraging policymakers and stakeholders at all levels to promote active ageing and solidarity between generations". The fields for active ageing are: employment framework, implications in society, health and independent leaving and intergenerational solidarity. In this context, Romania must involve in all EU action and propose others to help elderly people to activate their lives and to sustain, in this manner, the future (partial) independency of the older.

In addition to EU Strategy Europe 2020, that sustain growth (smart, sustainable and inclusive) and set some directions for longevity, and to the fact that EU declared 2012 the Year for Active Ageing and Solidarity between Generations, "European Commission has launched a pilot European Innovation Partnership (EIP) on Active and Healthy Ageing, that will foster partnership between all the relevant stakeholders around overcoming obstacles to the take-up of innovative solutions in: prevention and health promotion; integrated care; and independent living of elderly people". (EC, 2011, p. 4)

## 3. The Labour Market Analysis

The possibility and interest of local and regional actors to sustain and develop services to maintain active the elders is a key factor. Services may include education facilities and LLP that may promote active ageing to employment, urban and transport facilities to sustain the mobility and active societal implication of the older people, pensions schemes and health care programs and long-term care services that will create a better and healthy life for this people. In this way, the quality of life for elderly will be better and the community's level of well-being will be higher. "Finding ways in which the national and European levels can support local and regional actors in promoting active ageing and solidarity between

generations will be a major added-value to successful policy development". (EC, 2011, p. 5)

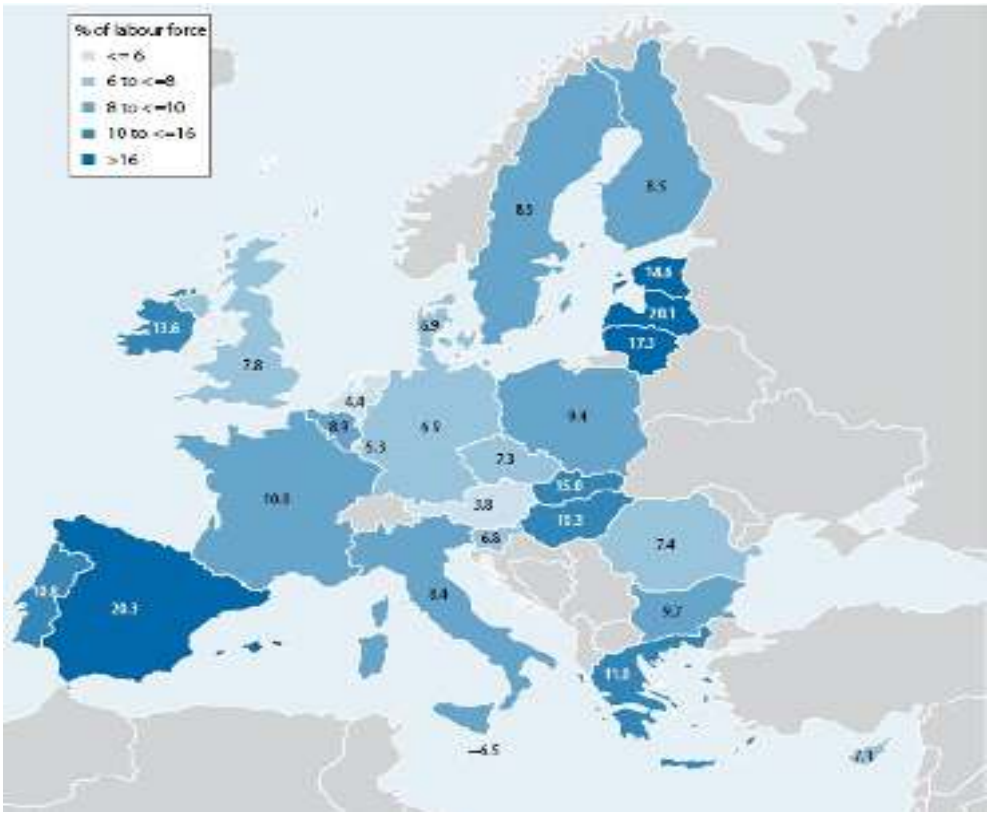


**Figure 1. Unemployment rates, July 2010**

*Source: Eurostat, series on unemployment. Data seasonally adjusted*

In the context of the reduction of the working-age population, the idea of the implication of older people in the labour market can increase the productivity. The mobilizations of the elders in working programs can reduce the problems of labour force in the future (Nuta, Ariton, Nuta, 2011). In this manner, this segment of population will not more be funded by public budgets, and more, the dependency ratio will be reduced. To create this opportunity for the older people the local, national and regional actors must be responsible, and improve the working conditions (by consideration of all the needs of older workers, involvement in training programs, and, why not, fiscal incentives).

Considering the situation of unemployment in 2010 in European Union and in Europe as a hole, we can observe in the figure above that Spain has the highest

unemployment rate (20.3%) and it exceeds the double average level of EU. "The particularly pronounced rise in unemployment in Spain reflects to a large degree the role played by the low-skilled-intensive construction sector that attracted many foreign workers from abroad and was subsequently hit by a particularly strong collapse of the housing bubble in that country" (EC, 2010, p. 38). The minimum levels of unemployment rate belong to Austria (3.8%) and the Netherlands (4.4%).

The total employment rate of the EU (for population aged 15-64) was 64.6% in 2009, according to Eurostat (2.4% more than 2000). Only five Member States registered an employment rate higher than Lisbon target (set at 70%). Romania (58.6%), together with Malta (54.9%), Italy (57.5%), Hungary (55.4%), Poland (59.3%), and Spain (59.8%) remained at a long distance from de Lisbon target.

Regarding the EU employment rate for persons aged 55–64 we find that the level of this indicator increase in 2009 to 46% (but, the same situation: it is less 2001 Stockholm Council target (50%) (see the figure below). These results are determined by the recent reforms of the labour policies and social protection which have encouraged older workers to remain economically active.

| | Total employment rate | | | | Older people's employment rate | | | |
|---|---|---|---|---|---|---|---|---|
| | 2009 | Change 2009-08 | Change 2009-00 | Gap below 2010 target | 2009 | Change 2009-08 | Change 2009-00 | Gap below 2010 target |
| BE | 61.6 | -0.8 | 1.1 | 8.4 | 35.3 | 0.7 | 8.9 | 14.7 |
| BG | 62.6 | 1.4 | 12.2 | 7.4 | 46.1 | 0.0 | 25.3 | 3.9 |
| CZ | 65.4 | -1.2 | 0.4 | 4.6 | 46.8 | -0.9 | 10.5 | 3.2 |
| DK | 75.7 | -2.4 | -0.5 | > | 57.5 | 0.5 | 1.8 | > |
| DE | 70.9 | 0.2 | 5.4 | > | 56.2 | 2.4 | 18.5 | > |
| EE | 63.5 | -6.3 | 3.1 | 6.5 | 60.4 | -2.0 | 14.1 | > |
| IE | 61.8 | -5.7 | -3.3 | 8.2 | 51.0 | -2.7 | 5.7 | > |
| EL | 61.2 | -0.6 | 4.8 | 8.8 | 42.2 | -0.6 | 3.3 | 7.8 |
| ES | 59.8 | -4.6 | 4.5 | 10.2 | 44.1 | 1.5 | 7.1 | 5.9 |
| FR | 64.2 | 0.7 | 2.1 | 5.8 | 38.9 | 0.8 | 9.1 | 11.1 |
| IT | 57.5 | -1.2 | 3.8 | 12.5 | 35.7 | 1.3 | 8.1 | 14.3 |
| CY | 69.9 | -0.9 | 4.3 | 0.1 | 56.0 | 1.2 | 5.6 | > |
| LV | 60.9 | -7.7 | 3.5 | 9.1 | 53.2 | -6.2 | 17.2 | > |
| LT | 60.1 | -4.2 | 1.0 | 9.9 | 51.6 | 1.5 | 11.2 | > |
| LU | 65.2 | 1.8 | 2.5 | 4.8 | 38.2 | 4.1 | 11.5 | 11.8 |
| HU | 55.4 | 1.3 | 0.9 | 14.6 | 32.8 | 1.3 | 10.6 | 17.2 |
| MT | 54.9 | 0.3 | 0.7 | 15.1 | 28.1 | 1.1 | 0.4 | 21.9 |
| NL | 77.0 | 0.3 | 4.0 | > | 55.1 | 2.1 | 16.9 | > |
| AT | 71.6 | 0.5 | 3.2 | > | 41.1 | 0.1 | 12.2 | 8.9 |
| PL | 59.3 | 0.1 | 4.3 | 10.7 | 32.3 | 0.8 | 3.9 | 17.7 |
| PT | 66.3 | 1.9 | 2.1 | 3.7 | 49.7 | 1.1 | 1.0 | 0.3 |
| RO | 58.6 | 0.5 | 1.0 | 11.4 | 42.6 | 0.5 | 5.4 | 7.4 |
| SI | 67.5 | 1.0 | 4.7 | 2.5 | 45.6 | 2.8 | 12.8 | 14.4 |
| SK | 60.2 | -2.1 | 3.4 | 9.8 | 39.5 | 0.3 | 18.2 | 10.5 |
| FI | 68.7 | -2.4 | 1.5 | 1.3 | 55.5 | -1.0 | 13.8 | > |
| SE | 72.2 | 2.1 | 0.8 | > | 70.0 | 0.1 | 5.0 | > |
| UK | 69.9 | 1.6 | 1.3 | 0.1 | 57.5 | 0.5 | 6.8 | > |
| EU15 | 65.9 | -1.4 | 2.5 | 4.1 | 48.0 | 0.6 | 10.1 | 2.0 |
| EU27 | 64.6 | -1.3 | 2.4 | 5.4 | 46.0 | 0.4 | 9.1 | 4.0 |

**Figure 2. Employment rates in EU Member States in 2009**

*Source*: Eurostat, EU LFS

In 2009, only 11 Member States had an employment rate for persons aged 55–64 of above 50%, with Portugal just edging back below the target in that year. "With a value of less than 30%, however, Malta had the lowest employment rate for older persons among all the Member States, having made no significant improvement since 2000"(EC, 2010, p. 68).

Moreover, to promote to promote the employability of older workers the local and regional actors can support the elders to update their skills to be more competitive in the labour market. At the European level exist some programmes that may be use for promote active ageing. (Dragomir & Dragomir, 2011)

On the other hand, "active participation in society can mean providing their time, energy and experience to active citizenship initiatives, voluntary organizations and community groups as well as within the family" (EC, 2011, p. 17). This modality of activate older people help the older people and the society in the same time, creating the volunteer networks, informal careers, avoiding social isolation of elders, and, in this way, insuring a better participation in society of older people.

## 4. The Financing Opportunities

In addition, improving the health of the older people is an essential objective to better solve these new demographic changes. "Health promotion and preventive health care through measures that maximize healthy life years and reduce the risk of dependency are to be further strengthened"(EC, 2011, p. 22). To respond to these needs the policy making actors must use EU founding and exchange the good practices between regions. "Local and regional actors have an important role to play in modernizing, improving and rationalizing the delivery of health and social-care services to produce models that achieve better results for individuals and society. Approaches can involve working for better understand needs and how these can be met in cost-effective ways." (EC, 2011, p. 25)

The EU funding instruments to promote active ageing and intergenerational projects in the 2007-2013 are:

- European structural and cohesion founds (The European Found, The European Social Fund (ESF), The European Regional Development Fund (ERDF), Technical assistance instruments);
- European rural development funds (European Agricultural Fund for Rural Development);
- European research, innovation and ICT funds (The Seventh Framework Programme for Research and Technological Development, Competitiveness and Innovation Framework Programme (CIP), The Ambient Assisted Living (AAL) Joint programme, European Research Council (ERC));

- European education and culture funds (Lifelong Learning Programme, Youth in Action programme, Europe for Citizens programme);
- Other European funds (PROGRESS, Health Programme, Daphne III2A. European structural and cohesion funds).

According to an analyze made by European Commission, the problem of ageing of population are due to increasing life expectancy and low levels of fertility sustained for decades. In this respect, the table below shows that between 1990-2011, the proportion of the older population grows rapidly, for EU 27 at 13.7% to 17.7%.(Cretu, Gheonea & Sîrbu, 2011)

| GEO/TIME | EU 27 | Bulgaria | Germany | Greece | Spain | France | Italy | Hungary | Romania | United Kingdom |
|---|---|---|---|---|---|---|---|---|---|---|
| 1990 | 13.7 | 13.0 | 14.9 | 13.7 | 13.4 | | 14.7 | 13.2 | 10.3 | 15.7 |
| 1991 | 13.9 | 12.4 | 14.9 | 13.8 | 13.8 | 14.0 | 15.1 | 13.5 | 10.6 | 15.8 |
| 1992 | 14.1 | 13.8 | 15.0 | 14.1 | 14.1 | 14.2 | 15.5 | 13.6 | 11.0 | 15.8 |
| 1993 | 14.3 | 14.2 | 15.0 | 14.4 | 14.4 | 14.4 | 15.8 | 13.8 | 11.3 | 15.8 |
| 1994 | 14.5 | 14.6 | 15.2 | 14.7 | 14.6 | 14.6 | 16.2 | 13.9 | 11.6 | 15.8 |
| 1995 | 14.7 | 14.9 | 15.4 | 15.0 | 15.1 | 14.8 | 16.5 | 14.1 | 11.8 | 15.8 |
| 1996 | 14.9 | 15.2 | 15.6 | 15.3 | 15.5 | 15.1 | 16.8 | 14.3 | 12.2 | 15.9 |
| 1997 | 15.1 | 15.3 | 15.7 | 15.6 | 15.8 | 15.3 | 17.2 | 14.5 | 12.4 | 15.9 |
| 1998 | 15.3 | 15.6 | 15.8 | 15.9 | 16.2 | 15.5 | 17.5 | 14.7 | 12.7 | 15.9 |
| 1999 | 15.4 | 15.9 | 15.9 | 16.2 | 16.5 | 15.7 | 17.8 | 14.8 | 13.0 | 15.8 |
| 2000 | 15.6 | 16.2 | 16.2 | 16.5 | 16.7 | 15.8 | 18.1 | 15.0 | 13.2 | 15.8 |
| 2001 | 15.8 | 16.3 | 16.6 | 16.8 | 16.9 | 15.9 | 18.4 | 15.1 | 13.5 | 15.8 |
| 2002 | 16.0 | 16.9 | 17.1 | 17.2 | 17.0 | 16.0 | 18.7 | 15.3 | 13.9 | 15.9 |
| 2003 | 16.3 | 17.0 | 17.5 | 17.5 | 16.9 | 16.1 | 19.1 | 15.4 | 14.2 | 16.0 |
| 2004 | 16.4 | 17.1 | 18.0 | 17.8 | 16.9 | 16.2 | 19.2 | 15.5 | 14.4 | 16.0 |
| 2005 | 16.6 | 17.1 | 18.6 | 18.1 | 16.8 | 16.3 | 19.5 | 15.6 | 14.7 | 16.0 |
| 2006 | 16.8 | 17.2 | 19.3 | 18.5 | 16.7 | 16.4 | 19.7 | 15.8 | 14.8 | 16.0 |
| 2007 | 16.9 | 17.3 | 19.8 | 18.8 | 16.7 | 16.3 | 19.5 | 15.9 | 14.9 | 16.0 |
| 2008 | 17.1 | 17.3 | 20.1 | 19.0 | 16.6 | 16.4 | 20.0 | 16.2 | 14.9 | 16.1 |
| 2009 | 17.2 | 17.4 | 20.4 | 18.7 | 16.6 | 16.5 | 20.1 | 16.4 | 14.9 | 16.3 |
| 2010 | 17.4 | 17.6 | 20.7 | 18.9 | 16.8 | 16.6 | 20.2 | 16.6 | 14.9 | 16.5 |
| 2011 | | 17.7 | 20.6 | 19.3 | 17.1 | 16.8 | 20.3 | 16.7 | | 16.6 |

**Figure 3. Proportion of population aged 65 years and more**

*Source*: Eurostat

More complete, the next figure presents "the growth in the proportion of older people that can be explained by gains in longevity and is known as 'ageing from the top' of the population pyramid. A significant increase in life expectancy at birth was recorded in all EU-27 Member States for the past decades". (EC, 2001, p. 64)

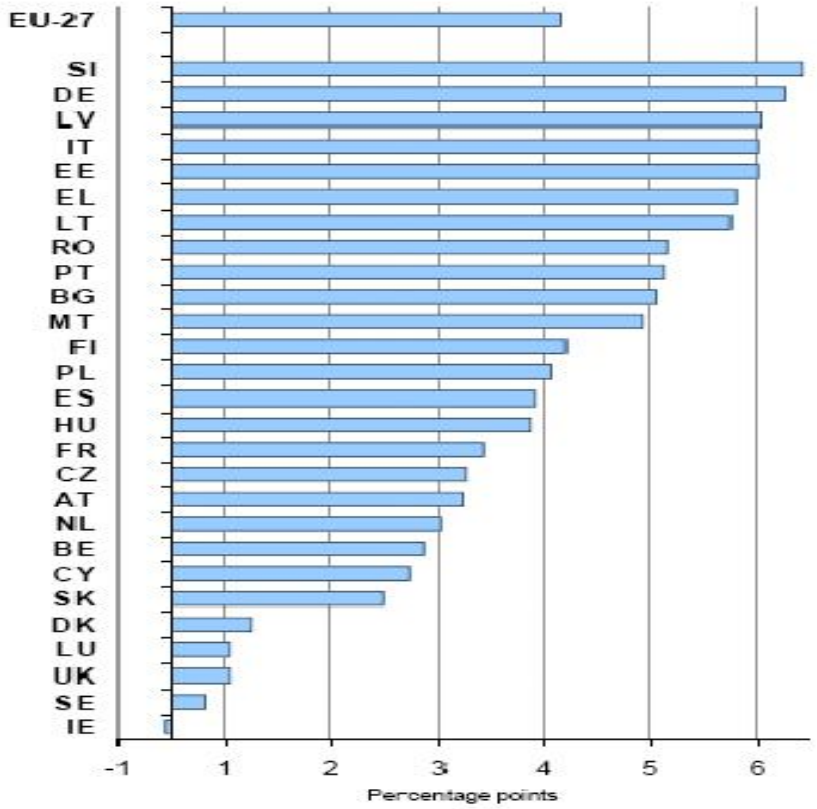


**Figure 4. Proportion of population aged 65 years or over**

**(% increase/decrease 1990-2010)**

*Source*: Eurostat (online data code: demo_pjanind)

The dependency ratio, calculated as a ratio of the older population to the population of working age support the same interpretation like above. In this sense, the table below is representative.

| | Median age | Dependency ratio | | | Pop. aged 80 or over |
|---|---|---|---|---|---|
| | | Young age | Old age | Total | |
| | (years) | (%) | | | |
| EU 27 | 40.9 | 34.8 | 28.4 | 63.2 | 4.7 |
| BE | 40.9 | 38.2 | 28.6 | 66.8 | 4.9 |
| BG | 41.4 | 30.1 | 27.7 | 57.7 | 3.8 |
| CZ | 39.4 | 31.0 | 23.6 | 54.6 | 3.6 |
| DK | 40.5 | 41.2 | 27.5 | 68.8 | 4.1 |
| DE | 44.2 | 31.0 | 34.1 | 65.1 | 5.1 |
| EE | 39.5 | 34.4 | 27.7 | 62.0 | 4.1 |
| IE | 34.3 | 44.9 | 18.5 | 63.4 | 2.8 |
| EL | 41.7 | 31.5 | 30.7 | 62.3 | 4.6 |
| ES | 39.9 | 31.3 | 26.6 | 57.9 | 4.9 |
| FR | 39.9 | 41.5 | 28.6 | 70.2 | 5.3 |
| IT | 43.1 | 31.2 | 33.3 | 64.5 | 5.8 |
| CY | 36.2 | 38.1 | 20.7 | 58.8 | 2.9 |
| LV | 40.0 | 32.2 | 27.8 | 60.0 | 3.9 |
| LT | 39.2 | 36.0 | 26.0 | 62.1 | 3.6 |
| LU | 38.9 | 38.0 | 22.4 | 60.4 | 3.6 |
| HU | 39.8 | 33.2 | 26.5 | 59.7 | 3.9 |
| MT | 39.2 | 35.4 | 23.5 | 58.9 | 3.3 |
| NL | 40.6 | 38.9 | 25.1 | 64.0 | 3.9 |
| AT | 41.7 | 33.9 | 28.6 | 62.5 | 4.8 |
| PL | 37.7 | 33.7 | 20.9 | 54.6 | 3.3 |
| PT | 40.7 | 33.3 | 29.0 | 62.3 | 4.5 |
| RO | 38.3 | 32.9 | 23.3 | 56.2 | 3.1 |
| SI | 41.4 | 29.9 | 25.7 | 55.6 | 3.9 |
| SK | 36.9 | 33.7 | 18.7 | 52.4 | 2.7 |
| FI | 42.0 | 38.0 | 28.3 | 66.3 | 4.6 |
| SE | 40.7 | 40.1 | 31.0 | 71.0 | 5.3 |

**Figure 5. Median age and age dependency ratios, 1 January 2010**

*Source*: Eurostat (online data code: demo_pjanind)

The table shows that in 2010, the old-age dependency ratio of the EU-27 was 28.4 %. This means that the EU-27 had around 3.5 persons of working age for every person aged 65 years or over. In 2010, the lowest total age dependency ratio was in Slovakia (52.4 %) and the highest in Sweden (71.0 %).

Some fiscal measure was taken in some Member State to stimulate de evolution of the employment rate of older people ( Pripoaie, R., Pripoaie S., 2011). For example, in Portugal, a 50% reduction in employer social contributions is granted for hiring older unemployed people (55 years or older, reduced to 40 years or older in 2010), in Germany, vocational training programmes have been temporarily (until end-2010) extended to workers at risk of unemployment, older workers in small- and medium-sized enterprises and temporary workers rehired by their agency.

## 5. Conclusion

Even if the new Laws regarding the pension system (263/2010 and 119/2010) sets the retirement age at 65 years for men, respectively 63 for women (the gender difference in the age of retirement does not necessarily take into account the life expectancy issues), to be completed by January 2030, that means an increase in the

retirement age, and limits the early retirement, the problem of the employment (hiring and keeping in the market) of older workers was not solved.

In addition, with respect to the Life-Long Learning (LLL), the national strategy need to be and will be elaborated by the end of 2011, and will contain some aspects and objectives in line with the Europe 2020 recommendations.

All measures taken (recalculation of special pensions, revising the conditions for granting disability benefits, increasing the retirement age and discouraging early retirement, increasing the number of contributors, reforming the granting benefits changes in the taxation of pensions, the introduction of a new form of income tax on rich households) are expected to restore the financial sustainability of the Romanian pension system over the next decade, seriously affected by the recent crisis.

The Romanian National Reform Programme (2011-2013) and Convergence Programme 2011-2014 set the Romanian Europe 2020 targets and measures for their achievement. In this social framework, Romania have to reduce by 580 000 the number of people at risk of poverty, increase R&D investment at 2% of GDP, increase Employment rate at 70%. With respect to the prolonging the active life, pension system aims are based on: the gradual increase of the standard retirement age, the discouragement of the anticipated and invalidity retirements; the inclusion of persons registered in the special pensions' systems within the unified public pensions' system, but no measure was taken by the labor laws, that contains specific measures for young people and for women, but not for older people. In line with the European Year for Active Ageing and Solidarity between Generations, 2012, Romanian responsive institutions will have several initiatives to take advantage of such an opportunity to address age discrimination.

## 5. References

Cretu, C.; Gheonea, V. & Sîrbu, C. (2011). Comparative Study on Presentation of Statement of Financial Position in the Public Sector. *Acta Universitatis Danubius. Œconomica*, Vol 7, No 3.

Dragomir, G. & Dragomir C.M. (2011). Aspects on the Role of the Educational Process in Increasing the Quality of Human Resources at the Level of Public Administration. *Acta Universitatis Danubius. Œconomica*, Vol 7, No 3.

Balkenende, Jan Peter (2008). Demographic change: societal changes in an ageing Europe. *European View* 7: 171–177.

Nuta, A.C., Ariton, D., Nuta, F.M. (2011). Social and economic cohesion in Romania for sustainable development in the context of anti crisis policies. *Revista Economică*/*Economic Journal*, No. 2(55)/2011.

Pettersson, Pierre & Schmöcker, Jan-Dirk (2010). Active ageing in developing countries? – trip generation and tour complexity of older people in Metro Manila. *Journal of Transport Geography* 18 613–623.

Pripoaie, R. & Pripoaie S. (2011). The Statistical Analysis of GDP, Tax Pressure and Tax Revenue with EViews 7 between 2000 – 2009. *Acta Universitatis Danubius. Œconomica*, Vol 7, No 2.

Turtureanu, A.G (2011). Aspects of Global Crisis. *Acta Universitatis Danubius. Œconomica*, Vol 7, No 3.

Długosz, Zbigniew (2011). Population ageing in Europe. *Procedia Social and Behavioral Sciences* 19, 47–55.

***AGE Platform Europe, Annual Report 2010.

***AGE Platform, How to promote active ageing in Europe. EU support to local and regional actors, September 2011.

***European Commission, Directorate-General for Employment, Social Affairs and Equal Opportunities, Employment in Europe 2010.

***European Commission, Directorate-General for Employment, Social Affairs and Inclusion, Unit D.4, Demography Report 2010, Older, more numerous and diverse Europeans, March 2011.

***World Population Prospects, the 2010 Revision, http://esa.un.org/wpp/unpp/panel_population.htm.

# Spatial Distributions of Regional Economic Activity

## The Equilibrium Analysis of a Closed Economy Model with Government and Money Market Sector

**Gina Ioan[1], Cătălin Angelo Ioan[2]**

**Abstract:** In this paper, we first study the static equilibrium of a a closed economy model in terms of dependence on national income and interest rate from the main factors namely the marginal propensity to consume, tax rate, investment rate and the rate of currency demand. In the second part, we study the dynamic equilibrium solutions in terms of stability. We thus obtain the variation functions of national income and interest rate variation and their limit values.

**Keywords:** equilibrium; demand; income

**JEL Classification:** R12

## 1 Introduction

The purpose of this paper is to analyze a closed economy model so the situation when net exports are zero.

After formulation of classical assumptions of the model, we first study the static equilibrium in terms of dependence on national income and interest rate from the main factors namely the marginal propensity to consume, tax rate, investment rate and the rate of currency demand.

In the second part, we study the dynamic equilibrium solutions in terms of stability. We thus obtain the variation functions of national income and interest rate variation and their limit values.

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## 2 The Model Equations ([4])

The model equations are:

(1) $D=C+I+G$

(2) $C=c_Y V+C_0$, $C_0>0$, $c_Y \in (0,1)$

(3) $V=Y+TR-TI$, $TR>0$

(4) $TI=ri_Y Y+T_0$, $ri_Y \in (0,1)$, $T_0 \in \mathbf{R}$

(5) $I=in_Y Y+i_r r+I_0$, $in_Y \in (0,1)$, $i_r<0$, $I_0>0$

(6) $G=\overline{G}$

(7) $D=Y$

(8) $MD=md_Y Y+m_r r+M_0 \leq M_0$, $md_Y>0$, $m_r<0$, $M_0>0$

(9) $MD=M$

(10) $\frac{dY}{dt}=\alpha(D-Y)$, $\alpha>0$

(11) $\frac{dr}{dt}=\beta(MD-M)$, $\beta>0$

where:

- D – the aggregate demand;
- C – the consumer demand (a concave function of V);
- I – the investment demand;
- G – the government spending;
- V – the disposable income;
- Y – the aggregate supply (national income);
- TR – the government transfers;
- TI – taxes;
- $c_Y$ – the marginal propensity to consume, $c=\frac{dC}{dV} \in (0,1)$, $\frac{d^2c}{dV^2} \leq 0$;
- $ri_Y$ – the tax rate, $ri_Y \in (0,1)$;
- $in_Y$ –the rate of investments, $in_Y \in (0,1)$;

- $i_r$ – a factor of influence on the investment rate, $i_r<0$;
- r – the interest rate;
- MD – the money demand in the economy;
- $md_Y$ – the rate of money demand in the economy;
- $m_r$ – a factor of influencing the demand for currency from the interest rate, $m_r<0$;
- M – the money supply.

## 3 The Static Equilibrium

From (1), (2), (3), (4), (5), (6) we get:

$$D=c_Y(Y+TR-ri_Y Y-T_0)+C_0+in_Y Y+i_r r+I_0+\overline{G} \quad (12)$$

The equilibrium condition D=Y in (7) implies: $Y=c_Y(Y+TR-ri_Y Y-T_0)+C_0+in_Y Y+i_r r+I_0+\overline{G}$ therefore:

$$Y=\frac{i_r}{1-c_Y(1-ri_Y)-in_Y}r+\frac{c_Y(TR-T_0)+C_0+I_0+\overline{G}}{1-c_Y(1-ri_Y)-in_Y} \quad (13)$$

With the notation:

$$E=c_Y(TR-T_0)+C_0+I_0+\overline{G}>0 \quad (14)$$

we have:

$$Y=\frac{i_r}{1-c_Y(1-ri_Y)-in_Y}r+\frac{1}{1-c_Y(1-ri_Y)-in_Y}E \quad (15)$$

From the fact that $ri_Y\in(0,1)$, $in_Y\in(0,1)$, $c_Y\in(0,1)$ we get that: $1-c_Y(1-ri_Y)-in_Y>0$ if and only if:

$$c_Y<\frac{1-in_Y}{1-ri_Y} \quad (16)$$

Similarly, from equation (8): $MD=md_Y Y+m_r r+M_0=M$ therefore:

$$Y=-\frac{m_r}{md_Y}r+\frac{M-M_0}{md_Y} \quad (17)$$

The condition of equilibrium on the two markets (goods and services and monetary):

$$(18)\quad \begin{cases} Y = \dfrac{i_r}{1 - c_Y(1 - ri_Y) - in_Y} r + \dfrac{1}{1 - c_Y(1 - ri_Y) - in_Y} E \\ Y = -\dfrac{m_r}{md_Y} r + \dfrac{M - M_0}{md_Y} \end{cases}$$

After solving the system results:

$$(19)\quad \begin{cases} r = \dfrac{(M - M_0)(1 - c_Y(1 - ri_Y) - in_Y) - md_Y E}{i_r md_Y + m_r(1 - c_Y(1 - ri_Y) - in_Y)} \\ Y = \dfrac{m_r E + i_r(M - M_0)}{i_r md_Y + m_r(1 - c_Y(1 - ri_Y) - in_Y)} \end{cases}$$

We will note below, for simplification:

$$(20)\quad \Lambda = i_r md_Y + m_r(1 - c_Y(1 - ri_Y) - in_Y) < 0$$

$$(21)\quad \Omega = i_r(M - M_0) + m_r E$$

$$(22)\quad \Gamma = \frac{\Omega}{\Lambda^2}$$

from where: $\mathrm{sgn}(\Gamma)=\mathrm{sgn}(\Omega)$.

From formulas (19) we have therefore:

$$(23)\quad \begin{cases} \dfrac{\partial r}{\partial c_Y} = -(1 - ri_Y) md_Y \dfrac{\Omega}{\Lambda^2} - \dfrac{md_Y(TR - T_0)}{\Lambda} \\ \dfrac{\partial r}{\partial ri_Y} = c_Y md_Y \dfrac{\Omega}{\Lambda^2} \\ \dfrac{\partial r}{\partial in_Y} = -md_Y \dfrac{\Omega}{\Lambda^2} \\ \dfrac{\partial r}{\partial md_Y} = -(1 - c_Y(1 - ri_Y) - in_Y)\dfrac{\Omega}{\Lambda^2} \end{cases}$$

$$\begin{cases} \dfrac{\partial Y}{\partial c_Y} = (1 - ri_Y) m_r \dfrac{\Omega}{\Lambda^2} + \dfrac{m_r (TR - T_0)}{\Lambda} \\ \dfrac{\partial Y}{\partial ri_Y} = -c_Y m_r \dfrac{\Omega}{\Lambda^2} \\ \dfrac{\partial Y}{\partial in_Y} = m_r \dfrac{\Omega}{\Lambda^2} \\ \dfrac{\partial Y}{\partial md_Y} = -i_r \dfrac{\Omega}{\Lambda^2} \end{cases} \tag{24}$$

Also:

$$\begin{cases} \dfrac{\partial \Gamma}{\partial c_Y} = 2 m_r (1 - ri_Y) \dfrac{\Omega}{\Lambda^3} \\ \dfrac{\partial \Gamma}{\partial ri_Y} = -2 m_r c_Y \dfrac{\Omega}{\Lambda^3} \\ \dfrac{\partial \Gamma}{\partial in_Y} = 2 m_r \dfrac{\Omega}{\Lambda^3} \\ \dfrac{\partial \Gamma}{\partial md_Y} = -2 i_r \dfrac{\Omega}{\Lambda^3} \end{cases} \tag{25}$$

We get now:

$$\begin{cases} \dfrac{\partial^2 r}{\partial c_Y^2} = -\dfrac{2 m_r md_Y (1 - ri_Y)^2 \Omega}{\Lambda^3} - \dfrac{m_r md_Y (1 - ri_Y)(TR - T_0)}{\Lambda^2} \\ \dfrac{\partial^2 r}{\partial ri_Y^2} = -2 m_r md_Y c_Y^2 \dfrac{\Omega}{\Lambda^3} \\ \dfrac{\partial^2 r}{\partial in_Y^2} = -2 m_r md_Y \dfrac{\Omega}{\Lambda^3} \\ \dfrac{\partial^2 r}{\partial md_Y^2} = 2 i_r \left(1 - c_Y (1 - ri_Y) - in_Y\right) \dfrac{\Omega}{\Lambda^3} \end{cases} \tag{26}$$

$$\begin{cases} \dfrac{\partial^2 Y}{\partial c_Y^2} = \dfrac{2m_r^2(1-ri_Y)^2\Omega}{\Lambda^3} + \dfrac{m_r^2(1-ri_Y)(TR-T_0)}{\Lambda^2} \\ \dfrac{\partial^2 Y}{\partial ri_Y^2} = 2m_r^2 c_Y^2 \dfrac{\Omega}{\Lambda^3} \\ \dfrac{\partial^2 Y}{\partial in_Y^2} = 2m_r^2 \dfrac{\Omega}{\Lambda^3} \\ \dfrac{\partial^2 Y}{\partial md_Y^2} = 2i_r^2 \dfrac{\Omega}{\Lambda^3} \end{cases} \quad (27)$$

In terms of the sign, we have:

$$\begin{cases} \operatorname{sgn}\left(\dfrac{\partial r}{\partial c_Y}\right) = \operatorname{sgn}\left(\dfrac{\partial Y}{\partial c_Y}\right) = -\operatorname{sgn}\left((1-ri_Y)\Omega + (TR-T_0)\Lambda\right) \\ \operatorname{sgn}\left(\dfrac{\partial r}{\partial ri_Y}\right) = \operatorname{sgn}\left(\dfrac{\partial Y}{\partial ri_Y}\right) = \operatorname{sgn}(\Omega) \\ \operatorname{sgn}\left(\dfrac{\partial r}{\partial in_Y}\right) = \operatorname{sgn}\left(\dfrac{\partial Y}{\partial in_Y}\right) = -\operatorname{sgn}(\Omega) \\ \operatorname{sgn}\left(\dfrac{\partial r}{\partial md_Y}\right) = \operatorname{sgn}\left(\dfrac{\partial Y}{\partial md_Y}\right) = \operatorname{sgn}(\Omega) \end{cases} \quad (28)$$

$$\begin{cases} \operatorname{sgn}\left(\dfrac{\partial^2 r}{\partial c_Y^2}\right) = \operatorname{sgn}\left(\dfrac{\partial^2 Y}{\partial c_Y^2}\right) = \operatorname{sgn}\left(\dfrac{2(1-ri_Y)\Omega}{\Lambda} + (TR-T_0)\right) \\ \operatorname{sgn}\left(\dfrac{\partial^2 r}{\partial ri_Y^2}\right) = \operatorname{sgn}\left(\dfrac{\partial^2 Y}{\partial ri_Y^2}\right) = \operatorname{sgn}\left(\dfrac{\Omega}{\Lambda}\right) \\ \operatorname{sgn}\left(\dfrac{\partial^2 r}{\partial in_Y^2}\right) = \operatorname{sgn}\left(\dfrac{\partial^2 Y}{\partial in_Y^2}\right) = \operatorname{sgn}\left(\dfrac{\Omega}{\Lambda}\right) \\ \operatorname{sgn}\left(\dfrac{\partial^2 r}{\partial md_Y^2}\right) = \operatorname{sgn}\left(\dfrac{\partial^2 Y}{\partial md_Y^2}\right) = \operatorname{sgn}\left(\dfrac{\Omega}{\Lambda}\right) \end{cases} \quad (29)$$

The inequality $\Omega = i_r(M-M_0) + m_r E > 0$ becomes $M < M_0 - \dfrac{m_r}{i_r} E$.

After these considerations:

**Case 1** $M<M_0-\frac{m_r}{i_r}E$

- If $(1-ri_Y)\Omega+(TR-T_0)\Lambda>0$: $\frac{\partial r}{\partial c_Y}<0$, $\frac{\partial^2 r}{\partial c_Y^2}<0$ then r is decreasing and concave with respect to $c_Y$; $\frac{\partial Y}{\partial c_Y}<0$, $\frac{\partial^2 Y}{\partial c_Y^2}<0$ then Y is decreasing and concave with respect to $c_Y$;
- If $2(1-ri_Y)\Omega+(TR-T_0)\Lambda<0$: $\frac{\partial r}{\partial c_Y}>0$, $\frac{\partial^2 r}{\partial c_Y^2}>0$ then r is increasing and convex with respect to $c_Y$; $\frac{\partial Y}{\partial c_Y}>0$, $\frac{\partial^2 Y}{\partial c_Y^2}>0$ then Y is increasing and convex with respect to $c_Y$;
- If $(1-ri_Y)\Omega+(TR-T_0)\Lambda<0$ and $2(1-ri_Y)\Omega+(TR-T_0)\Lambda>0$: $\frac{\partial r}{\partial c_Y}>0$, $\frac{\partial^2 r}{\partial c_Y^2}<0$ then r is increasing and concave with respect $c_Y$; $\frac{\partial Y}{\partial c_Y}>0$, $\frac{\partial^2 Y}{\partial c_Y^2}<0$ then Y is increasing and concave with respect $c_Y$;
- $\frac{\partial r}{\partial ri_Y}>0$, $\frac{\partial^2 r}{\partial ri_Y^2}<0$ then r is increasing and concave with respect $ri_Y$; $\frac{\partial Y}{\partial ri_Y}>0$, $\frac{\partial^2 Y}{\partial ri_Y^2}<0$ then Y is increasing and concave with respect $ri_Y$;
- $\frac{\partial r}{\partial in_Y}<0$, $\frac{\partial^2 r}{\partial in_Y^2}<0$ then r is decreasing and concave with respect to $in_Y$; $\frac{\partial Y}{\partial in_Y}<0$, $\frac{\partial^2 Y}{\partial in_Y^2}<0$ then Y is decreasing and concave with respect to $in_Y$;
- $\frac{\partial r}{\partial md_Y}>0$, $\frac{\partial^2 r}{\partial md_Y^2}<0$ then r is increasing and concave with respect $md_Y$; $\frac{\partial Y}{\partial md_Y}>0$, $\frac{\partial^2 Y}{\partial md_Y^2}<0$ then Y is increasing and concave with respect $md_Y$.

$\frac{m_r}{i_r}$

**Case 2** $M>M_0$- E

- $\frac{\partial r}{\partial c_Y}>0$, $\frac{\partial^2 r}{\partial c_Y^2}>0$ then r is increasing and convex with respect to $c_Y$; $\frac{\partial Y}{\partial c_Y}>0$, $\frac{\partial^2 Y}{\partial c_Y^2}>0$ then Y is increasing and convex with respect to $c_Y$;
- $\frac{\partial r}{\partial ri_Y}<0$, $\frac{\partial^2 r}{\partial ri_Y^2}>0$ then r is decreasing and convex with respect to $ri_Y$; $\frac{\partial Y}{\partial ri_Y}<0$, $\frac{\partial^2 Y}{\partial ri_Y^2}>0$ then Y is decreasing and convex with respect to $ri_Y$;
- $\frac{\partial r}{\partial in_Y}>0$, $\frac{\partial^2 r}{\partial in_Y^2}>0$ then r is increasing and convex with respect to $in_Y$; $\frac{\partial Y}{\partial in_Y}>0$, $\frac{\partial^2 Y}{\partial in_Y^2}>0$ then Y is increasing and convex with respect to $in_Y$;
- $\frac{\partial r}{\partial md_Y}<0$, $\frac{\partial^2 r}{\partial md_Y^2}>0$ then r is decreasing and convex with respect to $md_Y$; $\frac{\partial Y}{\partial md_Y}<0$, $\frac{\partial^2 Y}{\partial md_Y^2}>0$ then Y is decreasing and convex with respect to $md_Y$.

## 4 A Result on the Stability of Solutions of a System of Differential Equations of First Order, Linear, with Constant Coefficients

**Lemma**

Let the system of differential equations:

$$\begin{pmatrix} \frac{dX}{dt} \\ \frac{dY}{dt} \end{pmatrix} = \begin{pmatrix} a & b \\ c & d \end{pmatrix} \begin{pmatrix} X \\ Y \end{pmatrix} + \begin{pmatrix} e \\ f \end{pmatrix}$$

, $a,b,c,d,e,f \in \mathbf{R}$, $X(0)=X_0$, $Y(0)=Y_0$.

Then $\lim_{t\to\infty} X(t) = \widetilde{X}$, $\lim_{t\to\infty} Y(t) = \widetilde{Y}$, $\widetilde{X}, \widetilde{Y} \in \mathbf{R}$ if and only if:

1. a=-d, $d^2$=-bc, b,c≠0: a= $\frac{ef}{eY_0 - fX_0}$ , b= $-\frac{e^2}{eY_0 - fX_0}$ , d= $-\frac{ef}{eY_0 - fX_0}$ , c= $\frac{f^2}{eY_0 - fX_0}$ with the solution:

$$\begin{cases} X = X_0 \\ Y = Y_0 \end{cases}$$

2. a=d=0, b≠0, c=0: f=0, b= $-\frac{e}{Y_0}$ , e≠0 with the solution:

$$\begin{cases} X = X_0 \\ Y = Y_0 \end{cases}$$

3. a=d=0, b=0, c≠0: e=0, c= $-\frac{f}{X_0}$ , f≠0 with the solution:

$$\begin{cases} X = X_0 \\ Y = Y_0 \end{cases}$$

4. a=b=c=d=0: e=f=0 with the solution:

$$\begin{cases} X = X_0 \\ Y = Y_0 \end{cases}$$

5. a=d<0, b=0: c,e,f∈**R** with the solution:

$$\begin{cases} X = -\frac{e}{a} + \left( X_0 + \frac{e}{a} \right) e^{at} \\ Y = c\left( X_0 + \frac{e}{a} \right) te^{at} + \left( Y_0 - \frac{ce - af}{a^2} \right) e^{at} + \frac{ce - af}{a^2} \end{cases}$$

6. a=d>0, b=0: $a = -\frac{e}{X_0}$ , $c = \frac{eY_0 - fX_0}{X_0^2}$ with the solution:

$$\begin{cases} X = X_0 \\ Y = Y_0 \end{cases}$$

7. a=d<0, b≠0, c=0: e,f∈**R** with the solution:

$$\begin{cases} X = \left(Y_0 + \dfrac{f}{a}\right)bte^{at} + \left(X_0 - \dfrac{bf - ae}{a^2}\right)e^{at} + \dfrac{bf - ae}{a^2} \\ Y = -\dfrac{f}{a} + \left(Y_0 + \dfrac{f}{a}\right)e^{at} \end{cases}$$

8. a=d>0, b≠0, c=0: $a = -\dfrac{f}{Y_0}$, $b = \dfrac{fX_0 - eY_0}{Y_0^2}$ with the solution:

$$\begin{cases} X = X_0 \\ Y = Y_0 \end{cases}$$

9. a≠d, b,c≠0, $(a-d)^2+4bc=0$, a+d<0: e,f∈**R** with the solution:

$$\begin{cases} X = \left(\dfrac{a-d}{2}X_0 + bY_0 + \dfrac{2bf + e(a-d)}{a+d}\right)te^{\frac{a+d}{2}t} + \left(X_0 + 4\dfrac{de - bf}{(a+d)^2}\right)e^{\frac{a+d}{2}t} + 4\dfrac{bf - de}{(a+d)^2} \\ Y = \left[Y_0 + 4\dfrac{af - ce}{a+d}\right]e^{\frac{a+d}{2}t} - \left(\dfrac{a-d}{2}X_0 + bY_0 + \dfrac{2bf + e(a-d)}{a+d}\right)\dfrac{a-d}{2b}te^{\frac{a+d}{2}t} + 4\dfrac{ce - af}{b(a+d)^2} \end{cases}$$

10. a≠d, b,c≠0, $(a-d)^2+4bc=0$, a+d>0: $X_0 = 4\dfrac{bf - de}{(a+d)^2}$, $Y_0 = 4\dfrac{ce - af}{(a+d)^2}$ with the solution:

$$\begin{cases} X = X_0 \\ Y = Y_0 \end{cases}$$

11. $(a-d)^2+4bc>0$, b≠0, a+d<0 and ad-bc>0 and $\lambda_1 \neq \lambda_2$ are roots of the equation: $\lambda^2-(a+d)\lambda+(ad-bc)=0$: e,f∈**R** with the solution:

$$\begin{cases} X = k_1e^{\lambda_1 t} + k_2e^{\lambda_2 t} - \dfrac{de - bf}{ad - bc} \\ Y = \dfrac{\lambda_1 - a}{b}k_1e^{\lambda_1 t} + \dfrac{\lambda_2 - a}{b}k_2e^{\lambda_2 t} + \dfrac{ce - af}{ad - bc} \end{cases}$$

where:

$$k_1 = \frac{(\lambda_2 - a)X_0 + (\lambda_2 - a)\frac{de - bf}{ad - bc} - bY_0 + b\frac{ce - af}{ad - bc}}{\lambda_2 - \lambda_1}$$

$$k_2 = \frac{bY_0 - b\frac{ce - af}{ad - bc} - (\lambda_1 - a)X_0 - (\lambda_1 - a)\frac{de - bf}{ad - bc}}{\lambda_2 - \lambda_1}$$

12. $(a-d)^2+4bc>0$, $b\neq 0$, $ad-bc<0$ and $\lambda_1<0$, $\lambda_2>0$ are roots of the equation: $\lambda^2-(a+d)\lambda+(ad-bc)=0$: $bY_0 - b\frac{ce - af}{ad - bc} - (\lambda_1 - a)X_0 - (\lambda_1 - a)\frac{de - bf}{ad - bc} = 0$ where $\lambda_1 \in \mathbf{R}$ is the negative root, with the solution:

$$\begin{cases} X = \left(X_0 + \frac{de - bf}{ad - bc}\right)e^{\lambda_1 t} - \frac{de - bf}{ad - bc} \\ Y = \left(Y_0 - \frac{ce - af}{ad - bc}\right)e^{\lambda_1 t} + \frac{ce - af}{ad - bc} \end{cases}$$

13. $(a-d)^2+4bc>0$, $b\neq 0$, $a+d>0$, $ad-bc>0$ and $\lambda_1\neq\lambda_2$ are roots of the equation: $\lambda^2-(a+d)\lambda+(ad-bc)=0$: $X_0 = \frac{bf - de}{ad - bc}$, $Y_0 = \frac{ce - af}{ad - bc}$ with the solution:

$$\begin{cases} X = X_0 \\ Y = Y_0 \end{cases}$$

14. $(a-d)^2+4bc>0$, $b=0$, $c\neq 0$, $a,d<0$: $e,f \in \mathbf{R}$ with the solution:

$$\begin{cases} X = k_1\frac{a - d}{c}e^{at} + \frac{bf - de}{ad - bc} \\ Y = k_1 e^{at} + k_2 e^{dt} + \frac{ce - af}{ad - bc} \end{cases}$$

where:

$$k_1 = \frac{cX_0 - c\frac{bf - de}{ad - bc}}{a - d}$$

$$k_2 = \frac{(a - d)Y_0 - \frac{ce - af}{ad - bc}(a - d) - cX_0 + c\frac{bf - de}{ad - bc}}{a - d}$$

15. $(a-d)^2+4bc>0$, $b=0$, $c\neq 0$, $a<0$, $d>0$: $(a-d)Y_0 - cX_0 - \frac{ce-af+df}{d} = 0$ with the solution:

$$\begin{cases} X = \left(X_0 + \frac{e}{a}\right)e^{at} - \frac{e}{a} \\ Y = \left(Y_0 - \frac{ce-af}{ad}\right)e^{at} + \frac{ce-af}{ad} \end{cases}$$

16. $(a-d)^2+4bc>0$, $b=0$, $c\neq 0$, $a>0$, $d<0$: $a = -\frac{e}{X_0}$ with the solution:

$$\begin{cases} X = -\frac{e}{a} \\ Y = \frac{(a-d)Y_0 - \frac{ce-af}{ad}(a-d) - cX_0 - \frac{ce}{a}}{a-d}e^{dt} + \frac{ce-af}{ad} \end{cases}$$

17. $(a-d)^2+4bc>0$, $b=0$, $c\neq 0$, $a,d>0$: $a = -\frac{e}{X_0}$ and $Y_0 = -\frac{cX_0+f}{d}$ with the solution:

$$\begin{cases} X = X_0 \\ Y = Y_0 \end{cases}$$

18. $a\neq d$, $a,d<0$, $b=c=0$: $e,f\in\mathbf{R}$ with the solution::

$$\begin{cases} X = \left(X_0 + \frac{e}{a}\right)e^{at} - \frac{e}{a} \\ Y = \left(Y_0 + \frac{f}{d}\right)e^{dt} - \frac{f}{d} \end{cases}$$

19. $a\neq d$, $a<0$, $d>0$, $b=c=0$: $e\in\mathbf{R}$, $d = -\frac{f}{Y_0}$ with the solution:

$$\begin{cases} X = \left(X_0 + \frac{e}{a}\right)e^{at} - \frac{e}{a} \\ Y = Y_0 \end{cases}$$

20. $a\neq d$, $a>0$, $d<0$, $b=c=0$: $a = -\frac{e}{X_0}$ with the solution:

$$\begin{cases} X = -\dfrac{e}{a} \\ Y = \left( Y_0 + \dfrac{f}{d} \right) e^{dt} - \dfrac{f}{d} \end{cases}$$

21. $a \neq d$, $a,d>0$, $b=c=0$: $a=-\dfrac{e}{X_0}$, $d=-\dfrac{f}{Y_0}$ with the solution:

$$\begin{cases} X = X_0 \\ Y = Y_0 \end{cases}$$

22. $(a-d)^2+4bc<0$, $b \neq 0$, $a+d<0$ and $\lambda_1=\alpha+i\beta$, $\lambda_2=\alpha-i\beta$, $\beta \neq 0$ are the roots of the equation: $\lambda^2-(a+d)\lambda+(ad-bc)=0$: $e,f \in \mathbf{R}$ with the solution:

$$\begin{cases} X = \left( X_0 + \dfrac{de-bf}{ad-bc} \right) e^{\alpha t} \cos \beta t - \\ \dfrac{(\alpha - a)(ad-bc)X_0 + (\alpha - a)(de-bf) - b(ad-bc)Y_0 + b(ce-af)}{\beta(ad-bc)} e^{\alpha t} \sin \beta t - \dfrac{de-bf}{ad-bc} \\ Y = \left( X_0 + \dfrac{de-bf}{ad-bc} \right) \dfrac{\alpha - a}{b} e^{\alpha t} \cos \beta t + \\ \dfrac{cX_0(ad-bc) + c(de-bf) + (ad-bc)(\alpha - a)Y_0 - (ce-af)(\alpha - a)}{\beta(ad-bc)} e^{\alpha t} \sin \beta t - \\ \dfrac{(\alpha - a)(ad-bc)X_0 + (\alpha - a)(de-bf) - b(ad-bc)Y_0}{b(ad-bc)} \end{cases}$$

23. $(a-d)^2+4bc<0$, $b \neq 0$, $a+d>0$ and $\lambda_1=\alpha+i\beta$, $\lambda_2=\alpha-i\beta$, $\beta \neq 0$ are the roots of the equation: $\lambda^2-(a+d)\lambda+(ad-bc)=0$: $(ad-bc)X_0 = bf-de$, $(ad-bc)Y_0 = (ce-af)$ with the solution:

$$\begin{cases} X = X_0 \\ Y = Y_0 \end{cases}$$

24. $(a-d)^2+4bc<0$, $b \neq 0$, $a+d=0$ and $\lambda_1=\alpha+i\beta$, $\lambda_2=\alpha-i\beta$, $\beta \neq 0$ are the roots of the equation: $\lambda^2-(a+d)\lambda+(ad-bc)=0$: $e,f \in \varnothing$.

## 5 The Dynamic Equilibrium

Let the system of first order differential equations:

$$(30)\quad \begin{cases} \dfrac{dY}{dt} = \alpha(D - Y) \\ \dfrac{dr}{dt} = \beta(MD - M) \end{cases}, \ \alpha,\beta>0$$

From (12) we have: $D=c_Y Y-c_Y ri_Y Y+in_Y Y+i_r r+E$

from where:

$$(31)\quad \begin{cases} \dfrac{dY}{dt} = \alpha(c_Y Y - c_Y ri_Y Y + in_Y Y + i_r r + E - Y) \\ \dfrac{dr}{dt} = \beta(md_Y Y + m_r r + M_0 - M) \end{cases}$$

or otherwise:

$$(32)\quad \begin{cases} \dfrac{dY}{dt} = -\alpha\chi_Y Y + \alpha i_r r + \alpha E \\ \dfrac{dr}{dt} = \beta md_Y Y + \beta m_r r + \beta(M_0 - M) \end{cases}$$

where we note $\chi_Y=1-c_Y(1-ri_Y)-in_Y>0$

In matrix notation, the system becomes:

$$(33)\quad \begin{pmatrix} \dfrac{dY}{dt} \\ \dfrac{dr}{dt} \end{pmatrix} = \begin{pmatrix} -\alpha\chi_Y & \alpha i_r \\ \beta md_Y & \beta m_r \end{pmatrix} \begin{pmatrix} Y \\ r \end{pmatrix} + \begin{pmatrix} \alpha E \\ \beta(M_0 - M) \end{pmatrix}$$

Using the above lemma, it follows that: $\lim_{t\to\infty} Y(t) = \tilde{Y}$, $\lim_{t\to\infty} r(t) = \tilde{r}$,

$\tilde{Y}, \tilde{r} \in \mathbf{R}_+$ if and only if:

1. $(\alpha\chi_Y+\beta m_r)^2+4\alpha\beta i_r md_Y=0$ then:

$$\begin{cases} Y = \left( -\dfrac{\alpha\chi_Y + \beta m_r}{2} Y_0 + \alpha i_r r_0 - \alpha \dfrac{2 i_r \beta (M_0 - M) - E(\alpha\chi_Y + \beta m_r)}{\alpha\chi_Y - \beta m_r} \right) te^{\frac{-\alpha\chi_Y + \beta m_r}{2} t} + \\ \left( Y_0 + 4\alpha\beta \dfrac{m_r E - i_r (M_0 - M)}{(\alpha\chi_Y - \beta m_r)^2} \right) e^{\frac{-\alpha\chi_Y + \beta m_r}{2} t} + 4\alpha\beta \dfrac{i_r (M_0 - M) - m_r E}{(\alpha\chi_Y - \beta m_r)^2} \\ r = \left[ r_0 + 4\alpha\beta \dfrac{\chi_Y (M_0 - M) + m d_Y E}{\alpha\chi_Y - \beta m_r} \right] e^{\frac{-\alpha\chi_Y + \beta m_r}{2} t} - \\ \left( \dfrac{\alpha\chi_Y + \beta m_r}{2} Y_0 - \alpha i_r r_0 + \alpha \dfrac{2 i_r \beta (M_0 - M) - E(\alpha\chi_Y + \beta m_r)}{\alpha\chi_Y - \beta m_r} \right) \dfrac{\alpha\chi_Y + \beta m_r}{2\alpha i_r} te^{\frac{-\alpha\chi_Y + \beta m_r}{2} t} - \\ \quad 4\beta \dfrac{m d_Y E + \chi_Y (M_0 - M)}{i_r (\alpha\chi_Y - \beta m_r)^2} \end{cases}$$

and:

$$\begin{cases} \tilde{Y} = 4\alpha\beta \dfrac{i_r (M_0 - M) - m_r E}{(\alpha\chi_Y - \beta m_r)^2} \\ \tilde{r} = -4\beta \dfrac{m d_Y E + \chi_Y (M_0 - M)}{i_r (\alpha\chi_Y - \beta m_r)^2} \end{cases}$$

2. $(\alpha\chi_Y+\beta m_r)^2+4\alpha\beta i_r m d_Y>0$ and $\lambda_1\neq\lambda_2$ are roots of the equation: $\lambda^2+(\alpha\chi_Y -\beta m_r)\lambda-\alpha\beta(\chi_Y m_r+i_r m d_Y)=0$ then:

$$\begin{cases} Y = k_1 e^{\lambda_1 t} + k_2 e^{\lambda_2 t} + \dfrac{m_r E - i_r (M_0 - M)}{\chi_Y m_r + i_r m d_Y} \\ r = \dfrac{\lambda_1 + \alpha\chi_Y}{\alpha i_r} k_1 e^{\lambda_1 t} + \dfrac{\lambda_2 + \alpha\chi_Y}{\alpha i_r} k_2 e^{\lambda_2 t} - \dfrac{m d_Y E + \chi_Y (M_0 - M)}{\chi_Y m_r + i_r m d_Y} \end{cases}$$

where:

$$k_1 = \frac{(\lambda_2 + \alpha\chi_Y) Y_0 - (\lambda_2 + \alpha\chi_Y) \dfrac{m_r E - i_r (M_0 - M)}{\chi_Y m_r + i_r m d_Y} - \alpha i_r r_0 - \alpha i_r \dfrac{m d_Y E + \chi_Y (M_0 - M)}{\chi_Y m_r + i_r m d_Y}}{\lambda_2 - \lambda_1}$$

$$k_2 = \frac{\alpha i_r r_0 + \alpha i_r \dfrac{m d_Y E + \chi_Y (M_0 - M)}{\chi_Y m_r + i_r m d_Y} - (\lambda_1 + \alpha\chi_Y) Y_0 + (\lambda_1 + \alpha\chi_Y) \dfrac{m_r E - i_r (M_0 - M)}{\chi_Y m_r + i_r m d_Y}}{\lambda_2 - \lambda_1}$$

and:
$$\begin{cases} \widetilde{Y} = \dfrac{m_r E - i_r (M_0 - M)}{\chi_Y m_r + i_r m d_Y} \\ \widetilde{r} = -\dfrac{m d_Y E + \chi_Y (M_0 - M)}{\chi_Y m_r + i_r m d_Y} \end{cases}$$

3. $(\alpha\chi_Y+\beta m_r)^2+4\alpha\beta i_r m d_Y<0$ and $\lambda_1=\mu+i\nu$, $\lambda_2=\mu-i\nu$, $\nu\neq 0$ are roots of the equation: $\lambda^2+(\alpha\chi_Y-\beta m_r)\lambda-\alpha\beta(\chi_Y m_r+i_r m d_Y)=0$ then:

$$\begin{cases} Y = \left(Y_0 - \dfrac{m_r E - i_r (M_0 - M)}{\chi_Y m_r + i_r m d_Y}\right) e^{\mu t} \cos \nu t - \\ \dfrac{(\chi_Y m_r + i_r m d_Y)\left[(\mu + \alpha\chi_Y) Y_0 - \alpha i_r r_0\right] - (\mu + \alpha\chi_Y) m_r E + \mu i_r (M_0 - M) - \alpha i_r m d_Y E}{\nu(\chi_Y m_r + i_r m d_Y)} e^{\mu t} \sin \nu t + \\ \dfrac{m_r E - i_r (M_0 - M)}{\chi_Y m_r + i_r m d_Y} \\ r = \left(Y_0 - \dfrac{m_r E - i_r (M_0 - M)}{\chi_Y m_r + i_r m d_Y}\right) \dfrac{\mu + \alpha\chi_Y}{\alpha i_r} e^{\mu t} \cos \nu t + \\ \dfrac{(\chi_Y m_r + i_r m d_Y)\left[\beta m d_Y Y_0 + (\mu + \alpha\chi_Y) r_0\right] - \beta m d_Y (m_r E - i_r (M_0 - M)) + (m d_Y E + \chi_Y (M_0 - M))(\mu + \alpha\chi_Y)}{\nu(\chi_Y m_r + i_r m d_Y)} e^{\mu t} \sin \nu t + \\ \dfrac{(\chi_Y m_r + i_r m d_Y)\left[\alpha i_r r_0 - (\mu + \alpha\chi_Y) Y_0\right] + (\mu + \alpha\chi_Y)(m_r E - i_r (M_0 - M))}{\alpha i_r (\chi_Y m_r + i_r m d_Y)} \end{cases}$$

and:
$$\begin{cases} \widetilde{Y} = \dfrac{m_r E - i_r (M_0 - M)}{\chi_Y m_r + i_r m d_Y} \\ \widetilde{r} = \dfrac{(\chi_Y m_r + i_r m d_Y)\left[\alpha i_r r_0 - (\mu + \alpha\chi_Y) Y_0\right] + (\mu + \alpha\chi_Y)(m_r E - i_r (M_0 - M))}{\alpha i_r (\chi_Y m_r + i_r m d_Y)} \end{cases}$$

## 6 Conclusions

The above analysis highlights the following issues:

- At an offer of money M upper limited by $M_0-\dfrac{m_r}{i_r}E$ where $E=c_Y(TR-T_0)+C_0+I_0+\overline{G}$ is obtained that if $(1-ri_Y)\Omega+(TR-T_0)\Lambda>0$ then the interest rate and the national income are decreasing and concave in relation to the marginal propensity to consume; if $2(1-ri_Y)\Omega+(TR-T_0)\Lambda<0$ then the interest rate and the national income are increasing and convex in relation to the marginal propensity to consume; if $(1-ri_Y)\Omega+(TR-T_0)\Lambda<0$ and $2(1-ri_Y)\Omega+(TR-T_0)\Lambda>0$ then the interest rate and the national income are

increasing and concave in relation to the marginal propensity to consume. Also, the interest rate and the national income are increasing and concave with respect to tax rates, are decreasing and concave in relation to the investment rate, and increasing and concave in relation to the rate of currency demand.

- At an offer of money M lower limited by $M_0-\frac{m_r}{i_r}E$ where $E=c_Y(TR-T_0)+C_0+I_0+\overline{G}$ we get that the interest rate and the national income are increasing and convex in relation to the marginal propensity to consume, decreasing and convex with respect to tax rates, increasing and convex in relation to the investment rate, decreasing and convex in relation to the rate of currency demand.
- In relation to time, the national income and the interest rate have a tendency to stabilize, their evolution and limit values being specified above.

## 7 References

Dornbusch, R.; Fischer, S.; Startz R. (1997). *Macroeconomics*. Richard D. Irwin Publishers.

Mankiw, N.G. (2010). *Macroeconomics*. Worth Publishers.

Romer, D. (1996). *Advanced Macroeconomics*. McGraw-Hill.

Stancu S. & Mihail N. (2009). *Macroeconomie. Modele statice şi dinamice de comportament. Teorie şi aplicaţii/Macroeconomics. Static and dynamic models of behavior. Theory and applications*. Bucharest: Economică.

# On The Nature of Level Hyper Surfaces in the Economic Theory

**Alin Cristian Ioan[1], Cătălin Angelo Ioan[2]**

**Abstract:** In this paper, we will determine the conditions where a level hypersurface (curve) will preserve the character of the original function. The applications are in the theory of the utility and in the theory of production functions.

**Keywords:** utility; production; convexity; concavity

**JEL Classification:** R12

## 1 Introduction

In most of the works in the economics, the authors noticed an implicit assumption or sometimes graphically demonstrated by methods more or less "common sense" relative to the nature of convexity or concavity of a level curve corresponding to an economical concept, be it utility or production function.

If in the classical theories that concern two quantities (goods, factors of production) the nature of the level curves can be determined from purely economic considerations, in the general theory of n goods or factors of production ([5]), this is not at all obvious.

For these reasons, we will broach the issue of level hypersurfaces nature relatively to the basic function, obtaining a result that will demonstrate that when appropriate marginal indicators are positive, the nature will change (from concavity to convexity and vice versa) and if they are negative, the character is preserved.

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## 2 Main Theorem

For the beginning

**The implicit functions theorem (Goursat)**

Let a function $f:D\subset\mathbf{R}^n\to\mathbf{R}$, D - open set, $n\geq 2$, $f\in C^1(D)$, $(x_1,...,x_{n-1},y)\to f(x_1,...,x_{n-1},y)$ and $c=(a_1,...,a_{n-1},b)\in D$ such that $f(c)=0$. If $\frac{\partial f}{\partial y}(c)\neq 0$ then $\exists W=U\times V\in V(c)$ such that $U\subset\mathbf{R}^{n-1}$, $V\subset\mathbf{R}$ and $\varphi:U\to V$, $\varphi\in C^1(U)$, $b=\varphi(a_1,...,a_{n-1})$, $f(x_1,...,x_{n-1},\varphi(x_1,...,x_{n-1}))=0$ $\forall(x_1,...,x_{n-1})\in U$, $\frac{\partial\varphi}{\partial x_i}=-\frac{\frac{\partial f}{\partial x_i}}{\frac{\partial f}{\partial y}}$, $i=\overline{1,n-1}$.

Also, if $f\in C^s(D)$, $s\geq 1$ then $\varphi\in C^s(U)$.

Let therefore $f:D\subset\mathbf{R}^n\to\mathbf{R}$, $\chi\in\mathbf{R}$ such that $f(x_1,...,x_n)=\chi$ and suppose that (after a possible renumbering) $\frac{\partial f}{\partial x_n}\neq 0$. Considering the function $g=f-\chi$, the implicit function theorem shows that $\exists\varphi:U\to V$ such that: $x_n=\varphi(x_1,...,x_{n-1})$ and $f(x_1,...,x_{n-1},\varphi(x_1,...,x_{n-1}))=\chi$. In addition: $\frac{\partial\varphi}{\partial x_i}=-\frac{\frac{\partial f}{\partial x_i}}{\frac{\partial f}{\partial x_n}}$, $i=\overline{1,n-1}$.

We have now:

$$\frac{\partial^2\varphi}{\partial x_i\partial x_j}=\frac{-\frac{\partial^2 f}{\partial x_i\partial x_j}\left(\frac{\partial f}{\partial x_n}\right)^2+\frac{\partial^2 f}{\partial x_i\partial x_n}\frac{\partial f}{\partial x_j}\frac{\partial f}{\partial x_n}+\frac{\partial^2 f}{\partial x_n\partial x_j}\frac{\partial f}{\partial x_i}\frac{\partial f}{\partial x_n}-\frac{\partial^2 f}{\partial x_n^2}\frac{\partial f}{\partial x_i}\frac{\partial f}{\partial x_j}}{\left(\frac{\partial f}{\partial x_n}\right)^3},$$

$$i,j=\overline{1,n-1}$$

We put now the issue of determining the second differential of $\varphi$ respecting to f. We have thus:

$$\left(\frac{\partial f}{\partial x_n}\right)^3 d^2\varphi=\left(\frac{\partial f}{\partial x_n}\right)^3\sum_{i,j=1}^{n-1}\frac{\partial^2\varphi}{\partial x_i\partial x_j}dx_i dx_j=$$

$$\sum_{i,j=1}^{n-1}\left(-\frac{\partial^2 f}{\partial x_i \partial x_j}\left(\frac{\partial f}{\partial x_n}\right)^2+\frac{\partial^2 f}{\partial x_i \partial x_n}\frac{\partial f}{\partial x_j}\frac{\partial f}{\partial x_n}+\frac{\partial^2 f}{\partial x_n \partial x_j}\frac{\partial f}{\partial x_i}\frac{\partial f}{\partial x_n}-\frac{\partial^2 f}{\partial x_n^2}\frac{\partial f}{\partial x_i}\frac{\partial f}{\partial x_j}\right)dx_i dx_j$$

=

$$-\left(\frac{\partial f}{\partial x_n}\right)^2\sum_{i,j=1}^{n-1}\frac{\partial^2 f}{\partial x_i \partial x_j}dx_i dx_j+2\frac{\partial f}{\partial x_n}\sum_{i,j=1}^{n-1}\frac{\partial^2 f}{\partial x_i \partial x_n}\frac{\partial f}{\partial x_j}dx_i dx_j-\frac{\partial^2 f}{\partial x_n^2}\sum_{i,j=1}^{n-1}\frac{\partial f}{\partial x_i}\frac{\partial f}{\partial x_j}dx_i dx_j$$

=

$$-\left(\frac{\partial f}{\partial x_n}\right)^2 d^2 f+2\left(\frac{\partial f}{\partial x_n}\right)^2\sum_{i=1}^{n-1}\frac{\partial^2 f}{\partial x_i \partial x_n}dx_i dx_n+2\frac{\partial f}{\partial x_n}\sum_{i,j=1}^{n}\frac{\partial^2 f}{\partial x_i \partial x_n}\frac{\partial f}{\partial x_j}dx_i dx_j-2\frac{\partial f}{\partial x_n}\sum_{i=1}^{n-1}\frac{\partial^2 f}{\partial x_i \partial x_n}\frac{\partial f}{\partial x_n}dx_i dx_n-$$

$$2\frac{\partial f}{\partial x_n}\sum_{j=1}^{n-1}\frac{\partial^2 f}{\partial x_n^2}\frac{\partial f}{\partial x_j}dx_n dx_j-\frac{\partial^2 f}{\partial x_n^2}\sum_{i,j=1}^{n}\frac{\partial f}{\partial x_i}\frac{\partial f}{\partial x_j}dx_i dx_j+2\frac{\partial^2 f}{\partial x_n^2}\sum_{i=1}^{n-1}\frac{\partial f}{\partial x_i}\frac{\partial f}{\partial x_n}dx_i dx_n=$$

$$-\left(\frac{\partial f}{\partial x_n}\right)^2 d^2 f+2\left(\frac{\partial f}{\partial x_n}\right)^2\sum_{i=1}^{n-1}\frac{\partial^2 f}{\partial x_i \partial x_n}dx_i dx_n+2\frac{\partial f}{\partial x_n}df\sum_{i=1}^{n}\frac{\partial^2 f}{\partial x_i \partial x_n}dx_i-2\frac{\partial f}{\partial x_n}\sum_{i=1}^{n-1}\frac{\partial^2 f}{\partial x_i \partial x_n}\frac{\partial f}{\partial x_n}dx_i dx_n-$$

$$2\frac{\partial f}{\partial x_n}\frac{\partial^2 f}{\partial x_n^2}df dx_n+2\left(\frac{\partial f}{\partial x_n}\right)^2\frac{\partial^2 f}{\partial x_n^2}dx_n^2-\frac{\partial^2 f}{\partial x_n^2}(df)^2+2\frac{\partial^2 f}{\partial x_n^2}\frac{\partial f}{\partial x_n}df dx_n-2\frac{\partial^2 f}{\partial x_n^2}\left(\frac{\partial f}{\partial x_n}\right)^2 dx_n^2=$$

$$-\left(\frac{\partial f}{\partial x_n}\right)^2 d^2 f+2\frac{\partial f}{\partial x_n}df\sum_{i=1}^{n}\frac{\partial^2 f}{\partial x_i \partial x_n}dx_i-\frac{\partial^2 f}{\partial x_n^2}(df)^2$$

Because df=0 we get:

$$d^2\varphi=\sum_{i,j=1}^{n-1}\frac{\partial^2 \varphi}{\partial x_i \partial x_j}dx_i dx_j=-\frac{1}{\frac{\partial f}{\partial x_n}}d^2 f$$

We can formulate the following theorem:

**Theorem**

Let $f:D\subset\mathbf{R}^n\to\mathbf{R}$, $\chi\in\mathbf{R}$ such that $f(x_1,...,x_n)=\chi$ and $\exists k=\overline{1,n}:\ \frac{\partial f}{\partial x_k}\neq 0$. Considering $\varphi:U\to V$, $U\subset\mathbf{R}^{n-1}$, $V\subset\mathbf{R}$ such that $x_k=\varphi(x_1,...,x_{k-1},x_{k+1},...,x_n)$ and $f(x_1,...,x_{k-1},\varphi(x_1,...,x_{k-1},x_{k+1},...,x_n),x_{k+1},...,x_n)=\chi$ then:

- if $\frac{\partial f}{\partial x_k}>0$ then f is convex (concave) if and only if $\varphi$ is concave (convex);

- if $\frac{\partial f}{\partial x_k} < 0$ then f is convex (concave) if and only if φ is convex (concave).

## 3 Application for the Utility Function

For n fixed assets, let the consumer space: $SC=\{(x_1,...,x_n) \mid x_i \geq 0,\ i=\overline{1,n}\} \subset \mathbf{R}^n$ where $x \in SC$, $x=(x_1,...,x_n)$ is a consumption basket or basket of goods. We also consider an arbitrary norm $\|\cdot\|$ defined on $\mathbf{R}^n$.

We define also on *SC*, the relationship of indifference SC noted, below, with: ~.

If two baskets x and y are related: x~y, this means that any combination of goods x and y it is indifferent to the consumer. Also, we will note $x \not\sim y$ the fact that x is not indifferent to y.

We impose to the indifference relationship the following axioms:

I.1. $\forall x \in SC \Rightarrow x \sim x$ (reflexivity);

I.2. $\forall x,y \in SC$, $x \sim y \Rightarrow y \sim x$ (symmetry);

I.3. $\forall x,y,z \in SC$, $x \sim y$, $y \sim z \Rightarrow x \sim z$ (transitivity);

I.4. $\forall x,y \in SC$, $x \sim y$, $\|x\| < \|y\| \Rightarrow \exists z \in SC$ such that $x \sim z$ and $\|x\| < \|z\| < \|y\|$ (the axiom of continuity);

I.5. $\forall x \in SC \Rightarrow \exists u \sim x$ such that $\|u\| \leq \|v\|$ $\forall v \sim x$ (the condition of lower bounds of the indifference classes).

Considering (*SC*,~), let $x \in SC$. The equivalence class of x: $[x]=\{y \in SC \mid y \sim x\}$ will be the total consumption baskets indifferent in relation to x. We will call [x] – the indifference class of x.

For $x \in SC$, we will call, in the assumption of continuity axiom, the indifference class of x as the indifference hypersurface or for n=2 – the indifference curve.

Relative to the axiom I.5, we call u the minimal basket of goods in the meaning of the norm relative to the indifference class of $x \in SC$ and we will note m(x).

Now we define preference relationship on classes marked, below, with $\succeq$ through the following axioms:

P.1. $\forall[x]\in SC/\sim \Rightarrow [x]\succeq[x]$ (reflexivity);

P.2. $\forall[x],[y]\in SC/\sim$, $[x]\succeq[y]$, $[y]\succeq[x]\Rightarrow[x]=[y]$ (skew-symmetry);

P.3. $\forall[x],[y],[z]\in SC/\sim$, $[x]\succeq[y]$, $[y]\succeq[z]\Rightarrow[x]\succeq[z]$ (transitivity);

P.4. $\forall x,y\in SC\Rightarrow[x]\succeq[y]$ or $[y]\succeq[x]$ (the total ordering);

P.5. $\forall x\in SC\Rightarrow\exists y\in SC$ such that $y\neq x$ and $[y]\succeq[x]$;

P.6. $[x]\succeq[y]$ if and only if $\|m(x)\|\geq\|m(y)\|$ (the compatibility with the existence of minimum baskets);

P.7. $\forall x,y\in SC$, $x>y\Rightarrow[x]\succeq[y]$ and $x\neq y$ (the compatibility with strict inequality relation).

We now define the utility function as:

$$U:SC\rightarrow\mathbf{R}_+,\ (x_1,...,x_n)\rightarrow U(x_1,...,x_n)\in\mathbf{R}_+\ \forall(x_1,...,x_n)\in SC$$

satisfying the following axioms:

U.1. $\forall x,y\in SC/\sim$: $[x]=[y]\Leftrightarrow U([x])=U([y])$;

U.2. $\forall x,y\in SC/\sim$: $[x]\succeq[y]\Leftrightarrow U([x])\geq U([y])$;

U.3. $U(0)=0$

We require to the utility function the additional conditions:

U.4. The utility function is concave;

U.5. The utility function is of class $C^2$ on the inside of *SC*.

Considering $\chi>0$, the graph corresponding to the equation solutions $U(x)=a$ is called curve (in $\mathbf{R}^2$) or isoutility hypersurface (in $\mathbf{R}^n$).

We define also the marginal utility relative to a good "k": $U_{m,k}=\frac{\partial U}{\partial x_k}$. The economic theory says that for a rational consumer, according to the constancy of consumption of other goods, the marginal utility must be positive, otherwise the consumer recording a decrease of total utility which implicitly would lead to economic nonsense.

So the question arises about the isoutility hypersurface (curve) nature in relation to the good "k".

From the theorem, it follows, however, that if the isoutility hypersurface is represented explicitly by $x_k=\varphi(x_1,...,x_{k-1},x_{k+1},...,x_n)$ then it is opposed to the corresponding character of the utility function.

Therefore, as U is a concave function, it follows that all of the isoutility hypersurfaces will be convex.

## 4 Application for the Production Function

We define on $\mathbf{R}^n$ the production space for n fixed resources as $SP=\{(x_1,...,x_n) \mid x_i\geq 0, i=\overline{1,n}\}$ where $x\in SP$, $x=(x_1,...,x_n)$ is a ordered set of resources.

Because in a production process, depending on the nature of technology applied, but also its specificity, not any amount of resources possible, we will restrict the production space to a subset $D_p\subset SP$ called field of production.

We will call production function an application $Q:D_p\rightarrow\mathbf{R}_+$, $(x_1,...,x_n)\rightarrow Q(x_1,...,x_n)\in\mathbf{R}_+ \ \forall(x_1,...,x_n)\in D_p$ satisfying the following axioms:

FP1. $D_p$ is convex;

FP2. $Q(0)=0$;

FP3. $Q\in C^2(D_p)$;

FP4. Q is monotonically increasing in each variable;

FP5. Q is concave.

Considering a production function $Q:D_p\rightarrow\mathbf{R}_+$ and $\overline{Q}\in\mathbf{R}_+$ - fixed, the set of inputs which generate $\overline{Q}$ is called isocuant.

As above, we assume that the marginal productivity of factors of production relative to $x_k$: $\eta_{x_k}=\frac{\partial Q}{\partial x_k}$ is positive, representing the trend of variation of production to changes in factor $x_k$.

The condition is absolutely normal in the theory, because no economic agent will not supplement the factors of production (labor, capital etc.) if this will lead to a decrease in effective results.

From theorem, therefore follows that for a isoquant explicitly represented by $x_k=\varphi(x_1,...,x_{k-1}, x_{k+1},...,x_n)$, its character is opposed to the feature production. Therefore, as Q is a concave function, it follows that isoquants will be convex.

## 5 Conclusions

Following the above analysis, we detach a series of conclusions important in the theoretical and practical approaches. On the one hand, the above considerations cover, we hope, a present gap in most economic works, where the character of the level hypersurfaces (curves) is granted. If in the classical theory involving consideration of only two quantities (goods, factors of production) the nature of level curves might be somehow determined, in the general theory of n goods or factors of production this is not at all obvious.

On the other hand, we will offer a "justification" from a purely mathematical nature of the necessity of positiveness marginal indicators, in light of the fact that in the negativity area the character of the level hypersurfaces (curves) will change, the whole theory of minimize income or costs being overturn.

## 6 References

Chiang, A.C. (1984). *Fundamental Methods of Mathematical Economics*. McGraw-Hill Inc.

Cobb, C.W. & Douglas, P.H. (1928). A Theory of Production. *American Economic Review*, 18, pp. 139–165.

Hardwick P., Langmead J., Khan B. (2002). *Introducere în economia politică modernă*/*Introduction to modern political economy.* Iasi: Polirom.

Ioan C.A. & Ioan G. (2010). *Matematică aplicată în micro și macroeconomie/Mathematics Applied in Micro and Macroeconomics*. Galati: Sinteze.

Ioan C.A. & Ioan G. (2011). *n-Microeconomie/ n-Microeconomics.* Galati: Zigotto.

Ioan C.A. & Ioan G. (2011). A generalisation of a class of production functions. *Applied Economics Letters.*

Mishra, S.K. (2007). *A Brief History of Production Functions*. Shillong, India: North-Eastern Hill University.

Ploae V. (1999). *Microeconomie*/*Microeconomics.* Constanţa: Ex Ponto.

Stancu S. (2006). *Microeconomie. Comportamentul agenților economici. Teorie și aplicații/ Microeconomics. Behavior of economic agents. Theory and Applications*. Bucharest: Economică.

Varian H.R. (2006). *Intermediate Microeconomics*. W.W. Norton & Co.

# Tourism and Sustainable Development

## Ecological Price Setting

**Dan Păuna[1], Tanta Păuna[2]**

**Abstract:** This article aims at highlighting the elements that need to be taken into consideration when setting prices, so that they support the effort of resource saving from production, distribution and consumption activities as well as pollution prevention efforts. Communication and price support these efforts. Market mechanisms are based on price so they will not recognize the importance of these issues and will favour bidders with lower unit prices. They will not reflect the efforts that are being made for recycling or destroying waste from the production process or even the damage caused by it. Also, the article highlights the taxes that demonstrate the importance of the environment, taxes on products and activities that are destructive to the environment, which will be the basis for the reform of national systems, the effects produced and conviction of some European countries for non-compliance with the Community environmental legislation. Although the article makes reference to the need to adjust the price, which does not have a direct connection with the generation and disposal of waste, it must also be looked at in an ecological context

**Keywords:** sustainable development; eco-prices; environmental taxes; green prices; carbon offset.

**JEL Classification:** Q52; Q53

## 1. Introduction

The issues related to the consumption of resources and reduction of pollution generated nearly two decades ago in the economic science of a new concept "sustainable development", meaning the relative and absolute saving of resources due to their scarcity. A sustainable society meets its needs without diminishing the prospects for the next generation. We can talk about the scarcity of resources if we start from their availability or lack of availability. Their consumption will lead to depletion of the limited stocks available in a shorter or longer period taking into account the conditions of their intensive or reasonable use.

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The concern of harmonising the economic activity with the environment demands the conduct of economic activities which aim at the interests of consumers and the interests of firms, their setting being made through the market, "regardless of whether trade is done through barter or cash" (Toffler, 1983) the main regulatory element being the price. The price of the goods produced will be affected when we take into account the ecosystems.

## 2. Price – An Element of Resource Recovery or Pollution Prevention?

"Green" prices aim at the integration of environmental protection spendings in the structure of unitary costs, so that prices reflect all costs associated with the processing of the resources into consumer products. (Fuller, 1999) When setting the price we must take into consideration, at the same time, the demands of different situations linked to the resource saving, by influencing and measuring these situations, that is the reflection of all costs in the price, including those related to environmental protection (the bigger the supplemetary costs (monetary or non-monetary) the more sensitive the customers become to the price of a product). (Tureac, 2006)

In order to include green prices in the product price, it is necessary to identify, to take into account and to keep a distinct evidence of all eco-costs, the ideal solution being the selling of all products for prices that have been added complete costs; consumers being willing to purchase them, they will assume a part of the ecological charge (recycled paper has 5-20% higher costs which will be reduced as a consequence of the increase of the requested quantity and of the implementation of new technology).

The significant difference in price for a certain product can even lead to the alteration of the decision to buy, taking into account the smaller incomes of some social categories. (Samuil, 2007)

The tendency to maximize profit still stimulates consumption, and it will continue to do so in the following decades, by increasing the manufactured quantity. (Dogaru, 2006) However, this tendency will support the resource consumption, their waste during the production process, including luxury goods or regrettable goods (weapons and similar products) production.

The institutional intervention in the economy will sanction the non-ecological products from the point of view of the eco-costs since these products will tend to have total costs, that is high prices. They will lose ground to those offering the same degree of usability and the same quality, but lower prices because they are manufactured in conditions of responsibility to the environment. (Bîrcă, July 31 - August 5, 2007) (Bîrcă, 22-24 November 2007)

The situation is reflected in the principle "the polluter pays" which is to be found even in the Romanian legislation or in the "Community ecological label" (it is a voluntary procedure which allows consumers to easily identify green products officially approved in the European Union (EU). The ecological label allows producers to show and communicate to their clients that their products meet the conditions of environment protection. The environment criteria are made so that they are reflected in the products and daily services for consumers (except food, drink and medicine). Until now the EU ecological label has been assigned to 28 groups of products. Ecological criteria are the result of some scientifical research and of some extended talks inside the European Union Committee for ecological labeling).

In a broader sense, the principle "the polluter pays" aims at charging the polluter with the social cost of the pollution created. This leads to the setting of a responsibility mechanism for the ecological damage which can cover all the negative effects of pollution, not only concerning the goods and people, but also the environment itself.

In economical terms, this principle might translate into the internalization of the external spendings (the theory of externalizations). In a limited sense given by the Organization for Economical Cooperation and Development (O.C.D.E.), this principle requires that the polluter assumes the spendings for the fight against pollution.

Applying this principle should take into account a real depolluting which would allow communities and each individual to live in an adequate environment. (Eg the reasons for implementing these public policies in the vehicle sector have the purpose to reduce the impact on the environment starting from the present problems of the vehicle market situated in the maturity phase of the lifecycle until the consumer's preoccupation for the environment. (Sasu & Ariton (Bălău), 2011)

For the polluter to face such depolluting, one might take into account a series of measures which, together, could be efficient. A system of pollution taxes, the forcing of restrictive directions (against pollution) and some diverse financial mechanisms: compensations, tax remission etc. E.g. discounts due to the use of ecological fuels, tax remissions for vehicles using alternative energy sources, or intermodal transportation.

The finite product will generate eco-costs produced by the addition of ecological attributes, by changing the manufacturing of the product, the energy consumption, by altering the materials and raw materials used (Eg. the use of package made from recyclable materials).

The cost of ecological campaigns can also be added to the price, campaigns which will have important meanings concerning the image of the company (Eg. taking

into account the responsibilities to the environment, Canon[1] has been the pioneer of the ink cartridge collecting campaigns since 1990 when it started collecting and recycling them. The company donated 50 cents for each recovered cartridge during the Clean Earth for World Wild Found or Nature Conservacy campaign. All these recycling programs reduced the new resources used by 110.000 tones and the carbon bioxide (CO2) emissions by 310.000 tones).

Production processes, production capacity, production management, human resources management, transportation systems can be modified – all which will influence the total costs by the eco-costs component (Eg. In May 2004 the International Finance Corporation (IFC), the private sector arm of the World Bank, approved a corporate loan of up to USD 100 million to LNM Group for use in Kazakhstan (ArcelorMittal Temirtau) and Romania (Galati). According to the IFC the project's main purposes were to:

- improve the environmental performance of the plants;
- create and maintain an environmental and worker health and safety system on a corporate level, so that it can help ensure that all its current and future operations will meet World Bank Group and/or European Union standards; and
- rehabilitate, de-bottleneck and provide working capital and cash support to its subsidiaries. (Turtureanu, 2010)

## 3. Intermodal Transportation - A Measure to Reduce Emissions

Transport policy in EU (Fistung, 2007) is based on the present modal division (road 44%, railroad 8%, river 4%) which is considered to be alarming especially since it hides a tendency to increase road traffic by 50% until 2010, and because of the lack of directing the goods flow to the other transportation means. (as a result of the analysis and the protocol signed in Kyoto (10.12.1997) EU agreed to reduce its CO2 emissions by 8% until 2012).

In order to do this, EU stimulates intermodal transport development, especially the river and railroad ones (funds given to România in order to modernize the great speed corridors Constanţa – Bucureşti – Braşov – Deva – Arad - Curtici and Constanţa – Bucureşti- Braşov – Cluj Napoca - Episcopia Bihor). The advantages of this way of transportion compared to other means of transportation can be vizualised in figure no. 1.

[1] htpp:// www.canon com/environement/history/2000 html

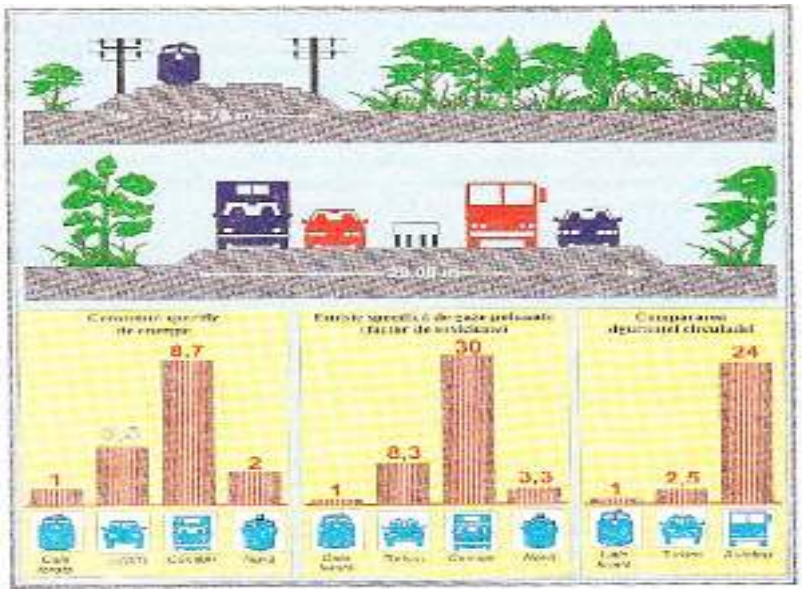


**Figure 1. Advantages of the railroad transportation compared to other means of transportation**

*Source: (Simuţ, 2001, p. 36)*

In the case of airlines which are big polluters, a series of actions have been implemented, these actions aiming at reducing emissions even in the case of traffic increase.

The phrase used by the company "**We think green to keep the sky blue!**" aims to demonstrate that air traffic growth is possible within the limits imposed by the environmental protection measures, that is all emissions produced by Tarom flights should be counterbalanced by various measures including the offset[1] ones. (Păuna, 2011) To reach these goals, Tarom implements a responsible policy on burnt fuel efficiency by trying to meet the requirements for managing carbon emissions under the EU Emissions Trading Scheme, EU ETS (in aviation, a tonne less of used fuel leads to a reduction in carbon dioxide emissions equivalent to 3.5 tonnes; a reduction in the duration of a flight by 29 minutes can lead, in only one year, to savings of over 25 million kg of fuel and to the decrease by more than 81 million kg of carbon dioxide emissions).

[1] Offset operations. Carbon offset is a reduction in carbon dioxide gas emissions or greenhouse gas emissions in order to counterbalance other emissions. Compensation is usually achieved through financial support, through projects that reduce emissions of greenhouse gases in the short or long term. The most popular type for this type of project is renewable energy such as wind farms, biomass energy, hydroelectric dams or other projects including energy efficiency, destruction of industrial pollutants and agricultural products, the destruction of landfills that emit methane.

The same phenomenon can be met in the case of public transportation. All over the EU the efforts of promoting public transportation are emphasized. The implementation of ABC[1] Dutch system in the Union has the purpose of reducing individual traffic and of increasing public traffic, which aims at the increase of the population density and the improvement of city life (Muscalu 2007). In the ABC system the areas are distributed according to their accessibility, A areas are very accessible to local and regional public transportation, vehicle movement must not exceed 10-20% of the total number of movements, B areas are accessible both to local and regional public transportation and to other vehicles, and the movements must not exceed 35% of the total, and C areas are accessible to vehicles. The decrease of vehicle traffic will lead to the diminishing of environment protection problems, of transportation costs, of the investment for auto infrastructure and an improvement of urban occupation.

The operations of fixing the problems caused by accidents, accidental discharging and eliminating pollutant, dangerous, toxic or radioactive substances generate significant spendings for depolluting operations, the necessary equipments, administrative expenditures, at which we can add insurance costs, trial fees, fines. (E.g. Exxon Valdez case in 1989, an oil ship of Exxon Valdez American company discharged in "Prince William" narrows in Alaska – an old and rich fishing spot – 37.000 tones of oil, about 256.000 barrels or the equivalent of 125 olympic swimming pools. 2.5 billion dollars were spent for depolluting only, and 286,8 million dollars represented damages for the fishermen in Alaska)

## 4. Environment Taxes – A Goal for the Change of Trader's Behaviour

For some EU member states environment taxes amount to 5-10% from the total revenues from taxes. In fact, according to Eurostat data, most of these taxes are linked to the energy sector (76% of the total revenues from environment taxes), to transportation (21% of the total revenues from environment taxes), thus remaining a small percent of the pure taxes obtained from the environment's pollution. So, one can notice that in the entire Eu Denmark and the Netherlands hold the first position with almost and even exceeding 10%. Compared to the same taxes in 2004 and 2005, the situation in 2008 is presented in the next chart:

[1] Master Plan of Urban transportation - Bucharest, Sibiu and Ploiesti. Final Report Ploiesti Europe Aid/123579/D/SER/RO CFCU – Central Unit of Finance and Contracts November 2007.

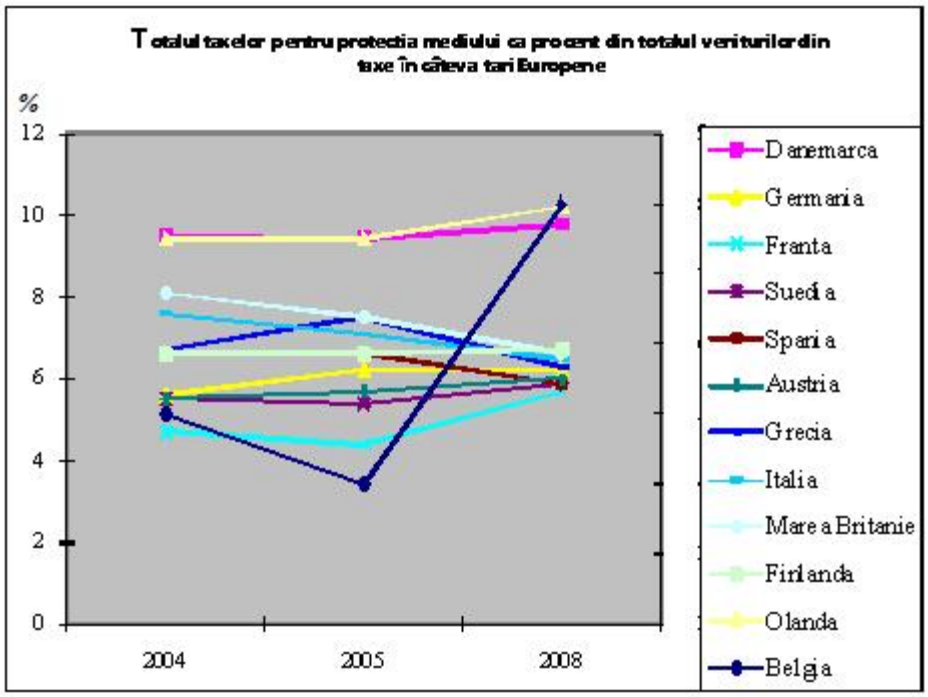


**Chart 1. The total taxes for environment protection as percent from the total revenues from taxes in some countries in Europe**

*Source: Eurostat 2010*

At EU level we can talk about taxes that prove the significance of environment. Many countries have imposed taxes on products and activities that damage the environment, at the same time reducing the contributions for social protection and income taxes, the idea being that of shifting taxes towards the activities that have a negative impact on the environment's quality and to change the behaviour of traders, public and each individual.

This shift has happened so far at a lower level, about 3% of the taxes gathered at world level. Prices will eventually have to reflect costs producing the desired chages in the individuals' behaviour. (Brown, Larsen, & Roberts, 2003)

Taxes for the environment reform (Environmental tax reform (ETR)) will represent the basis of reforming the national systems. In order to exemplify, we show a series of ecological taxes, the effects they produced and the conviction of European countries for not obeying the Community environment legislation.

## Denmark

Denmark was one of the first countries in Europe introducing a $CO_2$ tax on top of already existing energy taxes levied on oil products, coal and electricity consumption but not on petrol. The Danish ETR reform process can be distinguished between three phases.[1]

- 1993 Tax Reform/Phase 1: period 1994 – 1998 (The first ETR implemented in Denmark concerned mainly households. The political objective underlying this tax reform was to bring down the marginal tax rates on personal income.)

- The 1995 Tax Reform/Phase 2: period 1996 – 2000 (The business sector was not affected by the 1993 Tax Reform and revenues were therefore recycled back to households. However, the government already announced at that time that new environmental taxes would be introduced targeting industry)

- The 1998 Tax Reform/Phase 3: period 1999 – 2002 (The 1998 Tax Reform affected again mainly the household sector. (Brown, Larsen, & Roberts, 2003) The reduction in personal income taxes mainly affected lower and medium income owners and it also included compensation for pensioners. As mentioned above the main revenue raising policy was to increase solely energy tax rates and not $CO_2$ tax rates. (Final Report to the European Commission). This is insofar of significance because the business sector is not too affected when energy taxes are being increased because of special tax provisions. (Jensen, 2001)

All these tax shifting programmes have been designed to be revenue neutral although the last reform process should only guarantee revenue neutrality over a time period which itself was not clearly determined.

## Germany

ETR – were implemented between 1999 – 2003 and later they were stopped

- Environment objectives: Environment protection and especially reducing the greenhouse gas emissions

- Economical objectives: decreasing employees' contributions to the retirement funds and increasing taxes for transportation, for methane gas, and introducing taxes for electricity.[2]

[1] Competitiveness Effects of Environmental Tax Reform, Final Report to the European Commission DG Research, DG Taxation and Custom Union (2007), contract number SCS8-CT-2004-501993/ 2004.
[2] European Environment Agency, 2005.

1999- taxes for household heating fuels raise

2000- taxes for vehicle fuels and electricity raise

2006- European Court of Justice convicted Germany for not obeying the Community environment legislation.

There is a decrease in the sales of vehicle fuel.

**The United Kingdom**

ETR in the UK were introduced since 1996 in 3 phases, 1996, 2001 şi 2002.

Environment objectives

- Complex sorting technologies (Recyclers started using complex technologies (with infrared beams) to sort package waste in hypermarkets. These scan and sort plastic and aluminium.)

Making a comparison, we can conclude that:

➢ In the UK ETR have increased through the three taxes, that meant 2,7 billion euro in 2008, that is 0.15% of GDP (Gross Domestic Product) and 2,1% of the social contributions;
➢ In Germany ETR represents about 18 billion euro, which in 2008 was 0,8% of GDP and 5% of the social contributions

At European level ETR, as GDP percent, can be seen in the next chart:

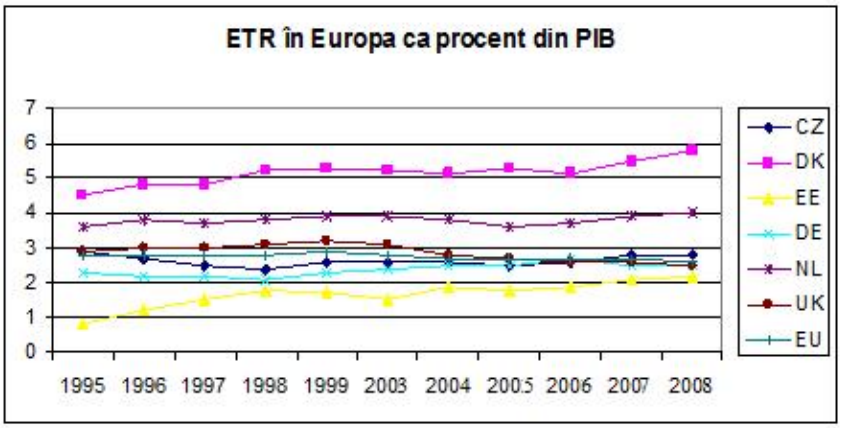


**Chart 2. Taxes for the environment reform in some countries in Europe, as a percent of GDP, between 1995 - 2008**

*Source: Eurostat 2007 and 2010*

**Greece**

In 2006 it had to pay daily fines of 20.000 euro for illegal landfills in Crete.

**Austria**

Waste is "intercepted" on its way to the landfill by a network of specialized firms which fix tens of thousand of articles, especially appliances and clothes. These are later sold at discounted prices.

Countries that joined the EU in 2004 had in 2005 a very low rate of package recycling, except for Czech Republic that managed to recycle 15%. According to Eurostat, Cyprus and Lithuania recycled 0% of the produced waste and Latvia, Malta, Hungary and Poland –1% each.

**Romania**

Setting a legislative system in this field has proven extremely difficult for the political powers governing Romania after December 1989. Both the complexity and the dynamics of this field make it extremely hard to regulate through organizing and functioning regulatory documents. As well, aiming at an important budgetary source, the legislative system of taxes must be well-structured according to well-defined criteria obeying the European provisions.

The revenues of the Fund for the environment are made up of:

a) a 3% contribution from the selling of ferrous and non-ferrous waste made by those detaining this kind of waste, natural or legal person;

b) taxes for pollutant emissions in the air taken form the traders;

c) taxes from traders that use new lands for dumping waste that can be valorized;

d) a tax of 1 leu (RON)/kilo of the weight of the packages introduced on the national market by packed goods and package producers and importers;

e) a contribution of 2% of the value of the substances considered dangerous for the environment, sold by producers and importers, except those used to make medicine;

f) in the case of selling uncut wood, the contribution to the Fund for the environment is established by applying 3% to its selling value. The amount is taken from the buyer along with the value of he wood;

g) in the case of exploiting uncut wood by the administrator or the owner of the forest on their own or through an intermediary, the contribution to the Fund for the environment is established by applying 3% to the value of the wood types obtained;

h) the contribution for wood processing is established by applying 3% to the selling value of the obtained products and it is paid by the trader that processed the wood;

i) a tax of 1 leu (RON)/kilo of tire, taken from the producers and importers that introduce on the market new and/or used tires intended to be used again;

j) a contribution of 3% of the amount paid yearly for managing hunting funds, paid by the administrators of the hunting funds;

The local projects of using package waste are few and not very important and the obligations for the environment we have as a Eu country concerning packages and package waste have been transposed into the national legislation by the Government Decision 621/2005. According to this decision by the end of 2008 we had to recycle minimum 60% of the paper waste and minimum 50% of the metallic waste.

Targets raise a lot until December 31$^{st}$ 2013 when România must recycle at least 55% of the total weight of materials contained in the package waste.

The Fund for the environment collected 180.108.351 lei in 2007 which represented 120,07 % of the predicted revenue value. The Fund for the environment financed projects for educating the public and for managing wastes, and also "Rabla" program (to call in old cars).

The collecting targets Romania has agreed to will be difficult to reach in the future since there is not an efficient package waste collecting system yet. Now all the collecting systems are based on those taking PETs out of garbage cans and landfills in order to get 0,4-0,6 lei per kilo.About 70-75% of the plastic is collected by buying it back from people and from the sanitation companies.

The main reason for introducing environment taxes in Romania is of financial-budgetary nature. These are the reasons for the introduction of this measure:

**1**. The Ministry of Labour will have to offer, between 2007-2018, a total co-financing of about 15 billion euro in order to attract European funds. That means a necessary of supplementary funds of over 1 billion euro/year (about 1% of Romania's present GDP). The Fund for the environment, currently available to the Ministry of the Environment, can barely attract 1 million euro/year, that is the thousandth part of the necessary amount (there are also difficulties collecting even this small amount).

**2**. Currently, Romania has budgetary revenues from environment taxes of under 0,1% of GDP, while central and east-European countries have 3,4% of GDP in Slovenia, 2,7% of GDP in the Czech Republic or Hungary, 2,5% of GDP in Latvia, 2,2% of GDP in Lithuania etc. Moreover, the excises and royalties established until now and which could have had an environment component (special tax for

vehicles, mining royalty, oil royalty) do not have it and, as such, those revenues are already given to other ministries.

**3**. Budgetary spendings for environment protection, about 0,2% of GDP, are among the smallest in Europe (Hungary 0,66% of GDP, Poland 0,45% of GDP etc.).

**4**. Romania's consolidated budget itself urgently needs to increase its revenues, from 31−32% of GDP, to 34−35% of GDP.

**5**. Paradoxically, the ecological reasons themselves play a less important part in explaining the necessity of increasing environment taxes. Due to the dramatic decrease of industrial activity after 1990, Romania easily meets the targets set by the Kyoto protocol to reduce by 8% greenhouse gas emissions until 2008 − 2012 (in Romania this reduction is already one of 46%). However, a clean environment is a public good whose inner value can not be underestimated.

**6**. On the contrary, there is an argument for raising environment taxes such as energy conservation. Despite the reduction by one third of the energetic intensity of economy between 1993 and 2008, Romania keeps having one of the largest oil consumption per production unit. Thus, the intensity rate of energy in Romania is 1226,95 kilos equivalent oil /1000 euro, compared to the Czech Republic (851,83), Hungary (534,05) and Poland (596,59).

All of the above lead to the conclusion that it is necessary to introduce environment taxes (others than the moderate ones that currently fuel the Fund for the Environment) of at least 1 billion euro/year.

A comparative analysis with central and east European countries shows that, without exception, about 85−90% of the environment taxes are connected to the fuel (gas and Diesel fuel). These are the most important budgetary source of environment taxes. Other fields which could pay taxes (air pollution, water pollution, household waste) do not bring, in any of these countries, more than 10−15% of the total revenues related to the environment.

## 5. Conclusion

Although the underlying reasons for implementing ETRs in EU member states are alike, the design of these tax shifting programmes differ. Design issues vary depending on the affected economic sectors as well as adopted recycling mechanism. However, the various reform processes have in common addressing multiple political objectives leading to an improvement in environment (an environmental benefit) and support for employment (an economic/employment

benefit). Problems and discrepancies emerge when analysing the effects of ETRs in more details as such assessments crucially depend on the benchmark.[1]

Are there green prices higher than the conventional products? Basically no (Eg.plastic bags cost more than the paper ones), this seems to be the answer for the following years. Sooner or later, the firms will have to act taking into account and assessing each eco-costs component so that they can act to prevent pollution and to save resources.

Taxes for the environment reform will be the basis of reforming the national systems, these being the most important source of budgetary taxes.

## 6. Bibliography

Bîrcă, A. (22-24 November 2007). Considerations concernant le systeme europeen de securite alimentaire/Considerations regarding the European food security system. *Proceedings of the 5-th International Conference „Integrated systems for agri-food production - Durable development" SIPA 2007*. Timisoara: Orizonturi Universitare.

Bîrcă, A. (July 31 - August 5, 2007). Traceability of agricultural products - chance or obstacle for food industrie. *Proceedings on the 3l-th Annual Congress of the American Romanian Academy of Arts and Sciences „Pro-active partnership in creativity for the next generation"*. Quebec, Canada: Presses Internationales Polytechnique.

Brown, L., Larsen, J., & Roberts, B. (2003). *Planet's ecological policy.* Bucharest: Tehnică.

Dogaru, V. (2006). *Cultural-regional landmarks for sustainable development in the European Union.* Bucharest: Romanian Academy, Economical Research Institute.

Fistung, D. F. (2007). Transportul durabil - o perspectivă viabilă de evoluţie / Sustainable transport - a viable development prospect. *The Romanian Academy, the National Institute of Economic Research, the Centre for Services and Industrial Economics*.

Fuller, D. (1999). *Sustainable Marketing: Managerial - Ecological Issues.* London: Sage Publications.

Jensen, A. (2001). Summary of Danish Tax Policy 1986-2002. *Working Paper No. 2*.

Muscalu, Mihai-Sabin (Coord). (2007). Interdependente intre dezvoltarea durabila a industriei prelucratoare, energeticii si transportului din Romania si tarile uniunii europene/ Interdependence between the sustainable development of manufacturing, energy and transport industry in Romania and EU countries. *Institutul national de cercetari economice, centrul de economia industriei si serviciilor/ National Institute of Economic Research, Centre for Industrial Economics and Services*. Romanian Academy.

Păuna, D. (2011). Passenger Air Transport in Romania, Ph.D. Thesis. *Romanian Academy, the National Institute of Economic Research*.

[1] European Environment Agency, 2005.

Samuil, C. (2007). *Ecological Agriculture Technologies, Textbook.* Iasi: Alexandru Ioan Cuza University.

Sasu, C., & Ariton (Bălău), M. V. (2011). Factors influencing passenger car consumer behavior and their use in the environmental public policy. *EuroEconomica, Issue 1(27)*.

Simuţ, V. (2001). *The Management of Railroad Transportation.* Bucharest: ASE.

Toffler, A. (1983). *The Third Wave.* Bucharest: Politică.

Tureac, C. E. (2006). General considerations on the influence of prices on business. *Acta Universitatis Danubius. Oeconomica No. 1*.

Turtureanu, A. et al. (2010). General Considerations Regarding the Industrial Activity of ArcelorMittal Galati on the Environment. *Acta Universitatis Danubius. Oeconomica, No. 3*.

****European Environment Agency, 2005.*

# The Effect of Board Size and Board Composition on Firms Corporate Environmental Disclosure: A Study of Selected Firms in Nigeria

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**Abstract:** Environmental problems have become major headlines due to the negative effects they bring to the stability of the ecosystem. Thus, the increased awareness of social responsibility or, specifically, environmental concern is now a challenge facing the corporate world. Hence this study tests whether board size and board composition have any association with the level of firms' corporate environmental disclosure in annual reports. To achieve the objective of this study, a total of 40 listed firms on the floor of the Nigerian stock exchange market were used. Also, the study critically developed and utilized the Kinder Lydenberg Domini (KLD rating scheme to analyze the level of corporate environmental disclosure made by firms in their annual reports for the period 2006-2010. In addition, the simple regression analysis was used to test the research propositions as stated in the study. However, empirical findings from the study reveal that while board size has a significant negative relationship with the level of corporate environmental disclosure; board composition on the other hand has a significant positive relationship with the level of firms' corporate environmental disclosure in the annual report.

**Keywords:** environmental disclosure; stakeholder theory; agency theory; resource dependency theory

## 1. Introduction

Corporate environmental disclosures has become more salient to board members as thinking at the top of organizations shifts toward more broadly defined performance than just the bottom line. Environmental issues are an important aspect of corporate social responsibility, especially for companies that are responsible for high carbon dioxide and chlorofluorocarbons emissions. Hence,

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corporate decision makers are increasingly called upon to consider the broader environmental impact of their business decisions. Boards may be moved to address corporate environmental issues for political reasons (Bendell & Kearins, 2005), in response to environmental legislation, or to preempt environmental litigation.

Although there has been an interest in the relationship between board composition and corporate social responsibility, less is known about how board composition affects corporate environmental disclosures (Ibrahim, Howard & Angelidis, 2003). With the growing competition of globalization, strategic decision makers have been faced with the competing interests of external and internal stakeholders such as greater diversity in corporate governance, undertaking more investments in corporate social responsibility and maximizing financial performance. As a result, strategic decision makers today must not only increase their financial performance, but also satisfy the increasing expectations of customers, suppliers and society as a whole. Since these developments have made strategic decision making process more complex, it is necessary to gain a better understanding of how companies can improve their effectiveness to serve both of these goals.

The concept of corporate environmental reporting was introduced in the early 1990s and since then it has rapidly gained acceptance as the means of communicating and demonstrating a company's commitment to improving corporate environmental performance to its stakeholders (ACCA 2004). According to Gray, Javad, Power & Sinclair (2001), the annual report have provided a plate form for a growing number of companies in combining their environmental efforts with their economic efforts in demonstrating their accountability for environmental stewardship. In developed countries like Netherlands, Japan, United States, United Kingdom and France concerns on the environment has been voiced out by the government and companies operating in these are encouraged to provide information on the impact of their economic activities on the environment in their annual reports. However, this is not the same in most developing countries where there have been series of social unrest and cases of kidnap arising from the youth of the host communities where most of these multinational corporations are domiciled due to their negative environmental impacts on the environment. To this end therefore, this study will attempt to examine the effects of board size and board composition on the level of corporate environmental disclosures among listed firms in Nigeria. In the light of the aforementioned objective, the remaining part of this study is organized as follows: following the introductory section of this study is the literature review and research hypotheses. This is closely followed by the research methodology and the empirical findings.

### Scope of Study

This study basically investigates the effects of board size and board composition on the level of corporate environmental disclosures among listed firms in Nigeria. To achieve this objective, the corporate annual reports for the period 2006-2010 were analyzed. In addition, the study considered a total of 40 listed firms in the Nigerian stock exchange market. The choice of these industries arises based on their direct or indirect contribution to environmental pollution.

## 2. Literature Review

### Corporate Governance and Corporate Environmental Disclosure

The scandals of high profile companies such as Enron, WorldCom, Tyco and some other firms in developed economies, have raised the question of the effectiveness of monitoring mechanisms in organizations (Raphaelson & Wahlen, 2004). It is therefore believed that the focus should now be more on improving the internal mechanism, which includes boards, particularly to increase shareholder's insight and influence on corporate behaviour in organizations (Kolk, 2006). Apart from the traditional approach to accountability in the context of corporate governance, corporate environmental reporting has also emerged, even though it is mostly on a voluntary basis concerning the societal and environmental implications (Kolk, 2006). Disclosure on environmental issues has the potential to increase shareholder's wealth and can be regarded as one of the elements of good corporate governance (Kassinis & Vafeas, 2002). Nonetheless, the effectiveness of regulation on environmental risk, which emphasizes awareness and empowerment of shareholders, essentially depends on the quality of the corporate environmental disclosure (Sinclair-Desgané & Gozlan, 2002). Consequently, the proper reporting of corporate environmental performance is now gaining significant interest in the business community and is being debated within the accounting profession and authoritative bodies (Rezaee, Szendi & Aggarwal 1995). Environmental costs and obligations will continue to grow in line with the consciousness of society, government regulation and corporations towards environmental concerns (Rezaee et. al, 1995). Therefore, as the scope of potential users may cover both internal and external stakeholders, there must be an assurance on the transparency and reliability of the information disclosed. Sustainability, specifically, the environmental concern and corporate governance need to be converged for better reporting. This situation has also been closely linked to the recognition that good corporate governance requires consideration of the impact a corporation has on the wider community and the environment (Andrew, 2003). More specifically, when considering the broader conception of corporate governance, it is clear that good governance entails responsibility and due regard to the wishes of all key stakeholders and ensuring companies are answerable to all stakeholders (Dunlop,

1998). There is thus a clear overlap between this conception of corporate governance and the stakeholder conception of corporate environmental disclosure that considers business as responsible vis-à-vis a complex web of interrelated stakeholders that sustain and add value to the firm (Freeman, 1984). Conversely, various corporate environmental disclosure scholars emphasize the need to uphold the highest standards of governance internally, particularly in discussions of the internal dimension of corporate environmental disclosure (Perrini, Pogutz & Tencati, 2006). However, despite the importance of corporate governance and its potential influence on companies to engage in environmental reporting, research in this area most especially in developing economies are still lacking.

**Theories of Corporate Governance**

Theories of Corporate Governance go back to as early as 1970's where Adam Smith in his land mark work Wealth of Nations incorporated some distinction about management and ownership. Since then certain theories were developed, Agency theory, Stewardship theory, Stakeholder theory and Resource dependency theory are some of those. According to agency theory, when there is separation of management and ownership, the manager seeks to act in self interest which is not always in the best interests of the owner and departs from those required to maximize the shareholder returns. This agency problem can be set out in two different forms known as adverse selection and moral hazard (Eisenhardt, 1989). Adverse selection can occur if the agent misrepresents his ability to perform the functions assigned and gets chosen as an agent. Moral hazard occurs if the chosen agent shirks the responsibilities or underperforms due to lack of sufficient dedication to the assigned duties. Such underperformance by an agent, even if acting in the best interest of the principal, will lead to a residual cost to the principal (Jensen & Meckling, 1976). These costs resulting from sub-optimal performance by agents are termed as agency costs. Other theoretical perspectives such as stewardship, resource dependency and stakeholder theories also enhance our understanding of the role of boards (Hillman & Dalziel, 2003). Stewardship theory views agents as stewards who manage their firm responsibly to improve the performance of the firm (Muth & Donaldson, 1998). Resource dependency theory considers agents as a resource since they would provide social and business networks and influence the environment in favour of their firm (Pearce & Zahra 1992). The resource dependence theory further suggests that the selection of outside board members will provide more resources, information, and legitimacy to the board (Johnson, Daily & Ellstrand, 1996). The stakeholder theory on the other hand expects boards to take into account the needs of an increasing number of different stakeholder groups, including interest groups linked to social, environmental and ethical considerations (Freeman, 1984; Freeman, Wicks, &

Parmar 2004). Appreciation of different theoretical perspectives will give insights into the contribution of boards to corporate environmental performance.

**Prior Studies and Development of Hypothesis**

The earliest literature on board size is by (Lipton & Lorch, 1992 and Jensen, 1993). Jensen (1993) argued that the preference for smaller board size stems from technological and organizational change which ultimately leads to cost cutting and downsizing. Hermalin & Weisbach (2003) argued the possibility that larger boards can be less effective than small boards. When boards consist of too many members agency problems may increase, as some directors may tag along as free-riders. Chaganti, Mahajan, Sharma (1985) also claimed that smaller boards are manageable and more often play a role as a controlling function whereas larger boards may not be able to function effectively as the board leaves the management relatively free. On the other hand, very small boards lack the advantage of having the spread of expert advice and opinion around the table that is found in larger boards. Furthermore, larger boards are more likely to be associated with an increase in board diversity in terms of experience, skills, gender and nationality (Dalton & Dalton, 2005). A larger board size may bring a greater number of directors with experience that may represent a multitude of values on the board (Halme & Huse, 1997).

Published studies that linked board size and voluntary disclosure of corporate environmental information are rather lacking. Besides Halme & Huse (1997), which found no significant association between the number of board members and the tendency for companies to report on the environment, and Cheng & Courtenay (2004), which found a similar result for voluntary disclosure (in which environmental information is a part of it); to the authors best knowledge, there is a complete dearth of literature in this area of accounting especially in developing countries. To this end therefore, this study intends to fill this gap in literature by examining the effects of board size and board composition on the level of corporate environmental disclosure among listed firms in Nigeria.

## 3. Research Hypothesis

With the dearth of literature in this area of accounting, the following hypotheses are stated below in the null form.

**$H_1$:** *there is no significant relationship between board size and the level of corporate environmental disclosure among listed firms in Nigerian.*

**$H_2$:** *there is no significant relationship between board composition and the level of corporate environmental disclosure among listed firms in Nigerian.*

## 4. Research Methodology

To achieve the objectives of this research, the study has adopted the use of corporate annual reports of listed firms as our main source of data. This is due to the fact that annual reports are readily available and accessible. Moreso, Gray, Kouhy, & Lavers (1995) opined that annual reports should be used in determing the level of environmental disclosures because such information is produced regularly and will be in the public domain. The annual reports for period 2006-2010 were used due to the increased level of awareness and pressure from stakeholders within these periods. The population for this study is comprised of all firms listed on the floor of the Nigerian Stock Exchange as at 31 December 2010. However, the selected sample size for this study includes listed firms both in the financial and non-financial sectors of the economy which sums up to a total of 40 firms. This represents 20% percent of the total population and, thus, is consistent with the minimum sample size as suggested by either the conventional sample size table proposed by Krejcie & Morgan (1970) or the modern online sample size calculator by Raosoft, Inc. In addition, the study further adopts the use of content analysis method of data collection in eliciting data from the annual report. This is due to the fact that the content analysis method is the most commonly used method of measuring corporate environmental disclosure in annual reports (Milne & Adler, 1999). Also, it allows corporate environmental information to be systematically classified and compared. However, this study attempts to measure the environmental disclosure in terms of themes and evidence, using Hackston & Milne's (1996) operational definitions and framework for corporate environmental disclosure index. Theme is measured in the categories of environment, energy, product, community, and employee health. Evidence is measured in the categories of monetary quantitative and non-monetary quantitative disclosures. The corporate environmental disclosure framework contained 28 attributes. Consequently, a firm could score a maximum of 28 points and a minimum of 0. The formula for calculating the reporting scores by using the environmental disclosure index (attributes) is expressed in a functional form:

$$RS = \sum_{i=1}^{28} d_i$$

**Where:**

RS = Reporting Score

$d_i$ = 1 if the item is reported and 0 if the item is not reported

i = 1, 2, 3... 28.

Also, in order to measure the relationships between the independent (board size and board composition) and the dependent (corporate environmental disclosure) variables; the ordinary least square regression model was adopted. Furthermore, while the board size in this study was proxied by the total number of members on the board of directors (BDSIZE); board composition on the other hand was proxied by the proportion on non-executive directors (NED).

**Model Specification**

$CED_t = f(BDSIZE_t, NED_t, U_t$ ..... (1)

This can be written in explicit form as:

$CED_t = \beta_0 + \beta_1 BDSIZE_t + \beta_2 NED_t + U_t$ ..... (2)

**Where:**

CED = Corporate environmental disclosure.

BDSIZE = total number of members on the board of directors.

NED = the proportion on non-executive directors on the board.

U = Stochastic or disturbance term.

t = Time dimension of the Variables

$\beta_0$ = Constant or Intercept.

$\beta_{1-2}$ = Coefficients to be estimated or the Coefficients of slope parameters.

**Table 1. Proxies and Predicted Signs for Explanatory Variables**

| Variable | Predicted Sign | Type | Data Type | Scale |
|---|---|---|---|---|
| BDSIZE | - | Independent | Continuous | Number of board members (n) |
| NED | + | Independent | Continuous | Proportion of non-executive directors on the board. |

## 5. Discussion of Findings

Empirical findings from the Pearson correlation analysis on the relationship between board size (proxied as the number of board members) and level of environmental disclosure as depicted in table (2) shows that there is a negative correlation between board size and the level of corporate environmental disclosure among the selected firms; and it is significant at 0.01 level. In addition, results from table (2) further indicate that there is a positive correlation between board composition and the level of corporate environmental disclosure; and it is significant at 0.01 level.

**Table 2. Pearson Correlations for Selected Firms in Nigeria**

| | | CED | BDSIZE | NED |
|---|---|---|---|---|
| CED | Pearson Correlation | 1 | -.592(**) | -.511(**) |
| | Sig. (2-tailed) | | .000 | .001 |
| | N | 40 | 40 | 40 |
| BDSIZE | Pearson Correlation | -.592(**) | 1 | -.454(**) |
| | Sig. (2-tailed) | .000 | | .003 |
| | N | 40 | 40 | 40 |
| NED | Pearson Correlation | .511(**) | -.454(**) | 1 |
| | Sig. (2-tailed) | .001 | .003 | |
| | N | 40 | 40 | 40 |

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

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

**Table 3. Model Summary**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate | Change Statistics | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | R Square Change | F change | dfl | df 2 | Sig F Change |
| 1 | .651[a] | .424 | .393 | 5.10076 | .424 | 13.631 | 2 | 37 | .000 |

*a. Predictors: (Constant), NED, BDSIZE*

**Table 4. ANOVA[b]**

| Model | | Sum of Squares | Df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 709.322 | 2 | 354.661 | 13.631 | .000[a] |
| | Residual | 962.657 | 37 | 26.018 | | |
| | Total | 1671.979 | 39 | | | |

*a. Predictors: (Constant), NED, BDSIZE*

b. *Dependent Variable: CED*

**Table 5. Coefficients[b]**

| Model | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. |
|---|---|---|---|---|---|
| | B | Std. Error | Beta | | |
| 1 (Constant) | 20.099 | 8.064 | | 2.492 | .017 |
| BDSIZE | -1.372 | .424 | -.453 | -3.233 | .003 |
| NED | 14.877 | | .306 | 2.183 | .035 |

*a. Dependent Variable: CED*

Furthermore, results for the goodness of fit test as shown in table (3) present an adjusted $R^2$ value of about 39%. This in a nutshell means that the value of the dependent variable can be explained by 39% of the independent variables. This

value can be considered sufficient because a firm's behaviour towards corporate environmental issues is also influenced by other factors beside board size and board composition. Nevertheless, while the result for the F- test with a p-value that is less than 0.05 (i.e. p-value < 0.05) as reflected in table (4) suggests clearly that simultaneously the explanatory variable (i.e. board size and board composition) are significantly associated with the dependent variable (corporate environmental disclosure); on the other hand, the regression analysis results as presented in table (5) indicates that consistent with our a priori expectation (i.e. $b_1 < 0$ ), a significant negative association does exist between board size (proxied by the number of board members) and level of corporate environmental disclosure among the selected firms. This result implies that the more the number of board members, the lower the level of corporate environmental disclosure. That is to say that there is an inverse relationship between board size and the level of environmental performance; since larger boards may be less effective in monitoring a firms negative environmental impact on the society due to problems such as social loafing and higher co-ordination costs. Accordingly, this result is in line with the suggestions of the agency theory, which holds that large boards in an organisation would result in communication and coordination problems and also decrease the managerial ability of the board. This result corroborates the findings in provided (Lipton & Lorsch, 1992; Jensen, 1993; Kassinis & Vafeas, 2002) were they found out that firms prosecuted for environmental violations have larger boards. Nevertheless, these findings contradict the views of Dalton et al. (1999) were they opined that larger boards potentially bring more experience and knowledge and offer better advice. They suggested that larger boards are more likely to include experts on specific issues such as environmental performance. In addition, further empirical findings from the regression analysis result for the second hypothesis which states that there is no significant relationship between board composition and level of corporate environmental disclosure; indicates clearly that consistent with our a priori expectation ($b_2 > 0$), a significant positive relationship does exist between board composition and level of corporate environmental disclosure. This result invariably implies that the board composition in an organisation have a very significant positive role to play in the level of firms' corporate environmental performance. That is, the higher the proportion of the non-executive directors on the board; the more likely they will be able to take decisions that are environmentally friendly. More so, outside board members are more effective in providing corporate social perspectives since they are more conscious about the environmental dynamics and the different demands of various stakeholders than insider members who are assumed to be more preoccupied with economic utilities. Interestingly, empirical evidence provided in this study supports the findings provided by (Dunn & Sainty, 2009; Coffey & Wang, 1998:159; Ibrahim & Angelidis, 1995; Ibrahim, Howard & Angelidis, 2003) were they found out that outside directors are more conscious about philanthropic components of corporate

social responsibility than insiders. This is also consistent with the resource dependency theory, which holds that outside board members (i.e. non-executive director) can be more effective in terms of enhancing corporate image and ensuring shareholders' interests. Similarly, this result is also consistent with the findings of Webb (2004) who also suggested that socially responsible firms tend to utilize more outsiders in their boards. However, this result contradicts the findings provided in McKendall, Sánchez & Sicilian (1999).

## 6. Conclusions and Recommendations

This study basically looked at board characteristics and corporate environmental disclosure among firms in Nigeria. The study came up with interesting findings that are of salient importance to scholars investigating corporate governance issues in the Nigerian context. In accordance with the first hypotheses, the study observed that lager board size in a firm has a negative impact on the level of an organisations environmental performance. That is, an inverse relationship does exist between board size and the level of environmental performance. This result is however in line with the suggestions of the agency theory. For the second hypothesis, the study however observed that there is a significant positive relationship between board composition and the level of environmental disclosure. That is, increasing the proportion of outside directors on the board will led to better corporate environmental performance. This is consistent with the resource dependence theory, which posits that independent boards enhance corporate image and ensure shareholders' interest. Consequently, this paper concludes that larger representations of a firms' board should be composed of outside directors (i.e. non-executive directors) since they are more conscious about the environmental dynamics and demands of various stakeholders than insider members who are assumed to be more preoccupied with economic utilities. Finally, this paper therefore calls for further longitudinal studies that will provide insights into some reporting patterns among listed firms in the country.

## 7. References

Andrew, J. (2003). Corporate Governance; the Environment and the Internet. *Electronic Green Journal*, *Issue 19.*

Bendell, J., and Kearins, K. (2005). The Political Bottom Line: The Emerging Dimension to Corporate Responsibility for Sustainable Development. *Business Strategy and the Environment, 14*, 372-383.

Chaganti, R. S., Mahajan, V. & Sharma, S. (1985). Corporate Board Size, Composition and Corporate Failures in Retailing Industry. *Journal of Management Studies* 22(4), 400-417.

Chapple W, Ucbasaran D (2007). *The Effects of Corporate Governance on Corporate Social Responsibility*. Unpublished.

Cheng, E.C.M. and Courtenay, S.M. (2004). *Board Composition, Regulatory Regime and Voluntary Disclosure*. Available from http:// www.b.kobe-u.ac.jp/coe/research/2005/illinois/pdf/ Cheng%20and%20Courtenay.pdf.

Coffey, B.S, and Wang, J. (1998). Board Diversity and Managerial Control as Predictors of Corporate Social Performance. *Journal of Business Ethics,* 17: 1595-1603.

Dalton, C. M., and Dalton, D. R. (2005). Boards of Directors: Utilizing Empirical Evidence in Developing Practical Prescriptions. *British Journal of Management,* Vol. 16, pp. 91-97.

Dunn P., and Sainty, B. (2009). The Relationship among Board of Director Characteristics, Corporate Social Performance and Corporate Financial Performance. *International Journal of Management Finance,* 5(4): 407-423.

Eisenhardt, K. M. (1989). Agency Theory: An Assessment and Review. *The Academy of Management Review*, 14(1): 57-74.

Freeman, R. E. (1984). *Strategic Management: A Stakeholder Approach*. Marshfield, MA. Pitman

Dunlop, A. (1998). *Corporate Governance and Control*. London:CIMA Publishing,

Freeman, R. E., Wicks, A. C. & Parmar, B. (2004). Stakeholder Theory and The Corporate Objective Revisited. *Organization Science,* 15(3):364–369.

Gray, R., Javad, M., Power, D. M., & Sinclair, C. D. (2001). Social and Environmental Disclosure and Corporate Characteristics: A Research Note and Extension. *Journal of Business Finance & Accounting,* 28(3/4): 327-356.

Hillman, A. J., & Dalziel, T. (2003). Boards of Directors and Firm Performance: Integrating Agency and Resource Dependency Perspectives. *Academy of Management Review,* 28(3):383–396.

Johnson, J. L., Daily, C. M., & Ellstrand, A. E. (1996). Boards of Directors: A Review and Research Agenda. *Journal of Management,* 22(3):409–438.

Halme, M., & Huse, M. (1997). The influence of Corporate Governance, Industry and Country Factors on Environmental Reporting. *Scandinavian Journal of Management* 13 (2). 137-157.

Hermalin, B. E., & Weisbach, M. S. (1991). The Effects of Board Composition and Direct Incentives on Firm Performance. *Financial Management* 20 (4): 101-112.

Hermalin, B. E. & Weisback, M. S. (2003). Board of Directors as an Endogenously Determined Institution: A Survey of the Economic Literature. *Center for Responsible Business. Working Paper Series; Paper 3*

Ibrahim, N. A., & Angelidis, J. P. (1995). The Corporate Social Responsiveness Orientation of Board Members: Are there Differences between Inside and Outside directors? *Journal of Business Ethics, 14*, 405-410.

Ibrahim, N. A., Howard, D. P., & Angelidis, J. P. (2003). Board Members in the Service Industry: An Empirical Examination of the Relationship between Corporate Social Responsibility Orientation and Directorial Type. *Journal of Business Ethics, 47*, 393-401

Jensen, M. C. (1993). The Modern Industrial Revolution, Exit and the Failure of Internal Control Systems. *Journal of Finance,* Vol. 48, no. 3, pp. 831-880.

Jensen, M. C. & W. H. Meckling (1976). Theory of the Firm: Managerial Behavior, Agency Costs and Ownership Structure. *the Journal of Financial Economics 3*, 305-360.

Kassinis, G., & Vafeas, N. (2002). Corporate boards and outside stakeholders as determinants of environmental litigation. *Strategic Management Journal* 23 (5): 399–415.

Kolk, A. (2006). *Sustainability, Accountability and Corporate Governance: Exploring Multinationals' Reporting Practices*. Retrieved 29 May 2007 from http://papers.ssrn.com/sol3/papers.cfm?abstract_id=899852.

Krejcie, R. V., & Morgan, D. W. (1970). Determining Sample Size for Research Activities. *Educational and Psychological Measurement,* Vol. 30, 607-610.

Lipton, M., & Lorsch, J. W. (1992). A Modest Proposal for improved Corporate Governance. *Business Lawyer* 48 (1): 59-77.

McKendall, M., C. Sánchez, & Sicilian, P. (1999). Corporate Governance and Corporate Illegality: The Effects of Board Structure on Environmental Violations. *The International Journal of organizational Analysis* 7 (3): 201-223.

Perrini, F., Pogutz, S. & Tencati, A. (2006). *Developing Corporate Social Responsibility: A European Perspective*. Cheltenham, Gloucestershire: Edward Elgar Publishing.

Post, E., Preston, E. & Sachs, S. (2002). Managing the Extended Enterprise: The New Stakeholder View. *California Management Review*, 45: 6–28.

Pearce, J.A., & Zahra, S.A. (1992). Board Composition from a Strategic Management Perspective. *Journal of Management Studies,* 29 (4): 411-438.

Raphaelson, I. H., & Wahlen, J. (2004). Effective Compliance Programs in the Aftermath of Corporate Mega scandals. *Insights; the Corporate & Securities Law Advisor* (18)5, 12-18.

Rezaee, Z., Szendi, J.Z & Aggarwal, R. (1995). Corporate Governance and Accountability for Environmental Concerns. *Managerial Auditing Journal* 10(8), 27-33.

Sinclair-Desgagné, B., & Gozlan, E. (2003). A Theory of Environmental Risk Disclosures. *Journal of Environmental Economics and Management* 45, 377-393.

Webb, E. (2004). An Examination of Socially Responsible Firms' Board Structure. *Journal of Management and Governance*, 8, 255-277.

Hackston, D., and Milne, M. J. (1996). Some determinants of social and environmental disclosures in New Zealand companies. *Accounting, Auditing & Accountability Journal*, 9(1): 77.

**Appendix (1). Listed Firms of Selected Listed firms in the Nigerian Stock Exchange Market**

| S/N | List of selected listed Firms | S/N | List of selected listed Firms |
|---|---|---|---|
| 1 | Chemical & Allied Products Plc | 21 | Evans Medical Plc |
| 2 | D N Meyer Plc | 22 | G S K Consumer Plc |
| 3 | Nigerian - German Chemical Plc | 23 | May and Baker Nig. Plc |
| 4 | Okitipupa Oil Palm Plc | 24 | Pharma - Deko Plc |
| 5 | Presco Plc | 25 | Guinness Nigeria Plc |
| 6 | Okomu Oil Palm Plc | 26 | Nigerian Breweries Plc |
| 7 | Ellah - Lakes Plc | 27 | Jos International Breweries Plc |
| 8 | Livestock Feeds Plc | 28 | Champion Breweries Plc |
| 9 | Ashaka Cement Company Plc | 29 | International Breweries Plc |

| | | | |
|---|---|---|---|
| 10 | Benue Cement Company Plc (BCC) | 30 | Lafarge West African Portland Cement Plc |
| 11 | Ecobank Plc | 31 | Cement Company of Northern (Nigeria) Plc |
| 12 | First Bank Plc | 32 | Ceramic Manufacturers Nigeria Plc |
| 13 | Fidelity Bank | 33 | African Petroleum Plc |
| 14 | Access Bank plc | 34 | Chevron Oil Nigeria Plc |
| 15 | First Bank of Nigeria plc | 35 | Mobile Oil Nigeria Plc |
| 16 | First inland bank plc | 36 | Conoil |
| 17 | Guaranty trust bank plc | 37 | Oando Plc |
| 18 | Oceanic bank international plc | 38 | Total Nigeria Plc |
| 19 | Berger Paints Plc | 39 | BOS Gases Plc |
| 20 | BCN Plc | 40 | African Paints (Nigeria) Plc |

**Appendix (2). Twenty Eight Testable Environmental Disclosure Items**

| S/N | Environment | Energy | Research & Development | Employee Health and Safety |
|---|---|---|---|---|
| 1 | Environmental pollution | firms energy policies | Investment in research on renewal technology | Disclosing accident statistics. |
| 2 | Conservation of natural resources | Disclosing energy savings | Environmental education | Reducing or eliminating pollutants, irritants, or hazards in the work environment. |
| 3 | Environmental management | Reduction in energy consumption | Environmental research. | Promoting employee safety and physical or mental health |
| 4 | Recycling plant of waste products | Received awards or penalties. | Waste management /reduction and recycling technology | Disclosing benefits from increased health and safety expenditure. |
| 5 | Air emission information | Disclosing increased energy efficiency products | Research on new method of production | Complying with health and safety standards and regulations. |
| 6 | Environmental policies or company concern for the environment | Conservation of energy in the conduct of business operations | Providing information for conducting safety research on the company's products | Health and Safety Arrangements |
| 7 | Installation of effluent treatment plant | Discussion of the company's efforts to reduce energy consumption | Information on research projects set up by the company to improve its product in any way | Establishment of Educational Institution |

*Source: Hackston & Milne's (1996).*

**Economic History**

# Romania's Foreign Trade. The Role of Braila City in its Progress

**Gheorghe Chiru**[1]

**Abstract:** If the period at the end of XVIII century and the beginning of sec. nineteenth century can be considered as "adolescence" economy and contemporary society, the period 1850-1914 should be seen as "youth" of today's economy. During this period no great changes occurred in the economic system, it was rather a period of growth, invigorate, expand and close to maturity.

**Keywords**: trade; foreign trade; export; economy; development

**JEL Classification**: N19; O23; O24; O38

## 1. Introduction

The period 1859-1877 is the decisive period in amplifying the process of Romanian national economy organism, by structural reforming of the state, of the economical and political life institution, in developing and consolidating the economical base of the Romanian modem state. A special place belongs to the Princely Message on December 6, 1859, that comprised a vast programme, and, from economical point of view was suggesting two large objectives: to bring economical independence to the country and to develop her productive forces.

Gaining the economical independence, at that moment, had a double aspect - the relationship with the Sublime Porte and with the Guaranteeing Forces. Confronted with the Turkish Porte's claims to consider the United Principalities as vassals and tributary, and confronted with the ambiguities of the Paris Treaty's provisions in 1856, and the ambiguity of the Paris Convention in 1858, the proclamation through the Princely Message of his own external policy, based on the free trade, had a double significance: on one hand, it was an act of suzerainty towards the Turkish

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Porte and, on the other hand, an act of opportunity towards the European context, because it could awaken and stimulate the interests from abroad regarding selling goods and investments in capital in our country, and inside the country, the interests of our makers and exporters.

In order to develop the productive forces, the Princely Message announced the construction of railways, that the credit and the public finances were reestablished, there would be a strict accounting and a Control Court, a Bank of Issuing and Discount, Land Bank, specialists would be prepared, etc.

## 2. Romania's Foreign Trade between 1877 – 1918

The labour social division, after 1877 materialized in developing new branches in industry and in extending the existent ones, in differentiating the peasants and specialization of some areas in certain agricultural products, in using in a wide area of the paid work. (Clough & Cole, 1967, pp. 532-559)

So, between 1865-1914 the total population of the old Romania increased with 88%, while the urban population increased with 115.8 %, from 648.6 thousand inhabitants to almost 1,400 thousand inhabitants. This fact together with creating, especially at the city, of some industries, stimulated strongly the exchange of goods between city and village. In the same period of time the number of traders increased almost 5 times. The internal market was stimulated also by the creation and the extension of the institution network, of credit instruments (bill of exchange, check, mandate), of the national currency, by introducing the decimal system for measures and weights, etc. A great role in the developing of the internal market had the expansion abroad the transport network. As this was extending to new areas, the volume of goods transported by railways increased. Crossing the country from one end to another, tying different regions of the country, as well as the most important ones to Bucharest, with the main ports and with the maritime port of Constanta, the railways allowed a much rapid and a cheaper transport. This took both to the development of the production but also to the intensification of the circulation of goods. After 1863 and until the First World War the Romania's foreign trade increased permanently in volume (between 1863-1913 by 6.5 times, from an import amounting to 72.1 millions lei in gold and an export amounting to 120.9 millions, to an import of 590 millions and an export of 670.7 millions lei in gold). (Bozga, Puia, Vasile, & Ribczuc, 1996, p. 133)

Between 1897-1906 there was ascertained a reducing of the volume but this did not affect the general tendency. The commercial balance is in surplus between 1863-1876, very adverse between 1877-1899, and then with large surplus between 1900-1913. By the new tariff in 1904- 1906 the custom taxes were situated between 10-25% compared to the value of the goods. The custom taxes were very low at the

machines, systems, semi-manufactured goods and raw materials that were not found in the country or they were excepted from taxes. In exchange, the goods that were made also in our country or at those that was the possibility to be produced in our country the custom taxes were a little higher. The tariff that was applied in that period of time made a separation between the countries with whom Romania had trading relationship and those who had not: to the first ones greater advantages were given, the other ones were granted limited advantages. Although critics were brought, some of them true, the customs and the industrial protectionism proved it selves objectively - in the conditions of that time - as the only ways to promote and to defend the Romanian economy. (Marcu, Puia, Bozga, Cherciu, & Vasile, 1979, pp. 380-412)

The total volume of the foreign trade (calculated as a sum of export and import), compared to annual average of the period 1872-1876(=100) increased to 225% in 1901 and to 439% in 1913. Compared to the same period of the year 1913 taken as a base the value of the export was amounting to 399.6%, and of the import to 494.3%. So while the export increased by 4 times the import increased almost 5 times.

Regarding the commercial balance, until 1877 it was in surplus, between 1877-1899 it was adverse year by year. Between 1900-19 13, excepting the years 1904, 1908, the commercial balance was again in surplus. The causes that produced the deficit of the commercial balance during the period 1877-1899 were numerous. Among them we can number: the negative results of the Customs Convention with Austria-Hungary Empire, the customs war that followed up and the unfavorable economical connections with the Large Powers. The agrarian crisis in the last third of the XIX$^{th}$ century that reduced considerable the price of the cereals, our main item exported, by the difference between the price of the products exported and the price of the imported goods. Between 1880-1913 Romania had reduced more from the difference between the prices, but her economy, mainly agrarian, her poor industrial development exposed her still at the effects of the non-equal exchange with even stronger partners and more developed partners from economical point of view. (Zane, 1930, pp. 390-397)

In the last decades of the XIX-th century, but especially at the beginning of the XX$^{th}$ century, the Romanian foreign trade knows a large development, reflecting the rhythm of the Romanian economy's evolution in these decades. Analyzing, even briefly, the volume and the structure of the foreign trade, it is necessary to have in view the following factors: it was an increasing demand of agricultural goods on the external market, that made the prices to grow with 15-25%; the quality of the Romanian wheat was one of the best; the making of a technical base for the transportation and industry needed to import equipment, harbor equipment, means of transport, etc. The economical development imposed also the import of capital that was invested in industry, commerce, and banks.

Accepting the idea, according to which only a correlation with the country's balance of payments by knowing all the credit and sold accounts- that, in condition that the values were passed over the border with no obligation to declare the values, it is impossible - could of remade and revaluate in real terms the Romania's commercial balance, we can still ascertain that increasing of the foreign trade volume, the changes occurred in the structure of the imported exported, within the structure of the group of commercial partners, suggest sufficient data for demonstrating the dynamics and to point out the dimensions of the Romanian economy's evolution in that period of time. (Marcu, 1979, p. 64)

Regarding the structure of the export, in that period it was ascertained - more in the last period of time- an increase of the petroleum industry share, of the forestry industry compared to cereals (the percent decreases from 84% to 77%). The quantity of oil exported will increase continuously until the beginning of the First World War: 77,756 tons in 1990; 214,345 tons in 1905; 586,151 in 1910; 1,036,446 tons in 1913.

When importing, the share belongs to the equipment (the percent is doubled from the end of the XIX$^{th}$ century until the First World War). Developing new branches in the national industry- textiles, leather, glass, paper, etc.- lead to decreasing the percent- not of the entire quantities- the imports of common goods, from 82.4% to 57% in that period of time.

Until the First World War the major part of the import continued to be made from Germany and Austrian-Hungarian Empire. Regarding the export, the structure in those years was the following: Austrian-Hungarian Empire 30%, Germany 11%, Belgium 14%, France and Italy 17%. The share of Austrian-Hungarian Empire in the Romania's foreign trade had on its basis the traditional economical relationship between Romania and Transylvania; this is confirmed by the fact that limitation of this economical relationship in the years of the „customs war" determined an economical crisis both in Romania, but also in Transylvania.

In a last evaluation, that suggests very well the dynamics and the dimensions of the foreign trade, in 1912, the value of the Romania's foreign trade was bigger than the sum of the values registered by the Bulgaria, Greece and Serbia's foreign trade. (Beaud, 2000, p. 157)

In that geographical orientation of the foreign trade, modifications were registered regarding the place occupied by the capitalist countries in Romania's import and export. The period 1900-19 14, reported to the last quarter of the XIX$^{th}$ century, point out that the number of the countries with whom Romania had trade did not increase very much. These exchanges reflect also the fight lead by the main European countries for conquering the Romanian market, both for placing their industrial products, and for supplying them with the raw industrial and agricultural materials they needed. Both when exporting and when importing the major part of

these exchanges was concentrated in the hands of a small number of countries. Valuing of the oil rebalanced the export possibilities of Romania, maintaining the positive tendencies and masking the negative ones. (Sută, Drăgan, Mureşan, & Sută, 1998, p. 56)

Near the period of the First World War, Romania represented one of the important components of the world's market: is one of the main exporters of cereals (4 place), being a great importer as well (especially of industrial products with a high degree of processing). Romania was on the 8-th place in the world (after Argentina, Holland, Belgium, England, France, Germany and the USA) because of the foreign trade volume. For some of the products (wheat) the Romanian prices influence the world price.

## 3. The Role of Braila City in Developing the Romanian Foreign Trade

### Braila, the Most Significant Port of Wallachia, the Main Fishing Center

The importance of the Braila port, the multitude of boats that came here is proven documentary in the period of Mircea the Great. The German Hans Schiltberger, taken prisoner by Turkish people in the battle of Nicopole (1396), comes back to his country in 1420, after a long period of detention passes through Braila. "Here - shows him in the story of his journey - stop the boats and the galleys that bring goods from the heathendom". By heathendom it is understand the regions over which, at that time, the Turkish, Arabs, and Tartars (mahometans by religion), so the coasts of the Black Sea, the Western and South coasts of Asia Minor, as well as the southern and eastern coasts of Mediterranean Sea. "More precise data are mentioned in a Turkish official act in April 15, 1520, so when the city had not fallen under Turkish domination; it is mentioned there the following: Ships in the Black Sea, coming from Trebizonda, from Caffa, from Samsun, from Istanbul, from other regions of the Turkish Empire, are going on the Danube, towards Braila. Sometimes 70 to 80 ships arrive at Braila from the Black Sea, loaded with merchandise. These are sold and instead the merchants load cereals and go back ". But besides the ships coming from "heathendom", also Greek ships arrived from the Byzantine Empire, Genovese and Venetian ships from Italy or ships from Dubrovnik from the Eastern cost of the Adriatic. The traffic was so big and the trade so flourishing that the Greek chronicler Laonic Chalcocondil, in the XV$^{th}$ century, shows that, regarding the expedition in 1462 of the Sultan Mahomet the 11-nd, the conqueror of Constantinople, against Vlad Tepes, that it was burned by the Turks the city of Braila, city of the Dacians, in which they make a greater trade than in all other cities of the country" The statement of this chronicler was rigorously exact: the commerce in Braila surpassed the commerce in all Wallachian cities, including the capital, that, at that time was still in Targoviste.

So we can see immediately the special importance the Braila presents for the economical life of Wallachia. (Giurescu, 1968, p. 152)

### 3.1 Braila a Turkish Fortified Town Important Strategic Point

Taking possession of Braila city took place in the period of June-October 1540. The city and the Wallachian main port at the Danube got under Turkish occupation. Taking possession of Braila by the Turks did not mean an interruption of her economical life, of the export, and of the import. A substitution of the custom income's beneficiary happened, also a modification of the way or the direction the export happened, this heading more and more to Istanbul, the capital of the Turkish Empire.

Braila was an important military center, situated in a region where there were neighbors Wallachia, Moldavia, and the Turkish Empire, it was normal that by this center to be related some military and political events.

It is important to mention that Braila was one of the major objectives during the long chain of wars between the Russians and the Turks, chain that starts with the war in 1711, during the reigns of Dimitrie Cantemir and Constantin Brancoveanu. During the XVIII century, the role of gathering the cereals destined for the Turkish Empire, that it had Braila in the previous centuries continued. (Gorincu & Gorincu, 1993, p. 39)

The decisive event, that determined the future faith of the city, is the war in 1828-1829. The war declaration of Russia against Turkey was issued on the 26 of April 1828; over only 5 days, at 1 of May, the siege of Braila starts. After a month of siege, Braila is conquered with an important war trophy. The Russians decided that after Braila is conquered to be demolished. (Cernovodeanu, 1986, p. 60)

For three years, important human forces worked to demolish the city. So the city that over three hundred years kept under threat both Wallachia and Moldavia, that contributed essentially to maintaining the Romanian countries under Turkish suzerainty, was disappearing[1].

### 3.2 Retaking the Right to Wear the National Flag on the Danube

The Russian and Turkish Empire plenipotentiaries conclude a convention regarding evacuating of the Romanian Principalities by the Russian troupes, at 29 of January 1834. According to the treaty, the Turks acknowledge the Organic Rules adopted during Russian occupation, and Russia engages herself to evacuate the troops from the Principalities in two months from the date the rulers were appointed. The treaty

[1] P. S. Aurelian (1889). Romania's economic situation in terms of passageways. *The "National Economy", XIII,* No. 5-6, II, p.105 and no. 6/13, II, p. 126.

also comprised the obligation of the Turks to "give their own flags to the Moldavian and Wallachian commercial vessels on the Danube"[1].

### 3.3 Free - Port Condition

By Princely order given on the 13 of January, 1836, Braila was declared free-port- the goods arrived here from over the border, in order to be consumed on place or for being re exported, were exempted from custom taxes. In these conditions they could be imported and deposited in Braila, but only within the city, not beyond the margins, any kind of goods and products without paying any custom tax or any other tax. (Ionescu, Demetriad, & Marinescu, January - March 1938, p. 35)

### 3.4 The Port and the City of Braila between 1859 – 1893

After the Union of the Principalities new perspectives opened in the port activity. A greater number of ships, having different flags, came or left from the export. In 1859 until the 26 of October, 1,408 vessels arrived and 1,360 left loaded, thus being exported 76,000 kg of wheat, 1,498 kg of corn, 108,443 kg of barley, 3,888 kg of millet and others. Between 1867-1893 the port got an entire new aspect compared to the previous one; the quay and the docks were built, the storerooms were demolished and new ones were built made of brick walls; for depositing in good conditions the goods they were connected to the railway network. The new docks started to be built in 1886, and the works made under the management of Anghel Saligny were completed in 1892. Modern equipped, these were situated in the Northern part of the port on 1 km length and occupied a surface of 38.5 ha, from which 11.5 were forming the basin with a width of 12-12.20 m and 12 berths. Nearby, at a distance of 33 m it was the store that comprised 334 silos with a total capacity of 2,560 wagons. In the port activity the first place was held by the trade with cereals, Braila, being the first among the all ports of the country. There were exported also cattle, not so many, (4,791 ox, 1,346 pigs). The export value rose in 1888 at 8,083,681 lei in gold, and the number of the vessels that visited the port was especially high, getting in 1890 at 6,395 arrived and 6,599 left. (Florinescu, 1911, p. 42)

### 3.5 Between 1893 – 1899

During 1893-1899 the Braila economy develops continuously putting a special accent on the alimentary industry. The census in 1894 showed that here there were 7 mills with vapors, and three years later other three more modern mills, of big capacity, of which products were requested for export: Millas, Galiatzato and Zerman. At the end of the century the Violatos mill started to work, with the most modern equipment, it was the largest vapor mill in Romania of that time, with 200 workers and a daily grist capacity amounting to 20 wagons (of 10 tons each). (Olaru, 1998, pp. 96-97)

[1] Arch Ministry of Foreign Affairs (MFA), fund Ports, 1861-1888, vol. 57, p. 4

## 4. The Naval Traffic and the Commercial Importance of the Braila Port in the First Two Decades of the XX$^{th}$

At Braila, the unanimously recognized specialization of the port as exporter of cereals established for the beginning a tight connection between the level of the annual agricultural production, on one hand and intensification of the naval traffic and the commercial trades in that year or the following year, on the other hand. For the first decades of the XX$^{th}$ century, to this determinant factor, it was added the evolution of the internal and international life, having sometimes a stronger impact than other times. That is why, influenced decisively by the agricultural production in the period of 1900-1913, the traffic of ships knew fluctuant levels from year to year, but with a tendency to increase per ensemble, coming to a head in the years 1910-1911. With 6,859 maritime and river vessels that entered, besides the 6,766 coming out in 1910 and 7,331 entered, compared to 7,126 coming out in 1911; the two consecutive years detach themselves as the most "full" years of that period, taking benefit from the great agricole productions gained than. The affluence of the vessels was so great in one day in 1911 that in the port there were 68 maritime vessels, half of them operating at quay, and both anchored. (Platon, Russu, Iacob, Cristian, & Agrigoroaiei, 1993, p. 142)

Loaded with significances the fact that from 1910 the traffic surpassed the total tonnage of the year 1893, when, it is true, the number of vessels entered and coming out was bigger. Even so, in 1910 the 6,859 maritime and river vessels entered had the net capacity of 2,826,218 tons, compared to 1,775,529 tons, the value of the 7,913 vessels entered in 1893; when coming out the situation was the same: 6,766 vessels had together 2,804,999 tons in 1910, while in 1893, 9,695 vessels registered not more than 2,699,686 tones. The explanation of the phenomenon consists in increasing the number of high capacity vessels and, in the same time, decreasing the number of the sailing vessels that were smaller vessels. As a matter of fact, in the last years of the last century, the frequency of this type of vessel decreased evidently. About the entries in Braila port, from 5,905 sailing vessels in 1882 we come to 3,163 in 1897, and about coming out there were registered 5,832 sailing vessels in 1882 compared to 2,937 in 1,897, that means in both cases that their number almost get in half. (Axenciuc & Tiberian, 1979, p. 257)

The remarkable technical progresses that humanity registered at the border of the two centuries condemned the sailing vessels, these vessels with almost the age of the human society, to lent but sure disappearance. As motives, it is enough to remember the higher speed, the safety of navigation and the increased capacity of transport given by the modem boats, called simple steam vessels. The years 1912 and 1913 were remarkable, as well, for the traffic level, but not as the preceding ones, they were "supported" only by a medium agricultural production. Although the figures here above were not reached at the chapter entered and coming out

vessels, the values made were relatively superior to the years at the beginning of the century at the river navigation and quite close to the maritime navigation. (Giurescu, 1968, p. 198)

Coming back to the naval traffic itself, we signalize its perturbation by the political events, which manifested as unfavorable towards the port movement. In the first decade of the XX$^{th}$ century the interstate relationships evolved to a constant increase of straining and suspicions in the world's political life. As foreplay of the first military confrontation of our century, the Balkan Wars (1912-1913), through and due to the restriction of the Turkish Empire at passing though Narrows, they had a bad influence over the navigation on Danube and the Black Sea. This thing explains why, although the river traffic was maintained at high values, closed to the previous years, the maritime one did not even reached the figures registered at the beginning of the century, being more close than it was the naval circulation in the after the World War. But the stronger stroke was to be received by the traffic of the vessels and the goods together with the beginning of the First World War. Date 29 of September 1914, the Turkish Empire forbidden even the commercial navigation through the Narrows, the only naval commercial gate used by the East —European countries for exchanging the goods with the West being thus blocked. By the way, not the commerce became the main preoccupation of the states, but the modality how to draw one another into the conflict or how to provoke one another.

In 1914, in the Braila port the traffic of goods decreased suddenly with approximately 1/3 at entries and in half at coming out; the maritime reduced at half on both .The decreasing is catastrophic in the next year, and in the period 1916-1919 the commercial traffic to be suspended due to entering Romanian to the War and due to extending the military operations.

In order to find another angle from which to look towards the economical importance of Braila lets use some indicators, the year of maximum affirmation, 1911. This time we will make the comparison putting together the homologous indicators of Romania. The commercial surplus of the entire country was of 121,975,381 lei, and the surplus of Braila was of 105,359,744 lei, that means that the port and the city contributed to the Romanian surplus with the incredible percent of 86%.

Before we go to a last aspect that the Braila commerce knew we can not resist to the temptation to make another comparison using the data above, not only because there is about two years in row, but also because they represent the higher point of the naval and goods traffic development in that period of time. (Portocală, Demetriad, & Marinescu, January-April 1939, p. 13)

At first sight it is a remarkable progress at all chapters. But the data also say that Braila imported goods with 44,077 tons more than in 1910, for which it was paid

supplementary 15,599,413 lei and exported 87,079 tons more goods than in the previous year, getting a surplus of only 2,963,983 lei.

If in this way, in essence inefficient, it was materialized at Braila - the custom that brought 86% of the commercial surplus of the country in 1911- the effort of the Romanian society from the beginning of the century to participate at the world trade. Than any other commentary over the national foreign trade in that period, becomes useless. (Giurescu, 1968, p. 264)

## 5. Conclusion

In a possible historiography of the Braila port the first two decades of the XX-th century could be the one of the most dynamic and contradictory period, for if in the first half the naval traffic and the volume of goods transited reached the peak, in the second half, especially after 1914, the essential problem seams to become the surviving. The First World War meant, in spite of many opinions of our contemporary people, only one of the numerous factors of economical, social, and political nature of which manifestation had a destabilizing impact over the port and the city. After all, the unanimous recognized glory of Braila - specialization as a cereal exporter- represented the environment in which causes germinated and destroyed her supremacy, in the context of changes suffered by the entire Romanian society after war. So, the agrarian reform between 1917-1921 determined Romania's transformation from a cereal exporter, as it was at the beginning of the century, in one more modest, in the period between the two wars. In the new conditions imposed by the disappearance of the great estates, was neither easy, nor possible the mobilization of substantial quantities of agricultural products for export, but it was registered their orientation mainly to the internal market, thus becoming very abundant. Also, following a natural evolution in the new completed state, with a superior potential, other economical domains, non agricultural, gathered momentum and providing a beneficial diversification of the Romanian export, in compensation.

At the same time, after the war, the Great Romania established new commercial relationship, first with the young states in Central Europe, and a part of the trades, moved to land, by force of facts. The terrestrial transport, where the railways provided a plus of speed and safety won, the competition with the naval transport not only here but also almost everywhere. The new capitalist world, more pragmatic, claimed increased rapidity and efficiency in circulating the goods for maintaining the markets and the commercial connections. The major share of the water transports in the communication system of the country - indicator for which Romania at 1900 was situated at 80%- is now a fact of the past. So, at Braila, after century of feeding the city, after it provided remaking, developing and its fame, the

port had become just an ordinary economical objective, but caressed by the nostalgia of long gone age.

## 6. Bibliography

Aurelian, P. (1889). Romania's economic situation in terms of passageways. *The "national economy", XIII, No.5-6*.

Axenciuc, V., & Tiberian, I. (1979). *Economic premises of the building of the Romanian unitary national state.* Bucharest: Academy.

Beaud, M. (2000). *The history of capitalism from 1500 to 2000.* Chişinău: Cartier.

Bozga, V., Puia, I., Vasile, R., & Ribczuc, E. (1996). *History of the national economy.* Bucharest: ASE.

Cernovodeanu, P. (1986). *Romanian-British trade relations in the context of Britain's Oriental (1803-1878).* Cluj Napoca: Dacia.

Clough, S. B., & Cole, C. W. (1967). *Economic History of Europe.*

Florinescu, P. (1911). *Port of Braila and the importance of the trade in grain.* Braila.

Giurescu, C. C. (1968). - *History of Braila - From ancient times until today.* Bucharest: Scientific Publishing House .

Gorincu, G., & Gorincu, F. (1993). *Braila 625, The dates (1368-1993).* Braila: House Danubius.

Ionescu, N., Demetriad, P., & Marinescu, G. T. (January - March 1938). *Annals of Braila - Review of regional culture Year X, no. 1* . Braila.

Marcu, N. (. (1979). *Economic History.* Bucharest: Didactic and Pedagogic Publishing House.

Marcu, N., Puia, I., Bozga, V., Cherciu, A., & Vasile, R. (1979). *Economic History.* Bucharest: Didactic and Pedagogic Publishing House.

Olaru, C. (1998). *Economic history.* Bucharest.

Platon, G., Russu, V., Iacob, G., Cristian, V., & Agrigoroaiei, I. (1993). *As was done modern Romania. A perspective on development.* Iasi: Al. I. Cuza.

Portocală, R., Demetriad, P., & Marinescu, G. T. (January-April 1939). *Annals of Braila - Review of regional culture, Year XI, no. 1.* Braila.

Sută, N., Drăgan, G., Mureşan, M., & Sută, S.S. (1998). *Trade history and Romanian trade policy.* Bucharest: Economic.

Zane, G. (1930). *Exchange economy in the Romanian Principalities.* Bucharest.

# Economic Crisis at the Confluence of the Somes Rivers

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**Abstract:** Economic depression is a complex phenomenon, with repercussions in all sectors, particularly the economic one. The crisis in Romania was a reflection of the global crisis. Measures taken at government level, as were currency restrictions and the quota imports were considered a necessity. They were previously taken by the countries with which Romania has trade relations. The crisis has had an impact on the business environment in Dej less than among larger firms and especially to the small traders and craftsmen. And in some cases even amongst the individual offices. Changes arising from the crisis required a greater presence of women in the social and economic life and especially their associations. The fight was to get as much protection as both employed and an entrepreneur.

**Keywords:** depression; Somes County; population; social care

**JEL Classification:** O23; O24; O38

## 1. Introduction

This crisis had a significant influence on the industry and agricultural phenomenon, different from land to land.

Although small peasant exploitation has adapted to the crisis better than the great farms, the depression had a strong influence in this sector. Being unable to sell their products at a good price, Romanian peasant continued to sow the same area of land, being content with a lower cash income, per unit of labor. And this was possible, especially because small farms did not use employment, but the work of his family and they were covering most of their needs with the products of their work.

Great farms could deal with this situation, although labor was cheaper later, by widespread practice "of the given part", the remuneration was done directly in the products of the work, and thus the incidence of depression had an impact on producers. The adaptation was made possible by the fact that, on the one hand,

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small farms have reduced their consumption, and on the other, as was done a compression of production costs.

## 2. The Crisis in Dej

The crisis has had an impact on the business environment in Dej less than among larger firms and especially to the small traders and craftsmen. And in some cases even amongst the individual offices.

A comparison can be made using the list of businesses in Dej in 1928 (*Romania's Yearbook for commerce, industry, jobs and agriculture,* 1928) and 1935 (*Private Documents Fund "Radu Gavrilă" (FRG), file I, list 1*, pp. 1-8) of Finding and control of urban Constituencies Dej.

Among large enterprises were no longer "Railway Enterprise Heathrow", "Carting Enterprise" and "Factory barrels". If the first was put on state property, the other two have disappeared due to the economic situation. To these is added "Stone SA oil industry."

In the case of the TANNERS the number dropped from 11 to 8. Even the number of taverns, restaurants, pub and "flow drinks" the number decreased from 55 to 48. More dramatic is the situation of hotels whose number decreases from 7-2. Sure, the conditions offered by those who remained on the market were much higher. There were six stores of spirits and beer stores. In 1935 there were reported two deposits of drinks. Grocery in Dej were 55 in 1928, while in 1935 it was recorded as mixed trade and these were only 23, here entered the colonial trade and the drugstores.

A job well represented was the tailors. Both for men and women. If there were 46 before the crisis, after there were operating only 31. And potters remained less: from 12 to 5. A very telling statement on the purchasing power of Dej's townsfolk's is showed by the evolution in the number of lawyers. In 1929 there were registered 26 offices and in 1935 there were only 10 remaining. Some of them have passed into other business (banks, credit institutes, etc.) or in politics.

Remaining relatively the same were: confectioners, candy trade, butchers, shoemakers, barbers, carpenters, masons, painters. Adapting to economic changes has increased the number: mechanics (from 4 to 20).

## 3. Legislative Proposals

Changes arising from the crisis required a greater presence of women in the social and economic life and especially their associations. The fight was to get as much protection as both employed and an entrepreneur.

"Housewives Circles Association" proposed a bill protecting working women for the protection of pregnant woman and woman lately confined, mandating a rest from the employer of 20 days before and 40 days after birth, and financial assistance in this time. (Our Newspaper, no. 1-3, 1935, p. 2)

The 1928 law on protection of women and child labor and working time, stated that the employer gives a vacation of six weeks prenatal and six weeks after birth. The term may be extended upon request. The law also stated that those companies with more than 50 workers over 18 years old had to have inside the building or near a special room where women could breastfeed children for half an hour without loss of salary.

Regulation on maternal and child care from 1937, established the break of one hour, if the company did not have space, and half an hour if the company had space for breastfeeding. (Hamangiu, 1938, p. 2387)

Act of 1928, gives women with children a maintenance allowance and free medical insurance for disease.

According to the law of 1933, a women that contributed at least 26 weeks in the last year before the birth, benefit from medical and financial assistance for 12 weeks in which six prenatal and six postnatal (minimum six, six were post-natal).

Act of 1938, was more restrictive financial aid is granted if the insured contributes at least 36 weeks in the last 12 months or 52 weeks in the last two years.

According to the bill proposed by the "Housewives Circles Association", proof of payment of social contribution by the employer is achieve by stamping the social stamp card of the worker. In the case of contributions of 90 days, Social Assistance paid the pre and postnatal leave. Payment was based on wages for women working states. Protection was extended to women in agriculture.

The Regulation for maternal and child care in 1937, established the establishment of child care dispensaries in each district, both in cities and villages. (Hamangiu, 1938, p. 2382)

According to the Association draft and the Regulation of 1937, mobile dispensaries have operated as maternal-child institution. In localities where infant mortality was a high percentage, teams were organized in collaboration with children's care centers, local administrative authorities and maternal-infant care societies.

They were doing girls education through conferences, through posters, videos, demonstrations, social evenings, exhibitions. There were organized "milk kitchens" in addition to clinics, where they offered free milk and hygiene materials for women in need and for pay for those with possibilities. Teams were formed consisting of child care specialist and pediatrics, one-two mobile instructors, which

are among the sisters' care and cares of children with long practice, a teacher or master of the household, teachers and social workers.

These teams in collaboration with church, school, cultural societies, conducted surveys, home visits, child care courses and household material assistance to women without any means.

For mothers and young girls from primary school were kept courses on general hygiene, infant care for newborns, infants, children aged two and three, children's diseases, care for pregnant women and woman lately confined. (Hamangiu, 1938, p. 2385)

Regulation of 1937, provided for the establishment of maternal homes, maternity hospitals, small children dispensaries, mobile clinics, shelters for days, swings, care centers, offices of urban, municipal, county protection, social services, and high mountain colonies. The sums necessary were paid from the budget and the Ministry and that of the House of Health and the counties, municipalities were to allocate at least 30% of the budget to the local health services. (Hamangiu, 1938, pp. 2381-2382)

Through the Association project and the Regulation of 1937 there were established in the cities of Arad, Brasov, Chisinau, Craiova, Constanta, Cernautsi, Cluj, Galati, Iasi, Oradea, Targu Mures, Timisoara and Bucharest care centers for abandoned children.

Association project took into consideration the protection of juvenile offenders. Interwar feminist movement supported the actions to help those minors. Thus the *Criminal Code (January 1, 1937*) in Article 567, introduced for the first time in Romania, special courts for minors. An important role in assisting juvenile offenders have had Institutes for preventions sponsored by women, they provide shelter, health care and the possibility of learning of trade or selling of products.

Women in interwar Romania Movement campaigned for amending the legislation on the status of illegitimate children and adulterers. The most vehement arguments were brought by lawyer Ella Negruzzi who made a comprehensive critical research of the legislation of paternity witch was in favor of men's who were shelter by the *Civil Code* Article 308, which allowed only search for motherhood.

*Penal Code* of 1936 introduced many changes on the protection of illegitimate children, due to the actions and the position taken by the feminist movement thru the word of Ella Negruzzi (Negruzzi, 1935, p. 3) and Maria Damilescu. (Damilescu, 1939, p. 3)

Women involved in "Housewives Circles Association", along with other female associations, throughout the interwar period contributed to improving the legal and institutional framework of social care and maternal-infant care.

They have simultaneously contributed to the process of institutional modernization and promoting social status influenced decision-makers and social reforms have contributed to the achievement of our country.

## 4. Conclusions

During the crisis, incomes in agriculture had declined, especially in proportion to revenue in the industry. Obviously the most affected were rural households but also cities, were the peasant products went to. Lack of vertical industrialization on farms, and no investment projects in the land had contributed to worsening the crisis.

Although small peasant exploitation has adapted to the crisis better than great service, the depression had strong influence in this sector. The situation of financing agriculture and lending by banks and cooperative was affected by the conversion of agricultural debt.

## 5. References

Cantacuzino, Alexandrina (1924). *The purpose of women in social and political life.* Bucharest.

Damilescu, M. (1939). Some aspects of the problem of illegitimate child. *Asistenţa socială. Buletinul Asociaţiei pentru progresul asistenţei sociale/Social assistance. Bulletin of the Association for the advancement of social assistance no. 1-2*, 3.

Hamangiu, C. (1938). Rules for Mother and Child, 30 December 1937. *Codul general al României. Legi uzuale/General code of Romania. Common law. Volume XXV*.

Negruzzi, E. (1935). The situation of illegitimate children and adulterers in the Romanian legislation. *Ziarul nostru/Our Newspaper, no. 4*.

Tătaru, Augustin (1946). Consideraţiuni asupra scrisului economic în România/ Considerations of economic writing in Romania. *Observatorul Social Economic/Social Economic Observe, XXII* (series II) no. 1-3, January-June.

***(1928). *Anuarul României pentru comerţ, industrie, meserii şi agricultură/ Romania's Yearbook for commerce, industry, jobs and agriculture.* Bucharest: Rudolf Mosse S.A..

****Circles of Housewives Association. The report of the Central Committee's work and its affiliates 1920-1940, Bucharest,* 1940.

****Fond privat documente "Radu Gavrilă" (FRG)/Private Documents Fund "Radu Gavrilă" (FRG), file I.*